Atlantic States Marine Fisheries Commission

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Patrick C. Keliher (ME), Chair *Spud Woodward (GA), Vice-Chair* *Robert E. Beal, Executive Director*

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

MEMORANDUM

October 6, 2021

TO: Commissioners; Proxies; American Eel Management Board; American Lobster Management Board; Atlantic Coastal Cooperative Statistics Program Coordinating Council; Atlantic Herring Management Board; Atlantic Menhaden Management Board; Atlantic Striped Bass Management Board; Coastal Sharks Management Board; Executive Committee; Horseshoe Crab Management Board; ISFMP Policy Board; Shad and River Herring Management Board; Spiny Dogfish Management Board; Tautog Management Board

FROM: Robert E. Beal
Executive Director

RE: **2021 Fall Meeting Webinar of the Atlantic States Marine Fisheries Commission**

The Atlantic States Marine Fisheries Commission's 2021 Fall Meeting Webinar will be held October 18-21, 2021. Meeting materials are now available on the Commission website at http://www.asmfc.org/home/2021-fall-meeting-webinar. Supplemental materials will be posted to the website on Wednesday, October 13.

Board meeting proceedings will be broadcast daily via webinar beginning Monday, October 18 at 9 a.m. and continuing daily until the conclusion of the meeting (expected to be 4:45 p.m.) on Thursday, October 21. The webinar will allow registrants to listen to board deliberations and view presentations and motions as they occur. To register for the webinar go to https://attendee.gotowebinar.com/register/180425878123839504 (Webinar ID: 349-122-851).

Each day, the webinar will begin 30 minutes prior to the start of the first meeting so that people can troubleshoot any connectivity or audio issues they may encounter. If you are having issues with the webinar (connecting to or audio related issues), please contact Chris Jacobs at 703.842.0790.

If you are joining the webinar but will not be using VoIP, you can also call in at 914.614.3221, access code 580-881-020. A PIN will be provided to you after joining the webinar; see webinar instructions for details on how to receive the PIN.

We look forward to meeting with you at the Fall Meeting Webinar. If the staff or I can provide any further assistance to you, please call us at 703.842.0740.

Enclosure: Public Comment Guidelines and Final Agenda

Atlantic States Marine Fisheries Commission

2021 Fall Meeting Webinar

October 18-21, 2021

Public Comment Guidelines

To provide a fair opportunity for public input, the ISFMP Policy Board approved the following guidelines for use at management board meetings. **Please note these guidelines have been modified to adapt to meetings via webinar**:

For issues that are not on the agenda, management boards will continue to provide an opportunity to the public to bring matters of concern to the board's attention at the start of each board meeting. Board chairs will ask members of the public to raise their hands to let the chair know they would like to speak. Depending upon the number of commenters, the board chair will decide how to allocate the available time on the agenda (typically 10 minutes) to the number of people who want to speak.

For topics that are on the agenda, but have not gone out for public comment, board chairs will provide limited opportunity for comment, taking into account the time allotted on the agenda for the topic. Chairs will have flexibility in deciding how to allocate comment opportunities; this could include hearing one comment in favor and one in opposition until the chair is satisfied further comment will not provide additional insight to the board.

For agenda action items that have already gone out for public comment, it is the Policy Board's intent to end the occasional practice of allowing extensive and lengthy public comments. Currently, board chairs have the discretion to decide what public comment to allow in these circumstances.

In addition, the following timeline has been established for the **submission of written comment for issues for which the Commission has *NOT* established a specific public comment period** (i.e., in response to proposed management action).

1. Comments received 3 weeks prior to the start of the webinar (September 27) has been included in the briefing materials.
2. Comments received by 5:00 PM on Tuesday, October 5 will be included in the supplemental materials.
3. Comments received by 10:00 AM on Friday, October 15 will be distributed electronically to Commissioners/Board members prior to the meeting.

Comments should be submitted via email at comments@asmfc.org. All comments must clearly indicate the commenter's expectation from the ASMFC staff regarding distribution.

Final Agenda

The agenda is subject to change. The agenda reflects the current estimate of time required for scheduled Board meetings. The Commission may adjust this agenda in accordance with the actual duration of Board meetings. It is our intent to begin at the scheduled start time for each meeting, however, if meetings run late the next meeting may start later than originally planned.

Monday, October 18

9:00 a.m. – Noon **American Lobster Management Board**
Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia
Other Members: NMFS
Chair: McKiernan
Other Participants: Perry, Reardon, Beal
Staff: Starks

1. Welcome/Call to Order *(D. McKiernan)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021
3. Public Comment
4. Review Annual Data Update of American Lobster Abundance Indices *(K. Reardon)*
5. Discuss Development of Draft Addendum XXVII on Gulf of Maine/Georges Bank Resiliency *(C. Starks*)
   - Consider Plan Development Team (PDT) Recommendations on Objectives
   - Provide Feedback to PDT on Proposed Options
6. Progress Update on Draft Addendum XXIX: Electronic Vessel Tracking Devices in the Federal American Lobster and Jonah Crab Fisheries *(C. Starks)*
7. Consider Next Steps for Development of a Management Strategy Evaluation of American Lobster Fisheries *(J. Kipp)* **Possible Action**
8. Other Business/Adjourn

Noon – 12:45 p.m. **Lunch Break**

12:45 – 1:15 p.m. **Atlantic Herring Management Board**
Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey
Other Members: NEFMC, NMFS
Chair: Patterson
Other Participants: Zobel, Brown
Staff: Franke

1. Welcome/Call to Order *(C. Patterson)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from February 2021
3. Public Comment
4. Set Quota Period for the 2022 Area 1A Fishery *(E. Franke)* **Final Action**
5. Other Business/Adjourn

1:30 – 4:00 p.m. **Tautog Management Board**

Member States: Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia
Other Members: NMFS
Chair: Hyatt
Other Participants: Ares, Snellbaker
Staff: Rootes-Murdy

1. Welcome/Call to Order *(W. Hyatt)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021
3. Public Comment
4. Review 2021 Stock Assessment Update *(N. Ares)*
5. Consider Management Response to 2021 Stock Assessment Update *(W. Hyatt)* **Possible Action**
6. Review and Provide Feedback on Risk and Uncertainty Decision Tool for Tautog *(J. McNamee)*
7. Develop Guidance for Law Enforcement Committee Review of Commercial Tagging Program *(K. Rootes-Murdy)*
8. Other Business/Adjourn

4:15 – 5:15 p.m. **Atlantic Large Whale (ALW) Take Reduction Team Update**, *(M. Trego)*

NOAA Fisheries will provide an update on ALW Take Reduction efforts. The update will include a review of the final rule to amend the ALW Take Reduction Plan to reduce risk of serious injury and mortality to North Atlantic right whales caused by incidental entanglement in Northeast Jonah crab and lobster trap/pot fisheries. Scoping on the next phase of rulemaking is ongoing, through October 21, 2021. Additionally, NOAA FIsheries will provide an overview of scoping efforts to inform the Take Reduction Team's development of recommendations to modify the Atlantic Large Whale Take Reduction Plan to reduce risk to North Atlantic right whales in coastwide gillnet and Atlantic mixed species trap/pot fisheries and Mid-Atlantic lobster fisheries.

Tuesday, October 19

9:00 – 10:30 a.m. **Shad and River Herring Management Board**

Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida
Other Members: DC, NMFS, PRFC, USFWS
Other Participants: Sprankle, Warner, Neilan
Chair: Davis
Staff: Starks

1. Welcome/Call to Order *(J. Davis)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from May 2021
3. Public Comment
4. Consider American Shad Habitat Plans/Updates *(B. Neilan)* **Action**

5. Consider Technical Committee Report on Methods for Evaluating Mixed-stock Catch *(B. Neilan)* **Possible Action**
6. Progress Report on Prioritizing Systems for Shad Recovery and Developing Inventory of Available Data to Support Development of Fish Passage Criteria *(B. Neilan)*
7. Elect Vice-Chair **Action**
8. Other Business/Adjourn

10:30 – 11:00 a.m. **Break**

11:00 a.m. – 12:30 p.m. **Atlantic Coastal Cooperative Statistics Program Coordinating Council**
Partners: ASMFC, Connecticut, Delaware, District of Columbia, Florida, Georgia, MAFMC, Maine, Maryland, Massachusetts, NEFMC, New Hampshire, New Jersey, New York, NMFS, North Carolina, Pennsylvania, PRFC, Rhode Island, SAFMC, South Carolina, USFWS, Virginia
Chair: Carmichael
Staff: White

1. Welcome/Call to Order *(J. Carmichael)*
2. Council Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021
3. Public Comment
4. Consider Recommendations for FY2022 Submitted Funding Proposals *(J. Simpson)* **Action**
5. Other Business/Adjourn

12:30 – 1:15 p.m. **Lunch Break**

1:15 – 5:15 p.m. **Atlantic Menhaden Management Board**
(break included)
Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida
Other Members: NMFS, PRFC, USFWS
Chair: Woodward
Other Participants: Newhard, Kersey, Cieri, Brust
Staff: Rootes-Murdy

1. Welcome/Call to Order *(S. Woodward)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021
3. Public CommentProvide Guidance to the Technical Committee and Ecological Reference Points Work Group on Priorities for Completing Next Benchmark Stock Assessment *(M. Cieri)* **Possible Action**
4. Progress Update on Development of Draft Addendum I to Amendment 3 *(K. Rootes-Murdy)* **Possible Action**
5. Update on 2020-2021 Atlantic Menhaden Mortality Events *(J. Brust)*
6. Other Business/Adjourn

Wednesday, October 20

8:00 – 10:00 a.m. **Executive Committee**

(A portion of this meeting may be a closed session for Commissioners and Committee members only)

Members: Abbott, Anderson, Batsavage, Bell, Bowman, Burgess, Cimino, Clark, Davis, Gilmore, Keliher, Kuhn, McKiernan, McNamee, Miller, Patterson, Woodward

Chair: Keliher

Staff: Leach

1. Welcome/Call to Order *(P. Keliher)*
2. Committee Consent
   - Approval of Agenda
   - Approval of Meeting Summary from August 2021
3. Public Comment
4. Review and Consider Approval of FY2021 Audit *(S. Woodward)* **Action**
5. Discuss Policy on Responding to FOIA Requests *(R. Beal)*
6. Discuss Commission Involvement in Wind Energy Development *(J. Cimino)*
7. Discuss Seafood Processors Pandemic Response and Safety (SPRS) Block Grant Program
8. Discuss Appeals Process *(R. Beal)*
9. Future Annual Meetings Update *(L. Leach)*
10. Other Business/Adjourn

10:00 – 10:30 a.m. **Break**

10:30 – 11:00 a.m. **Coastal Sharks Management Board**

Member States: Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida

Other Members: NMFS

Chair: Bell

Other Participants: Willey, Garner

Staff: Rootes-Murdy

1. Welcome/Call to Order *(M. Bell)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from February 2021
3. Public Comment
4. Set Specifications for 2022 Fishing Year *(K. Rootes-Murdy)* **Final Action**
5. Elect Vice-Chair **Action**
6. Other Business/Adjourn

11:15 a.m. – 12:15 p.m. **Business Session**

Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida
Chair: Keliher
Staff: Beal

1. Welcome/Call to Order *(P. Keliher)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021
3. Public Comment
4. Consider Approval of 2022 Action Plan **Action**
5. Elect Chair and Vice-Chair **Action**
6. Recess

12:15 – 1:00 p.m. **Lunch Break**

1:00 – 5:15 p.m. **Atlantic Striped Bass Management Board**
(break included)

Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina
Other Members: DC, NMFS, PRFC, USFWS
Chair: Borden
Other Participants: Sullivan, Blanchard, Bassano
Staff: Franke

1. Welcome/Call to Order *(D. Borden)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021
3. Public Comment
4. Consider Draft Amendment 7 for Public Comment *(E. Franke)* **Action**
5. Consider Draft Addendum VII for Public Comment *(E. Franke)* **Action**
6. Other Business/Adjourn

<u>Thursday, October 21</u>

8:30 – 10:00 a.m. **Horseshoe Crab Management Board**

Member States: Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida
Other Members: NMFS, PRFC, USFWS
Chair: Cimino
Other Participants: Brunson, Garner, Sweka
Staff: Starks

1. Welcome/Call to Order *(J. Cimino)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from October 2020

3. Public Comment
4. Set 2022 Harvest Specifications **Final Action**
   - Review Horseshoe Crab and Red Knot Abundance Estimates and 2021 Adaptive Resource Management Model (ARM) Results *(J. Sweka)*
   - Set 2022 Harvest Specifications (*C. Starks)*
5. Progress Update on Revision to the ARM Framework *(J. Sweka)*
6. Consider Fishery Management Plan Review and State Compliance for the 2020 Fishing Year *(C. Starks)* **Action**
7. Elect Vice-Chair **Action**
8. Other Business/Adjourn

10:15 – 11:15 a.m. **Spiny Dogfish Management Board**

Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina
Other Members: NMFS
Chair: Batsavage
Other Participants: Newlin, Moran, Didden
Staff: Rootes-Murdy

1. Welcome/Call to Order *(C. Batsavage)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from October 2020
3. Public Comment
4. Review Analysis on Trip Limit and Market Price *(J. Didden)*
5. Consider Fishery Management Plan Review and State Compliance for the 2020 Fishing Year *(K. Rootes-Murdy)* **Action**
6. Update on Research Track Assessment *(J. Didden)*
7. Other Business/Adjourn

11:30 a.m. – 12:15 p.m. **American Eel Management Board**

Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida
Other Members: DC, NMFS, PRFC, USFWS
Chair: Fegley
Other Participants: Tuckey, Beal
Staff: Rootes-Murdy

1. Welcome/Call to Order *(L. Fegley)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from May 2021
3. Public Comment
4. Consider Extending Maine's Glass Eel Quota for 2022-2024 *(K. Rootes-Murdy)* **Final Action**
5. Consider Fishery Management Plan Review and State Compliance for the 2020 Fishing Year *(K. Rootes-Murdy)* **Action**
6. Progress Update on 2022 Benchmark Stock Assessment *(K. Anstead)*
7. Other Business/Adjourn

12:15 – 12:45 p.m. **Lunch Break**

12:45 – 4:30 p.m. **Interstate Fisheries Management Program Policy Board**
(*A portion of this meeting will be held with the Mid-Atlantic Fishery Management Council (MAFMC)*)
Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida
Other Members: DC, NMFS, PRFC, USFWS
ASMFC Chair: Keliher
Other Participants: Pentony
Staff: Kerns

1. Welcome/Call to Order *(P. Keliher)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021
3. Public Comment
4. Update on Draft Addendum/Framework on Harvest Control Rule for Bluefish, Summer Flounder, Scup, and Black Sea Bass (*This agenda item will be considered with the MAFMC*.)
5. Executive Committee Report *(P. Keliher)*
6. Review Management and Science Committee Tasks to Address Conservation Equivalency Concerns *(T. Kerns)*
7. Presentation by NOAA Fisheries on Efforts and Next Steps to Reduce Sea Turtle Bycatch in Several Trawl Fisheries in the Greater Atlantic Region, including Summer Flounder, Atlantic Croaker, and Longfin Squid *(M. Pentony)*
8. Update on East Coast Climate Change Scenario Planning Initiative *(T. Kerns)*
9. Review Noncompliance Findings (if necessary) **Action**
10. Other Business/Adjourn

4:30 – 4:45 p.m. **Business Session**

7. Reconvene
8. Consider Noncompliance Recommendations (if necessary) **Final Action**
9. Other Business/Adjourn

Atlantic States Marine Fisheries Commission

American Lobster Management Board

October 18, 2021
9:00 a.m. – 12:00 p.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1.	Welcome/Call to Order (*D. McKiernan*)	9:00 a.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from August 2021	9:00 a.m.
3.	Public Comment	9:05 a.m.
4.	Review Annual Data Update of American Lobster Abundance Indices *(K. Reardon)*	9:15 a.m.
5.	Discuss Development of Draft Addendum XXVII on Gulf of Maine/Georges Bank Resiliency *(C. Starks)* • Consider PDT Recommendations on Objectives • Provide Feedback to PDT on Proposed Options	9:45 a.m.
6.	Progress Update on Draft Addendum XXIX: Electronic Vessel Tracking Devices in the Federal American Lobster and Jonah Crab Fisheries *(C. Starks)*	10:45 a.m.
7.	Consider Next Steps for Development of a Management Strategy Evaluation of the American Lobster Fisheries *(J. Kipp)* **Possible Action**	11:30 a.m.
8.	Other Business/Adjourn	12:00 p.m.

The meeting will be held via webinar, click here for details.

MEETING OVERVIEW

American Lobster Management Board
October 18, 2021
9:00 a.m. – 12:00 p.m.
Webinar

Chair: Daniel McKiernan (MA) Assumed Chairmanship: 02/20	Technical Committee Chair: Kathleen Reardon (ME)	Law Enforcement Committee Representative: Rob Beal
Vice Chair: Dr. Jason McNamee	Advisory Panel Chair: Grant Moore (MA)	Previous Board Meeting: August 2, 2021
Voting Members: ME, NH, MA, RI, CT, NY, NJ, DE, MD, VA, NMFS, NEFMC (12 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 2, 2021

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Review Annual Data Update of American Lobster Abundance Indices (9:15-9:45 a.m.)

Background

- During the 2020 stock assessment the Stock Assessment Subcommittee recommended an annual data update process between American lobster stock assessments to more closely monitor changes in stock abundance. The objective of this process is to present information—including any potentially concerning trends—that could support additional research or consideration of changes to management. Data sets recommended for this process were generally those that indicate exploitable lobster stock abundance conditions expected in subsequent years and include: YOY settlement indicators, trawl survey indicators, including recruit abundance (71-80 mm carapace length lobsters) and survey encounter rate, and ventless trap survey sex-specific model-based abundance indices (53 mm+ carapace length lobsters).
- The Technical Committee updated the annual abundance indices to provide the Board with the most recent information on trends in the Gulf of Maine/Georges Bank (GOM/GBK) and Southern New England (SNE) stocks **(Briefing Materials)**.

Presentations

- Annual Data Update of American Lobster Abundance Indices by K. Reardon

5. Discuss Development of Draft Addendum XXVII on Gulf of Maine/Georges Bank Resiliency (9:45-10:45 a.m.)

Background

- Addendum XXVII was initiated in 2017 to proactively increase resilience of the GOM/GBK stock but stalled due to the prioritization of Atlantic right whale issues. After accepting the 2020 Benchmark Stock Assessment for American lobster, the Board reinitiated work on the draft addendum in February 2021, with a focus on developing a trigger mechanism that would automatically implement management measures to improve the biological resiliency of the GOM/GBK stock if the trigger is reached. Since then the Plan Development Team (PDT) and Technical Committee (TC) have met a number of times to discuss the development of the addendum and analyze potential management options.
- The PDT tasked the TC with recommending appropriate management measures for improving the health of the GOM/GBK stock, and analyzing the impacts of changes to minimum and maximum gauge size for the management areas within the stock. The TC performed these analyses and made recommendations to the PDT in a memo dated September 10, 2021 (**Briefing Materials**).
- In August the PDT received Board guidance on the goals and objectives of the addendum. The Board's guidance included (1) prioritizing options to increase the biological resiliency of the stock over standardization, (2) considering a tiered trigger mechanism with multiple trigger levels that include relatively proactive trigger levels, and (3) not considering trigger levels that may already have been surpassed. Given the conflicting nature between the stated objective of increasing biological resiliency of the stock, some of the Board guidance, and the TC advice, the PDT has struggled to develop appropriate options for Draft Addendum XXVII. The PDT recommends the Board consider revising the objective of the action and provide feedback on the proposed management options **(Supplemental Materials)**.

Presentations

- PDT Recommendations for Draft Addendum XXVII by C. Starks

Board Actions for Consideration at the Meeting

- Consider PDT recommendations on action objective and provide feedback to PDT on proposed options

6. Progress Update on Draft Addendum XXIX: Electronic Vessel Tracking Devices in the Federal American Lobster and Jonah Crab Fisheries (10:45-11:30 a.m.)

Background

- In May 2021, the Board discussed electronic vessel tracking in the federal lobster and Jonah crab fisheries. After reviewing recent work to test additional tracking devices, integrate cell-based tracking with ACCSP's SAFIS eTRIPS mobile trip reporting application, and create trip viewers within SAFIS eTRIPS online, the Board agreed that there is a critical need for high-resolution spatial and temporal data to characterize effort in the federal lobster and Jonah crab fleet. In particular, these data will help to address a number of challenges facing the fisheries, including Atlantic right whale risk reduction efforts, marine spatial planning discussions, and offshore enforcement. The Board formed technical work group including to develop objectives, technological solutions,

and system characteristics for vessel tracking devices in the federal lobster and Jonah crab fisheries, which recommended initiating an addendum to implement tracking requirements in the federal fleet.
- The Board initiated Draft Addendum XXIX in August 2021 to consider electronic tracking requirements in the federal lobster and Jonah crab fisheries. Since August the Plan Development Team has met several times to discuss the development of the addendum.

Presentations
- Progress Update on Draft Addendum XXIX by C. Starks

7. Consider Next Steps for Development of a Management Strategy Evaluation of the American Lobster Fisheries (11:30 a.m.-12:00 p.m.) Possible Action

Background
- In May 2021 the Board reviewed TC recommendations on a Management Strategy Evaluation (MSE) for the lobster fishery. The TC recommended the Board pursue a two-phase MSE focused on the GOM/GBK stock, with the goal of providing short-term management guidance at the stock-wide scale while concurrently building the framework to expand the MSE to provide long-term, spatially-explicit management advice. As next steps, the TC recommended a formal process to develop management goals and objectives for the future of the lobster fishery, and forming a steering committee for additional scoping and work plan development **(Briefing Materials)**.
- At their last two meetings, the Board expressed interest in pursuing an MSE but postponed any action on development of an MSE in order prioritize work on Draft Addendum XXVII and Draft Addendum XXIX.

Presentations
- Review of MSE Options and TC recommendations by J. Kipp

Board Actions for Consideration at the Meeting
- Consider forming a steering committee to develop lobster management goals and objectives and an MSE work plan

8. Other Business/Adjourn

American Lobster and Jonah Crab TC Task List

Activity level: High

Committee Overlap Score: Medium

Committee Task List
Lobster TC • Spring 2021: Provide recommendations on MSE focal areas, timelines, and costs • Spring-summer 2021: Provide analysis for development of Draft Addendum XXVII • Annual state compliance reports are due August 1 • Fall 2021: Annual data update of lobster abundance indices *Jonah Crab TC* • Spring-Summer 2021: Develop recommendations on initiating Jonah crab stock assessment • Annual state compliance reports are due August 1 • Fall/Winter 2021: Begin data submissions for Jonah crab stock assessment

TC Members

American Lobster: Kathleen Reardon (ME, TC Chair), Joshua Carloni (NH), Jeff Kipp (ASMFC), Kim McKown (NY), Conor McManus (RI), Chad Power (NJ), Tracy Pugh (MA), Burton Shank (NOAA), Craig Weedon (MD), Somers Smott (VA), Renee St. Amand (CT)

Jonah Crab: Derek Perry (MA, TC Chair), Joshua Carloni (NH), Chad Power (NJ), Jeff Kipp (ASMFC), Conor McManus (RI), Allison Murphy (NOAA), Kathleen Reardon (ME), Chris Scott (NY), Burton Shank (NOAA), Somers Smott (VA), Corinne Truesdale (RI), Craig Weedon (MD)

Addendum XXVII PDT Members

American Lobster: Kathleen Reardon (ME), Joshua Carloni (NH), Robert Glenn (MA), Corinne Truesdale (RI), Allison Murphy (NOAA)

Addendum XXIX PDT Members

American Lobster: William DeVoe (ME), Renee Zobel (NH), Nicholas Buchan (MA), Richard Balouskus (RI), Kim McKown (NY), Barry Clifford (NOAA), Allison Murphy (NOAA)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

AMERICAN LOBSTER MANAGEMENT BOARD

Webinar
August 2, 2021

These minutes are draft and subject to approval by the American Lobster Management Board.
The Board will review the minutes during its next meeting.

Draft Proceedings of the American Lobster Management Board Webinar
August 2021

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August 2021

ATTENDANCE

Board Members

Pat Keliher, ME (AA)
Sen. David Miramant, ME (LA)
Cherie Patterson, NH (AA)
Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Dan McKiernan, MA (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Jason McNamee, RI (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Colleen Bouffard, CT, proxy for J. Davis (AA)
Bill Hyatt, CT (GA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
Emerson Hasbrouck, NY (GA)
John McMurray, NY, proxy for Sen. Kaminsky (LA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Sen. Houghtaling (LA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Mike Luisi, MD, proxy for B. Anderson (AA)
David Sikorski, MD, proxy for Del. Stein (LA)
Pat Geer, VA, proxy for S. Bowman (LA)
Allison Murphy, NMFS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Kathleen Reardon, Technical Committee Chair
Derek Perry, Jonah Crab TC Chair

Staff

Robert Beal
Toni Kerns
Maya Drzewicki
Tina Berger
Kristen Anstead
Pat Campfield
Lisa Carty
Emilie Franke
Lisa Havel
Chris Jacobs
Jeff Kipp
Dustin Colson Leaning
Kirby Rootes-Murdy
Sarah Murray
Joe Myers
Mike Rinaldi
Julie Defilippi Simpson
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Karen Abrams, NOAA
Jennifer Anderson, NOAA
Bill Anderson, MD (AA)
Nicholas Buchan, MA DMF
Mel Bell, SC DENR
Catherine Becker, FL FWC
Peter Clarke, NJ DEP
Chris Batsavage, NC DENR
Jeff Brust, NJ DEP
Erika Burgess, FL FWC
Colleen Coogan, NOAA
Heather Corbett, NJ DEP
Peter Benoit, Ofc. Sen. King (ME)
David Bethoney, CFR Foundation
Karen Bradbury, Ofc. Sen. Whitehouse (RI)
Alicia Brown, NH FGD
Clare Crowley, FL FWC
Jessica Daher, NJ DEP

Guests (continued)

Justin Davis, CT (AA)
Bill Devoe, ME DMR
Steve Doctor, MD DNR
Laura Engleby, NOAA
Lynn Fegley, MD DNR
Marianne Ferguson, NOAA
Joe Fessenden, Am. Comm. Fishing
Crystal Franco, NOAA
Erica Fuller, Earth Justice
Shaun Gehan, Gehan Law
Melanie Griffin, MA DMF
Jon Hare, NOAA
Hannah Hart, FL FWC
Marin Hawk, MSC
Doug Haymans, GA (AA)
Heidi Henninger, Offshore Lobster
Jay Hermsen, NOAA
Helen Takade-Heumacher, EDF
Haley Kohler, Vineyard Wind
Rob LaFrance, Quinnipiac Univ
Wilson Laney
Lauren Latchford, NOAA
Chip Lynch, NOAA
Shanna Madsen, VMRC
Kim McKown, NYS DEC
Conor McManus, RI DEM
Nichola Meserve, MA DMF
Kennedy Neill, Yorktown, VA
Jeffrey Nichols, ME DMR
Scott Olszewski, RI DRM
Noah Oppenheim, Homarus Strategies
Will Poston, SGA
Jessica Powell, NOAA
Chad Power, NJ DEP
Tracy Pugh, MA DMF
Story Reed, MA DMF
Renee Reilly, NJ DEP
Jason Rock, NC DENR
Samantha Russo, FL FWC
Scott Schaffer, MA DMF
Burton Shank, NOAA
Kara Shervanick, NOAA
Krista Shipley, FL FWC
Melissa Smith, ME DMR
Somers Smott, VMRC
Rene St. Amand CT DEP
David Stormer, DE DFW
Marisa Trego, NOAA
Corinne Truesdale, RI DEM
Jesica Waller, ME DMR
Megan Ware, ME DMR
Anna Webb, MA DMF
Craig Weedon, MD DNR
Kelly Whitmore, MA DMF
Chris Wright, NOAA
Renee Zobel, NH FGD
Barb Zoodsma, NOAA
Chao Zou, NOAA

The American Lobster Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Monday, August 2, 2021, and was called to order at 1:30 p.m. by Chair Daniel McKiernan.

CALL TO ORDER

CHAIR DANIEL McKIERNAN: Welcome everyone to the August 2, 2021 American Lobster Management Board meeting. My name is Daniel McKiernan; I'm the Administrative Commissioner from Massachusetts.

APPROVAL OF AGENDA

CHAIR McKIERNAN: First on the agenda is approval of the agenda itself. Are there any objections to the agenda, or any additions or modifications anyone wants to make? Raise your hand if you do.

MS. TONI KERNS: I don't see any hands, Dan.

CHAIR McKIERNAN: Right, seeing none, it's approved by unanimous consent.

APPROVAL OF PROCEEDINGS

CHAIR McKIERNAN: Next on the agenda is approval of the proceedings from the May, 2021 Board meeting. Are there any additions or modifications that are requested to the proceedings? Please, raise your hand.

MS. KERNS: I don't see any hands, Dan.

CHAIR McKIERNAN: That's great, thank you, Toni, therefore, I declare it's approved by unanimous consent.

PUBLIC COMMENT

CHAIR McKIERNAN: Next, Public Comment. On the agenda is a ten-minute time period for the public to communicate to the Board on any items that are not on the agenda. Is there anyone who has enlisted in advance to comment, or anyone who has got their hand raised, Toni?

MS. KERNS: I'm not aware of anyone asking in advance, and I currently don't see anybody with their hand up.

PROGRESS REPORT ON DEVELOPMENT OF DRAFT ADDENDUM XXVII ON THE GULF OF MAINE/GEORGES BANK RESILIENCY

CHAIR McKIERNAN: Great, okay we'll move right into Item Number 4, which is the Progress Report on Development of Draft Addendum XXVII on the Gulf of Maine/Georges Bank Resiliency issue. The Board will recall this was first initiated in 2017, to increase the resiliency of this particular stock.

We did back burner this, due to the prioritization of the Large Whale Take Reduction Team rules that have been facing the state and federal governments. The Board reinitiated the draft addendum in February, and the PDT and the TC have been meeting numerous times. Today the PDT is seeking guidance from the Board, with the intention of providing a draft addendum for public comment coming back to the Board in October, at our next meeting. Caitlin Starks has a presentation, so Caitlin, I'll turn it over to you.

MS. KERNS: Caitlin, before you start, if I could just make sure the Board is aware that the way Dan and I are going to do hands raised is, I'll monitor the hands as I see hands go up during questions or comment periods. I'll read off the three hands in a row, about who is going to go, and then the folks that are on deck, just to keep track of the hands. Thanks.

CHAIR McKIERNAN: Thank you, Toni.

MS. CAITLIN STARKS: Thanks, Toni. Thanks, Mr. Chair, for the introduction to this topic. You actually covered my first couple of slides, so that makes things a lot easier for me. Throughout the presentation I'll give some quick background, skipping over some things that Dan already covered, an updated action timeline, some updated technical considerations that have been discussed by the TC and the PDT.

Then I'll go over the draft recommendations for options that the PDT has developed up to this point, regarding the management options for the Addendum. Then I have a few areas where we're looking for Board guidance and next steps for the document. This is a very brief context that Dan essentially already covered.

I can mostly skip it, but the highlights are that this was originally initiated in August, 2017, based on our report from the Gulf of Maine/Georges Bank Subcommittee that emphasized concerns about decreasing trends in Maine's Larval Settlement Survey over recent years that might foreshadow future declines in recruitment in landings. The Board initiated this Addendum to increase resiliency of the Gulf of Maine and Georges Bank stock, by considering standard management measures for the stock.

Then after it was stalled for a few years, and reinitiated in February, the Board motion that was made in February changed the focus of the Addendum a bit, by specifying that the action should focus on a trigger mechanism, such that upon reaching a trigger, measures would be automatically implemented to improve the biological resiliency of the Gulf of Maine and Georges Bank stock.

That is what the PDT and TC have been focused on since February. They've met several times. They met before the May meeting, where they presented the draft structure of options to the Board, and received some additional guidance. That Board guidance at the time was that the action should prioritize increasing resiliency of the stock over standardizing measures.

That it should consider a tiered approach with multiple trigger levels, and that it should include some relatively conservative trigger levels, such that a change to measures would occur before abundance falls significantly from current levels. Since that May meeting, the PDT and TC have continued meeting to work on analyses to inform the draft options for the document.

However, due to some of our Technical Committee members competing workloads on other high priority projects, we did have some challenges with completing the analyses that are needed to fully flush out the proposed management options before this meeting. That leads me to the updated timeline for the action. I just covered the first four rows on the table here, so now we're at the fifth row, looking at the Board receiving a progress update on the Addendum today, and then following today's meeting the plan is for the PDT to finalize the draft addendum document for public comment, with the TC analysis and recommendations that will be completed in the near future. That would set us up for the Board to consider the draft addendum for public comment in October.

Then if that draft addendum is approved for public comment, hearings would be able to take place in November and December, and the Board could meet to consider the Addendum for final approval in February, 2022. Now I'll switch gears, and go over some of the Technical Committee work that is in progress to provide advice to the PDT on the various components of the Addendum, including indices for establishing triggers, trigger levels, and management measures that are expected to increase biological resiliency of the stock.

It should be noted again that some of these analyses are not quite complete, so nothing presented today should be considered final. But on the topic of indices that could be used to establish the trigger mechanism for the Addendum, the Technical Committee has recommended using the abundance indices that till be updated as part of the annual data update process.

These include a combined index for the Maine and New Hampshire Trawl Survey and the Massachusetts Trawl Survey, with separate indices for the spring and the fall survey. Then third, the Ventless Trap Survey Index. The Technical Committee advised that the indices should be constrained to the survey provided strata, and they should focus on the pre-recruit sizes, which are 71 to 80 millimeters, and sexes should be aggregated.

The focus on those sublegal sizes is recommended as a way to estimate future abundance trends for the spawning stock. This approach was also supported by correlation analysis from the stock assessment that shows there is a relationship between the trawl indices and the model abundance from the assessment.

For trigger levels, the TC agreed that the proposed trigger levels should be related to the assessment model output and the abundance reference points that were adopted by the Board. The reference points that have been discussed for relating to triggers are the fishery industry target, which is the 25th percentile of the high abundance regime, the modeled abundance level at the time when the abundance regime shifted from the moderate to high regime, and the abundance limit.

A trigger level approximating the fishery industry target would be the most conservative, where the trigger level that is approximating the abundance limit, which is again the points below which the stock status would be considered depleted, would be the least conservative, and really taking action at that time would be more reactive to poor stock conditions than it would be proactive.

The proposal that the TC has put together for the triggers is that each trigger point could be defined as a certain amount of observed decline in the indices that would approximate a certain change in abundance. For example, management would be triggered if the three-year moving median of the indices were to fall by a certain percentage from the reference value. The Technical Committee recommends using a running median, as opposed to an average, to smooth out annual variation, but also to better identify declining trends, as opposed to the average method. I'll try to better explain this in the next few slides, but just remember that the TC is still working out some of the details on this so the approach is not final yet. This is a visual for the reference points from the stock assessment, to remind you all of where they fall in the Gulf of Maine/Georges Bank model abundance curve.

The highest horizontal dotted line represents the fishery industry target. Below that there is a dashed blue line that represents the point where the abundance regime shift occurs from the moderate abundance regime to the high abundance regime. Below that the dashed red line is the abundance limit, and the solid red line at the bottom is the abundance threshold.

The black dot, again on the upper right, represents the average abundance from 2016 to 2018, which is what was used to make the stock status determination for the assessment. That's what the TC is proposing as the reference level to compare the triggers to. These are the percent declines from our reference abundance value, which is that black dot, or the average abundance from 2016 to 2018 to each of the trigger levels that are being considered at this point.

From that 2016 to 2018 average abundance to the fishery industry target reference point, that would be a 17 percent decline in abundance, to the point where the moderate to high regime shift takes place would be a 32 percent decline. Then to the point the 75th percentile of the moderate abundance regime, that would be a 45 percent decline, and all the way to the abundance limit would be a 51 percent decline.

Those are the trigger levels that are being considered. Remember that these would be based on annual indices, rather than the model of abundance, but the TC does feel that it's appropriate to use a one-to-one comparison for changes in the annual abundance indices, to approximate changes in that model of abundance, based on the correlation analysis that was performed.

Then here is what those trigger levels look like as declines in abundance, just so you can get an idea of how these things are connected here. Over on the top right you're looking at the declining black lines from the black dot. You see the dotted line is

the cumulative decline to the fishery industry target, the dash line is the cumulative decline to the abundance level, where the shift occurred from moderate to high abundance regime.

The dot dash line then is the cumulative decline to the 75th percentile of the moderate abundance regime, and the solid line is the cumulative decline to the abundance limit. The TC has also discussed the types of management measures that would be most appropriate for increasing biological resiliency, and they generally agree that increasing minimum gauge size is expected to have the most positive impact to stock resiliency, by allowing more individuals in the population to reproduce, and that is even if the gauge change is relatively small.

They've noted that increasing the minimum size would likely have a short-term impact of decreasing the number of lobsters landed, but it ultimately is expected to increase the total weight of landings. They've also noted that vent size changes should be made consistent with those changes in minimum gauge size. For maximum gauge size, the TC has said that decreasing it has the potential to increase stock resiliency by making large lobsters unavailable to the fishery. But the effects of that are less certain, due to less data. They noted that also minor changes to maximum gauge size are less likely to have a big impact, compared to changes to minimum gauge size, and that's because inshore where most of the landings are coming from, the size structure of the population is already truncated, so few large individuals are being caught.

The Technical Committee is still working on finalizing some of these analyses to better predict how certain gauge size changes would impact the stock in areas in the fishery, and in particular they are incorporating new data for Area 3 since the last time they did this analysis. One concern or issue that came up during the PDT discussions on trigger levels and potential management measures, is that there was some disagreement among PDT members about the appropriateness of an approach.

It's a tiered approach, where you have multiple triggers that would be established, and a more conservative trigger would result in only slightly more restrictive measures compared to our current measures, and a less conservative trigger would result in relatively more restrictive measures than the current measures.

The argument from some PDT members was that given the existing uncertainties about the stock recruit relationship, that there is not necessarily a strong scientific rationale for an approach like this. But other PDT members felt that it makes sense to have a smaller change to management occur sooner rather than later, and then have a second trigger in place so that further restrictions can be implemented if things were to continue declining.

This is something that might require more discussion among the TC and PDT, but they have highlighted it as something they would like to discuss with the Board. Before I jump into PDT recommendations, we want to go over where we are with current management measures. This table shows the area-specific measures for Gulf of Maine and Georges Bank, and I think the main things to note here are the differences between areas for minimum gauge size and vent sizes, V-notch requirements and definitions, and maximum gauge sizes.

Then also, the difference within the Outer Cape Cod Area for state versus federal waters. Those are things that this Addendum may address. This is a chart that compares those minimum and maximum gauge sizes for the areas within the stock. We have the yellow slots showing where each area currently falls.

As you can see, Area 1 has the smallest minimum gauge size at 3 and ¼ of an inch, and Outer Cape Cod is at 3 and 3/8 of an inch, and Area 3 is at 3 and 17/32 of an inch. Area 1 also has the smallest maximum gauge size at 5 inches, whereas Outer Cape Cod and Area 3 are more similar on their

maximum size at 6 and ¾ of an inch for federal waters, but no limit in state waters of Outer Cape Cod.

Also, on this chart there is an orange horizontal line in the middle, and that is representing the estimated size at 50 percent maturity for the Gulf of Maine and Georges Bank stock, which is 87 millimeters carapace length. There is some variation within different areas of the overall stock unit, but as you can see, minimum gauge size for Area 1 and Outer Cape Cod both fall below that stock-wide size at 50 percent maturity, which suggests that there is growth overfishing occurring, and the Technical Committee has generally agreed that it's better for the stock resiliency to move the minimum size to the at or above that 5 at 50 percent maturity of the area where the fishing is occurring.

As I mentioned, the Technical Committee hasn't provided final analyses on the impacts of gauge size changes, but the PDT does want to get feedback from the Board on whether for each area, are there any gauge sizes that are complete nonstarters that the Board would be unwilling to consider? Just keep that in mind as we go through the other options from the PDT.

Now on to the PDT recommendations. As I mentioned, they are still waiting on Technical Committee analyses to fill in some details. Generally, the PDT has just been focusing on structuring the management options in the Addendum to meet the objectives of the action, and make sure that it's accessible for the public and the Board.

Since the last meeting the PDT has changed the draft structure of options, to group them into four separate issues. The first issue would address the standardization of some measures, such as inconsistencies within LCMAs at final approval of the Addendum. The second issue would address the trigger mechanism, and include trigger level options.

The third issue would address the management measures that would be implemented as a result of hitting the triggers established under Issue 2. Then the fourth issue would be to address a spatial implementation of those measures within Area 3. For Issue 1, these are the proposed options as currently drafted.

Option 1, as always, is status quo, and that is that no changes to measures would occur upon final approval of this addendum. Option 2 is that some standardized measures would be implemented upon final approval of the Addendum, and the additional sub-options would define which measures those would be.

The sub-options to note are not mutually exclusive, so the Board could select more than one. Sub-option 2A is that upon final approval of the Addendum, measures within each LCMA would be standardized to the most conservative measure, where there are inconsistencies in measures for state and federal waters within the stock.

This would result in Outer Cape Cod's maximum gauge being standardized to 6 and ¾ of an inch for both state and federal waters, and the V-notch definition and requirement being standardized to 1/8 of an inch, with or without setal hairs. Option 2B is to implement a standard V-notch requirement across all LCMAs in the stock upon final approval of the Addendum, and that would result in mandatory V-notching for all eggers in LCMA 1, 3, and Outer Cape Cod.

Then Sub-option 2C is to standardize regulations across LCMAs in the stock for issuing trap tags for trap losses upon final approval of the Addendum, and that would result in no issuance of trap tags before trap losses occur. Issue 2 again considers establishing a trigger mechanism to automatically implement measures to improve biological resiliency. As I mentioned before, the PDT has been discussing several options for triggers. The first is status quo, which would be no trigger mechanism at all, so no management triggered by something really just the indices, and then the trigger levels alternative options are ranging from 17 percent

decline in the indices to 51 percent decline in the indices. It should be noted that for this issue, the intent is that the Board could select either one trigger only, or select two triggers and use a tier approach.

Issue 3 is considering what management measures would be put in place when each trigger is hit. This is where the PDT has yet to fill in those exact measures based on the Technical Committee analysis, but this is the general structure that they recommended for these options. The PDT wanted two sets of options, one that would consider LCMA specific measures, and one that would consider standardized measures.

But, given the Board's guidance to prioritize resiliency, any measures considered under either category would have to be projected to increase biological resiliency of the stock. For Option 1, we have sub-options to establish LCMA specific minimum gauge and vent sizes, and maximum gauge sizes for each area to increase resiliency.

Those are the nonstandard options. Then under Option 2, there would be two options for standard minimum sizes across the LCMAs, and those can be tied to either one or two triggers established under Trigger 2, or Issue 2. Then there are a few more options here, so next under Option 3 there would be two additional options for standardizing the maximum gauge sizes across LCMAs, and again those would be tied to either one or two triggers, depending on what's chosen under Issue 2.

Then lastly under this issue, Option 4 is, that in addition to the gauge and vent sizes that would be implemented by each trigger, the Board could also choose to trigger any of the measures that were considered, but not selected under Issue 1. As a reminder, those are things like the standard sizes within LCMAs, V-notch requirements, and trap tag loss regulations.

Then this is our last issue, Issue 4, which is addressing where in Area 3 the management measures triggered by the Addendum would apply. Option 1 is status quo, which means that Area 3 would be treated all as one unit, so the rules would apply throughout Area 3. Option 2 is that the measures would only apply in the part of Area 3 that is considered to be a part of the Gulf of Maine and Georges Bank stock.

Specifically, that means that Area 3 would be split along the 70-degree west longitude line, to create an eastern section and a western section of Area 3, with an overlap of 30 minutes on either side of that line. Under this option the idea is that LCMA 3 harvesters could choose to fish exclusively in either the western or the eastern portion of the area, and they would be allowed to fish annually in the overlap zone without needing to change their area declaration.

Then in that overlap zone they would be held to the management measures of whichever sub area they had declared. That gets us through all of the proposed options to this point, and now I just want to put up a few questions that the PDT has raised for the Board to think about today. First, given that there is some disagreement or concerns with the tiered approach to management triggers and measures, due to uncertainties about the stock recruit relationship. Does the Board want to weigh in further on whether you want to pursue that approach? Second, is there a desire to remove any of the proposed trigger levels from consideration, either because they are too proactive or not precautionary enough? Then third, considering the range of possible minimum and maximum gauge sizes, are there limitations to the options that the Board would be willing to consider? Finally, a question came up about the process for implementing changes to measures when a trigger is hit.

The question is, if a trigger mechanism is implemented through the final approval of the Addendum, would the states be able to write that trigger rule into their rulemaking, or would new rulemaking to implement new measures have to

occur only after that trigger is met? This is just to get a better sense of the expected timelines for evaluating a trigger and then implementing new management measures as a result.

This is my last slide, which is just reviewing the next steps. After this meeting the TC will finalize their analyses to inform the management options. Then in August and September the PDT will be meeting to consider those analyses, and recommend final options for the document.

At this stage I expect to invite those members of the Board who had volunteered in May, to sit in on the PDT meetings and offer some guidance on the document. Then following finalizing the document, we expect it will be presented at the October meeting for the Board to consider it for public comment. That is all I've got, so I'm happy to take any questions, Mr. Chair.

CHAIR McKIERNAN: Thank you, Caitlin. I think you've gone over a lot of pretty nuanced detail here, and I'm wondering if there are any questions about the presentation before we get into any of the substantive discussion. I actually have one myself, and it has to do with the slide, Issue 1 options.

In that slide it mentions under 2A, referring to this would result in Outer Cape Cod maximum gauge being standardize to 6 and ¾ for state and federal waters. Actually, I think it's a little more complicated, because under the federal regulations the most restrictive rule applies. We have dual permitted lobstermen, who are fishing in the Outer Cape that are bound under the federal standards to comply with the more restrictive rule.

In other words, they would have a 6 and ¾ inch minimum size in state waters, because they hold the federal permit. I don't know if you need to change that per se, but I want to make that correction so people can understand the complexity of this dual jurisdiction situation. I would welcome any other Board members if they have any questions to Caitlin on any of these other options, to ask those now.

MS. STARKS: Dan, I just want to clarify that point, to make sure I understand. For Outer Cape Cod, the idea is to just blanket have all harvesters permitted for that area be required to meet the 6 and ¾ inch maximum gauge is correct?

CHAIR McKIERNAN: Well, that's certainly one outcome, but I just want it to be known that given the dual authorities in the state and federal managed fishery, that the status quo in the Outer Cape, in my view, is that those who are dually permitted already are bound by the more conservative rule when in state waters. In other words, the issue I'm taking issue with is instead of saying for state and federal waters say state and federal permit holders, because there is that issue of if you're fishing in state waters but you hold a federal permit, you are bound by those federal rules. I would let, maybe somebody from NMFS sort of reinforce that, but that's my understanding.

MS. STARKS: I think I've got you, Dan, thank you.

CHAIR McKIERNAN: Are there any questions on the presentation? If not, I guess we could get into some of the substance.

MS. KERNS: Right now, I have David Borden.

CHAIR McKIERNAN: Go ahead, David.

MR. DAVID V. BORDEN: Caitlin, while Dan's got this slide up. On 2A, have the technical folks looked at the impacts of that change, in terms of how it would affect the industry itself? What type of lost revenue, for instance, would be expected?

MS. STARKS: The short answer is no. We don't have analysis on that. I think it would be possible to do an analysis to show changes in catch of different sizes based on that change, but I'm not quite sure if we have the data to go as far as value. I can ask the Technical Committee what kind of analysis we can put forward for that change.

MR. BORDEN: Okay, and then a follow up, if I may, Mr. Chairman. A follow up would be, in terms of the gauge changes. Are the technical folks looking at a particular range of increases? In other words, how much of an increment? Are we looking at a 16th, a 32nd? How is that going to be evaluated?

MS. STARKS: Sorry, I want to make sure I understand the question. Are you asking what gauge size increases are being considered?

MR. BORDEN: Yes, not the gauge size, the increment of change. How much of a change are you going to look at? I just point out that in Rhode Island I think when I worked for the Department, I think we went through 8-gauge changes during my tenure. We always did it using a 32nd of an inch, in order to minimize the economic harm to the industry. But they were sequential, in other words one came right after another. Are you going to look at that type of strategy, or are you going to look at say a more aggressive strategy, a 16th of an inch? What is the increment of change?

MS. STARKS: I guess that is something we could add options for. Right now, we were not thinking of a gradual approach being part of the option. I think generally what I have on the slide right now, this chart of maximum and minimum gauge sizes is what the TC has been analyzing. We're looking at these sets of minimum and maximum gauge sizes. If a change were implemented, I think right now we're just looking at it being implemented right away, and not necessarily a gradual increase to get to that size.

MR. BORDEN: Okay, thank you. Mr. Chairman, when you get to the point you're taking statements, I'll have a statement on that if you would like to call on me again. Thank you.

CHAIR McKIERNAN: Sure, thank you, David. Is there anyone else on the Board that wants to comment at this point?

MS. KERNS: No hands, Mr. Chair. Oh, you have Kathleen Reardon, your TC Chair.

CHAIR McKIERNAN: Go ahead, Kathleen.

MS. KATHEEN REARDON: Just to clarify, David. We're looking at 16th of an inch for these increases. It's kind of hard to tell, because of all the different fractions, but just to clarify. Right now, we are looking at 16th.

CHAIR McKIERNAN: Just for my clarification. Is that kind of a recommendation, a kind of recommendation the PDT would be expected to make, because it's a little more sort of socioeconomic, as opposed to the TC? Would that be the role of the PDT, to sort of weigh in on that? I guess that's a question for Caitlin.

MS. STARKS: Yes, Dan. I believe so. The Technical Committee will be able to provide the analysis that says, you know, at this minimum and maximum gauge size this is the expected outcome, in terms of changes for the stock, and changes in catch. But the PDT would definitely be able to recommend something like an incremental increase, or other issues that relate more to the market side or industry side of things.

CHAIR McKIERNAN: Okay, thanks. Any other discussion on this presentation from the Board?

MS. KERNS: No hands, Mr. Chair.

CHAIR McKIERNAN: At this point, Caitlin, this is an update. There is still more work being done on the back end by the two committees, the TC and the PDT. Will you feel cheated if you don't get more substantive discussion by Board members, or are you okay if we wait to see something closer to a final product?

MS. STARKS: I do have these questions up on this slide that we were hoping to get some discussion on today. In particular, I think it would be helpful to hear if there are any gauge sizes that should not be considered as options for this document. I think that is one that the PDT has struggled with.

CHAIR McKIERNAN: It sounded like David Borden wanted to come back and talk about gauge size increments. David, are you ready to bring that up?

MS. KERNS: Mr. Chair, you have a queue of David, Pat and Jason McNamee.

CHAIR McKIERNAN: That would be David Borden, Pat and Jay.

MR. BORDEN: Okay, thank you, Mr. Chairman. My only suggestion, having gone through that in my history numerous times. Every time we get, at least I'll just talk from a Rhode Island perspective. Every time we would be confronted with the need to raise a change for scientific, biological reason or whatever.

The industry would want to know, what is the projected impact, and then there would be a discussion that would follow it, which would relate to, how do we minimize the negative consequences? As I've spoken before at previous Board meetings, this whole concept, I have some concerns about it, which I'm going to voice at some point today.

When you start having a tiered approach that is based on, and I'm just picking a number out of the air, based on a 30 percent reduction in abundance, and then you superimpose on that a 16th of an inch gauge size change. Unless the data, our experience from Rhode Island is completely wrong, then you're going to compound the negative impact on the industry.

I think the Board really needs to think through how they do that. I'm not saying don't do it, I'm saying we have to be careful that we factor in a broader range of considerations, other than just science. If we want to try to minimize the negative consequences to the industry, you're going to want to phase it in, but have a strategy where the industry knows and expects a certain set of regulations to come out of it, and you can use a phase-in strategy to achieve the same end. You might be forced to kind of abandon, if you advocated a much more aggressive strategy up front. I think there needs to be some discussion on at least the analysis. If we're going to look at gauge changes, then I would advocate, fine, we look at a 16th if that is what the technical folks want to look at, but we also look at the consequences of a phase-in strategy like a 32nd, once a year for X number of years.

CHAIR McKIERNAN: Pat Keliher.

MR. PATRICK C. KELIHER: Caitlin has listed four questions that the PDT is asking for the Board for guidance. How do you want to handle these, one at a time or do you want me to address all the points that I have related to these questions?

CHAIR McKIERNAN: Well, this particular item is scheduled for only another ten minutes on the agenda. I don't think we have to keep exactly to the timing. But why don't you take a crack at what the concerns are that you see from the state of Maine, which is the number one lobster producer in the country. I think your input is really valuable.

MR. KELIHER: Well, I appreciate the standing you've given us. I'll just try to quickly hit on all four of these questions then, to give a little bit of thought from the state of Maine around these issues. Question Number 1, is the Board still interested in a tiered approach. I think from Maine's standpoint, we are.

We think we need to push for a tiered approach that allows for action earlier in the process, and is likely the type of action that is going to be more palatable. In other words, we don't have to be so draconian. I think we can take a lesson out of the Southern New England playbook here. If we continue to look for a single action, I think it's going to push us down the road. It's going to be harder to get to that point, and when we come to taking an action, it's going to have to be much more draconian, if we could even get to that point. I think the tiered approach is the right approach.

The second question, does the Board wish to remove any of the proposed trigger levels, because they are either too aggressive, or the trigger may already be met. I guess all I would say to that one is, we wouldn't want to be too aggressive and implement a trigger that has already been met, right? If the PDT is going to look at triggers, let's not have something be established that would have already been met before we even finalized the Addendum.

Number 3, are there limitations to the range of gauge sizes the Board is willing to consider. From our perspective, we need to stay with the biology here. Maybe I don't see a need to consider minimum gauge sizes and then one that are greater than the size at maturity. But other than that, let's stick with the biology. Then Number 4, if a trigger mechanism is implemented through final approval, will states be able to write established triggers into the rulemaking.

I do want to point out the state of Maine's both minimum and maximum sizes are in statute, which creates some complexity. But knowing this is coming, it will be the Department's intent to submit a bill to the Legislature this fall, or this winter, excuse me, to ask either for the authority to establish these, or new gauge sizes, or ask for the gauge sizes to be changed, if they have been addressed through an FMP by the Commission. Those are my quick thoughts around those points, and I hope they were beneficial.

CHAIR McKIERNAN: Thank you, Pat. Jason McNamee.

DR. JASON McNAMEE: I think in general; I'm just going to support everything that Commissioner Keliher just said. I agree. I think the idea here would be triggers was to be kind of proactive, and have a system kind of set up. I appreciated the comments about kind of learning the lesson from Southern New England, and trying to be proactive. I think these triggers seek to implement that, and I appreciate the PDTs concern about the weak stock recruit relationship, but again, I think that type of uncertainty is exactly why we want to have a series of triggers, you know in place, so that you're not kind of waiting for potentially the stock assessment to catch up, or get you to a point where you are kind of beyond the point of being able to recover in a reasonable way.

That for me, gets at Number 2 as well, where I think the suite of triggers that you have in there seem good. I don't have any recommendation to remove any, the comment that Pat made notwithstanding. I think it would be awkward to implement something that potentially we've already triggered.

I'm not going to comment any more on Number 3, and then on Number 4, it seems like we would want to have this in perspective so that again, if the idea is to be nimble, and to be able to make some changes prior to something really bad happening in the population, which is so important to the economies of particular, Maine, but also Massachusetts, also Rhode Island. You know, I would think we would want to have these things kind of in place, so that we could use them rapidly if needed. That's it. I just wanted to weigh in on the questions as well. Thank you, Mr. Chair.

CHAIR McKIERNAN: Caitlin, is one of the fundamental questions in Number 4, how long would each state require to enact amended rules? Are those time periods sufficiently quick? Am I right in sort of summarizing it that way?

MS. STARKS: Yes, I think so, Dan. We're trying to get at, you know figuring out what the timeline is if we have the ability to evaluate whether a trigger has been hit every October, which is the plan for when those data updates would occur. Would the states be able to implement quickly enough measures to implement for the following fishing year, if they don't write these trigger rules into their rulemaking? I think that is the gist of it.

CHAIR McKIERNAN: Yes, I can say on the Massachusetts end, we have done so many quick

rule changes in the Scup, Black Sea Bass and Fluke arena that we have a whole routine of these emergency actions justified as needing to comply with an ASMFC plan, that we could certainly enact a rule within, certainly less than five months, but we could do it in a couple of months. But it sounds like in Maine they need to extract the authority from the statute into another regulatory scheme. Is Maine the only state within the Gulf of Maine that has that challenge? What about New Hampshire and Rhode Island?

MS. KERNS: Dan, you have Cheri with her hand up.

CHAIR McKIERNAN: Okay, go ahead, Cheri.

MS. CHERI PATTERSON: Yes, thank you, Mr. Chair. New Hampshire can react very quickly with our rulemaking, considering this is an ASMFC managed species. Under Number 4, I would prefer to write in the rulemaking the trigger process, as long as there is some, and I know that there cannot be some clear thought process that this is going to last for a long time. I would hate to continually have to change rules or triggers on an annual basis, because ASMFC is changing it.

I would prefer to just keep it set for a long period of time. I also agree with Pat and Jay on Numbers 1, 2, and 3. I think that it's important to keep this tiered approach. I think it allows us to pivot quicker, to react to the management of lobster. I think that I agree with what both Pat and Jay say for Number 2 and I don't see where Number 3, where we need further limitations to the range of gauge sizes that is being considered.

CHAIR McKIERNAN: Okay, Toni, anyone else with their hand up?

MS. KERNS: You have Jason McNamee.

CHAIR McKIERNAN: Great, go ahead, Jason.

DR. McNAMEE: Yes, I was just going to quickly answer the question, Mr. Chair, that you asked. I think that you asked, but in Rhode Island it wouldn't be statutory, it would be regulatory, so we could get things established in a reasonable amount of, you know it's relative, I guess, but a reasonable amount of time. It shouldn't take years, or anything like that.

CHAIR McKIERNAN: Okay thanks, and I know that this is about resiliency of the Gulf of Maine stock, but when we're all done with the next iteration of lobster management, I hope that there will be some attempt to make some of the rules a little bit more compatible, relative to commerce.

Although this isn't one of the objectives that has been laid out, the fact that some of the Area 1 lobsters can't be easily imported, or have to be filtered out before they get to some of the Southern New England states or Mid-Atlantic states, has been a concern of mine, in terms of the effects on commerce. At some point I think we need to ask if it's worth it.

If not, can we achieve some of these conservation measures in a way that is more consistent with ease of commerce? You know, I would hate to see a commerce clause case sort of bubble up. Obviously, it's a conservation measure, but I know that it's been problematic for some dealers to be shipping lobsters to states with a slightly higher minimum size, and that is problematic. Any other comments, Toni?

MS. KERNS: David Borden.

CHAIR McKIERNAN: Go ahead, David.

MR. BORDEN: Just general comment follow-up on what I said before. I support this, so everyone is clear. I support this concept, and I think it's incumbent upon the Board to try to do this is a manner which is clear, and kind of effective and timely. On the issue of timing, I'm a little bit concerned, and I'll express more at the next meeting, about our ability to kind of standardize

some of the regulations, and then develop this tiered approach all in one action.

Hopefully the technical people will prove me wrong, bring forth an analysis that we can all agree with. But I think the tiered, the aspects of the tiered phase really have to be well thought through by the Board. It's going to be very complicated, I think, and there are going to be really dire implications for 10,000 fishermen up and down the coast, of how we do that.

What I would suggest is, at the next Board meeting we really focus on our ability to do this all-in-one action. I could envision a strategy where we break this into two actions, and do the first step of standardizing some of the regulations, and then in the second phase, which would quickly follow the first phase, then focus on the triggers.

You know I'm a bit concerned that some of this analysis hasn't been done, and the fact that it's only a few months away, when it's supposed to be ready to go to public hearing. I don't think that is necessarily a realistic expectation. Then, the other concern I have with it relates to my experience with Southern New England. I've said this before, so I'll be brief, but we went from the peak of landings in Southern New England, to basically a collapsed stock in four to five years. I'm sure Caitlin has got the chart that documents that, and she could put it up for the Board. But that's a really quick period of time to go from one extreme to the other extreme. We have to factor that in to our consideration of this. If we pick triggers that don't get implemented until there is a 50 percent reduction, that is the one exactly, thank you, Caitlin.

If we pick triggers that respond too late in the process, it's just not going to be an effective strategy. I think we've got to think through that really carefully, and try to look at a more gradual but phased-in approach that requires action as the stock goes down, instead of picking, say 50 percent or 30 percent decline. I mean the stock, and Pat Keliher, please correct this if I'm wrong. From peak landings, I think we're already down 30 million pounds. How far down do we really want this to go, before we start taking actions? My recommendation is to take actions sooner. It would be better to take a whole series of small steps sooner than waiting for some major event, where you have to go do something that is so draconian, it's just going to put a whole bunch of fishermen out of business. Thank you very much, sorry to be winded.

CHAIR McKIERNAN: Thank you, David. All right, anyone else?

MS. KERNS: Kathleen Reardon.

CHAIR McKIERNAN: Kathleen.

MS. REARDON: A question for David. You were talking about standardization, and that is something at the previous Board meeting we were given some guidance to focus on resiliency, and so that is what we have been focusing on. But you were still talking about standardization, is that across LCMAs or within LCMAs?

CHAIR McKIERNAN: Go ahead, David.

MR. BORDEN: Kathleen, the last portion of your question was a little bit broken up, could you repeat it, please? I apologize. I'm not sure.

MS. REARDON: It may be my internet, sorry about that. My question is, you were talking about standardization, and at the last Board meeting we were given the guidance to focus on resiliency rather than standardization across LCMAs. That is why, within the PDT process, we have had kind of different options, one being standardization across LCMAs, both Area 3 and Area 1, and then another option, which is area specific. I just wanted some clarification. Are you expecting that things are going to be only standardization, or that things could still be area specific?

MR. BORDEN: My response is I think that that is a decision we have yet to make. I don't think we

necessarily can make it. My assumption is we're going to look at some of these analyses, and then try to make some decisions that get to that very question. My personal view at this stage, without seeing the analyses, I think there are some issues that are kind of glaring examples of how we could standardize regulations, and improve the resiliency of the stock. You know you can view that. One of the things that I kind of struggle with a little bit is, we're kind of focused on the scientific portion of it, but you can add resiliency to the stock by changing a whole host of other measures that currently are not on the table. I'm not sure I've answered your question.

CHAIR McKIERNAN: David, I think if I could weigh in. I think these measures that are being floated are those that can be flipped by a simple regulatory amendment in short order. Some of the other things that we've done in the past, like in Southern New England, where we went to a complicated effort control plan, could not be accomplished in the span of a round of rulemaking. You know it took such a long time to work out the details of those plans. I'm seeing this plan as choosing those routine lobster management measures that the input control types, you know as opposed to the output controls.

MR. BORDEN: If I might, Mr. Chairman, can I follow up on that?

CHAIR McKIERNAN: Sure, go ahead.

MR. BORDEN: I mean, I think we should stay away from gauge changes in the first phase. I think that's too complicated, and it's not that I'm trying to avoid gauge changes, it's just going to become very complicated and very contentious. I think we should focus on issues like potential changes in the V-notch definition, where you have to V-notch or not V-notch. I could see us (David stopped).

CHAIR McKIERNAN: Did we lose David?

MS. KERNS: Looks like we lost him. He's still there, but I don't hear him. David, we lost you. I'll text him to let him know.

CHAIR McKIERNAN: All right, well we do need to move on, on the agenda. Why don't we take, let's give him 30 seconds to get back, hopefully he can come back quickly?

MS. STARKS: While we're waiting for David, Mr. Chair, I think I have something to offer.

CHAIR McKIERNAN: Yes, go ahead, Caitlin.

MS. STARKS: As I mentioned, I think after this meeting we are planning to have more PDT meetings to look through the Technical Committee analysis, and I had mentioned that that would be a good time for Board members. In May we asked if there would be some subcommittee of Board members that would be interested in providing guidance on this document. I think it sounds like we'll need some additional guidance, and maybe we just have those conversations at the PDT meeting.

CHAIR McKIERNAN: I agree with that, that is a great strategy. Someone like David, who has had many, many decades of lobster fishery management experience, is an important voice in this discussion. Why don't we move on, unless there is anybody else who wants to speak to this, because I think David's concerns can be brought up at those meetings with the PDT.

MS. KERNS: I just want to check. Kathleen, is your hand raised from before?

MS. REARDON: Actually, it was just to respond a little bit to David. The conversation of other measures, like V-notches for effort control, like trap reductions. They were discussed within the Technical Committee, and we I think came to consensus that the measure that we have the most certainty on as having an impact to resiliency is gauge changes.

CHAIR McKIERNAN: Okay, that is a good clarification. David, are you back? Okay. All right, if

there are no objections. Caitlin, did you get the feedback you were seeking at this point?

MR. BORDEN: Mr. Chairman, I apologize. I'm not quite sure what is going on. I was completely muted, and I had no control over it. I also missed part of the discussion; I couldn't hear anything. Let me just make this one quick point, in terms of the whole issue of standardizing things.

I think there is a whole range of things that we can take quick action on in the first phase, they are fairly simple, easy to analyze. Depending upon what the technical folks come back to us, the PDT come back to us at the next meeting, we may want to think about separating the first phase from the second phase, because I can see the second phase being far more complicated. But we can make that decision at the next meeting, Mr. Chairman.

CHAIR McKIERNAN: Thanks, David, and I think you will be getting an invitation to attend, as a Board member, the meeting of the PDT and the TC, right, Caitlin?

MS. STARKS: Yes, that is my intention.

CHAIR McKIERNAN: Okay, all right if there are no other comments that we need at this point, let's move on, if there are no objections.

REVIEW OF THE WORK GROUP REPORT ON VESSEL TRACKING DEVICES IN THE FEDERAL LOBSTER AND JONAH CRAB FISHERIES

CHAIR McKIERNAN: Great, okay next is a Review of the Work Group Report on Vessel Tracking Devices in the Federal Lobster and Jonah Crab Fisheries, and Caitlin, another presentation for you.

MS. STARKS: Thank you, give me one second to get this up on the screen.

CHAIR McKIERNAN: I can editorialize in the meantime. I think this is one of the more important issues of our time for this lobster fishery. In my own experience it's really hard to help the lobster fishery sort of be considered for the important role that it plays in the maritime economy, when it's so difficult to identify places and times of fishing.

The lobster fishery at this point is at a real disadvantage relative to its other counterparts, that being groundfish, scallops, herring, surf clams, all those other fisheries that have vessel tracking systems or vessel monitoring systems. That is my comment to begin, so go ahead, Caitlin.

MS. STARKS: All right, thank you, Mr. Chair. Today for some context, at the Lobster Board meeting in May the Board expressed continued support for implementing vessel tracking requirements for federally permitted lobster and Jonah crab vessels. This has been a continuing discussion for the Board over the course of several years, with the Board highlighting the need for high resolution spatial and temporal data from vessel tracking, particularly for federal waters, to address several challenges that the lobster fishery is facing. At that May meeting the Board agreed to form a work group, which included representatives from the Board, federal and state management agencies, and law enforcement, and that group was identifying objectives, technological solutions and just some characteristics for implementing vessel tracking requirements in the federal lobster and Jonah crab fisheries.

That work group, as well as technical staff who have been working with the tracking technology and data systems have met several times over the last few months, and they've put together information on the objectives of requiring harvesters to collect tracking data, and identified some of the essential device characteristics for those trackers.

Based on the Board's previous discussions and intentions for a tracking program, the work group developed this proposed objective statement, which is that the objective of requiring vessel tracking devices for federally permitted vessels, and just to be clear that includes vessels with both

federal and state permits as well, for lobster and Jonah crab, is to collect high resolution spatial and temporal data to characterize effort in the federal American lobster and Jonah crab fisheries for management and enforcement needs.

Noting that these data will improve the stock assessment, inform management decisions related to protected species, and enhance offshore enforcement. To go over a bit more detail again on each of these aspects. First is acknowledge that improved spatial resolution of harvest data will improve the size composition data that is used in the stock assessment models, which will ultimately allow for better estimates of exploitation and reference abundance.

Second, the current model is being used to assess the location of vertical lines in the fishery, and their associated risk to right whales could be significantly improved with high resolution vessel tracking data. The recently published biological opinion includes additional risk reductions for the U.S. lobster fishery, starting in 2025, so there is a pressing need to get these data and models updated with better information before that time, to determine if additional reductions were needed.

Third, there is a need to record the footprint of the U.S. lobster fishery, so that information can be considered as part of ongoing and future spatial allocations discussions that result from new, emerging ocean uses, such as aquaculture, marine protected areas, and offshore energy development.

President Biden's 2021 January Executive Order included a goal of protecting 30 percent of U.S. waters by 2030, and that is just one indication that these types of conversations are definitely on the horizon. Lastly, there is the enforcement challenge of locating broadly dispersed gear in the offshore areas. Vessel tracking should definitely benefit the efficiency and efficacy of enforcement, by providing locations of type gear to enforcement officials.

Out of the work group discussions the recommendation was developed that the Board should initiate an addendum to consider implementing electronic tracking requirements for federally permitted vessels in the lobster and Jonah crab fishery, and this is based on the understanding that this would allow tracking data collection to be implemented under the authority of the Atlantic Coastal Fishery Cooperative Management Act, ACFCMA, which will provide the process and flexibility that we need for collecting information and sharing that data, in order to achieve the objectives that we've identified.

Additionally, operating under ACFCMA would allow the tracking data to be stored directly to ACCSP, and that will make data access easier for state fishery management agencies and law enforcement. The work group also made several recommendations on specifications that should be considered for the tracking devices that would be required if the program were implemented.

First, the trackers should report location data at a rate of one ping per minute for at least 90 percent of the fishing trip, and based on pilot project results, our understanding is that with this rate we would be able to distinguish lobster fishing activity from transiting activity, and also calculate the number of traps per trawl.

Second, the work group noted that cellular tracking devices are the preferred technology over satellite systems, due to lower cost and that they are generally simpler to install and use than satellite-based technology. The working group also emphasized that devices should be required to meet some minimum standards, and those should be defined by ACCSP and its partners, to ensure that data needs are consistently met, while still allowing flexibility for technology to be able to evolve and improve over time.

Some examples of these requirements are that they should have power systems capable of running the

device at the specified ping rate for the entire fishing trip. They should meet minimum precision and accuracy requirements, and they should be capable of making a distinction between a tracker unit and a vessel permit or vessel or permit, so that the data coming from a particular tracker at a particular time can be tied to a vessel or a permit, rather than the tracker itself.

Some additional considerations that the work group brought up were first, that there are several issues where they felt consulting the Law Enforcement Committee would be useful. For example, they would like the LEC to weigh in on when tracking devices would need to remain active. What rate or capabilities they should have for a dockside communication, and what tamper proof feature should be required, such as affixing devices to the vessels.

The work group also noted that the Addendum will need to consider how tracking requirements should be applied to the mobile gear fleet, as opposed to pot trap vessels, since these different gear types could require different recording rates. They also said that technical staff from the states and ACCSP should draft the standards and processes for data reporting, management, and dissemination of vessel tracked data collected under the proposed requirements, and lastly that the Addendum should address a process for how devices would be approved for use in the fishery.

Beyond those considerations the working group members also noted some questions that will need to be answered as this process moves forward, which are listed on this slide. For one, the Board is looking for, in terms of the timeline for implementation, what is the Board looking for in general? How quickly are we looking for this to be implemented, and if the Board were to initiate an action today, the Addendum could be completed by February, 2022 at the earliest. If that is the case, there is a question of how that overlaps with the timeline for the mandatory eVTR for lobster permit holders.

Additionally, we want to figure out how much lead time is needed to develop the data collection and management systems that will be needed for this program, as well as the time and resource requirements for ACCSP for things like program development and data management and program maintenance, and also need to determine the time and resources requirements from the state side, as well as who will provide tech support to harvesters for these tracking devices, and who will pay for them.

With all of that information in mind, the action for consideration today is whether the Board would like to initiate an addendum to consider implementing a requirement for electronic vessel tracking for federally permitted lobster and Jonah crab vessels. That is the end of my presentation, so I can take any questions.

CHAIR McKIERNAN: Thank you, Caitlin, are there any questions for Caitlin?

MS. KERNS: I have Pat Geer and then David Borden.

CHAIR McKIERNAN: Okay, go ahead, Pat.

MR. PAT GEER: Caitlin, I just had a question. How well will a cellular system work versus satellite, especially when you're going offshore?

MS. STARKS: My understanding is that the cellular devices would still be logging the locations in a cache, and as soon as it comes back into cellular range it would be uploading those locations. I believe that their precision accuracy is equivalent, it's just a matter of the lag between when the location is recorded and when it's uploaded.

MR. GEER: Okay, thanks.

CHAIR McKIERNAN: David Borden.

MR. BORDEN: My question is, and I don't know whether this is to Alli or staff. For purposes of the question, just assume that we do a tracking Addendum. It takes a year to do that, it takes another year to implement it, so that is two years.

Then we make a recommendation to NOAA to implement it for permit holders in federal waters, as a trailing action. How long will it take NOAA to do that? I recognize that that is going to be dependent upon what we do in the action originally. But if Alli could provide some guidance on that it would be helpful. Then I might want to follow up with another question.

CHAIR McKIERNAN: Alli, is it you or anyone else from the Service that would respond to those, let us know.

MS. ALLISON MURPHY: Thank you, Mr. Chair, and thank you for the question, David. I think you're totally spot on in regard to that the devil is going to be a little bit in the details, as to what the PDT develops, and how rigorous of a system they develop. I think that's really going to inform the process to implementation.

You know something really built up, like more akin to our VMS program with this type approval. I don't know if vessels are going to need to be inspected and certified for having, you know the system installed, that kind of stuff. That is going to necessitate additional time to be built into the process before any flip, before we could turn this program on.

There is that aspect. I think another really important thing here is, if this Addendum is initiated, I'm hoping that there will be a PDT or a working group developed that will consist of some of the state experts who have worked with these systems, and can potentially front load some of the analyses that we would have to do in a federal rulemaking into that Addendum.

One of the things we've talked about at the working group level is the one-minute ping rate, and potentially Maine has some analyses demonstrating why the one-minute ping rate is necessary for enforcement. That would be another thing that would kind of help facilitate things to move on a little bit more quickly.

As far as rulemaking goes. We definitely don't have the best track record with the lingering eVTR rulemaking not proceeding super-fast. But I have heard loud and clear how important this issue is to everybody at the Board, and I think I could garner some support from some folks at GARFO, and try to move this action through fairly quickly. Does that help answer your question, David?

MR. BORDEN: Yes, thank you, and Mr. Chairman, can I follow up with another question?

CHAIR McKIERNAN: Go ahead, David.

MR. BORDEN: This is a question and also a suggestion, to try to help this situation. I mean the states have a long history of taking action on lobster in advance of federal rules. We've implemented a number of regulations. One of my questions, as everyone knows, I support this action. I've spoken repeatedly on the need to do this. I know that the industry, some members of the industry are not going to like the action.

But it's the only way that I can envision us ever being in a position to actually support the industry, given what's taking place, in terms of wind energy development, right whale rules. You know I've listed the reasons why we need to get on with this. I think one of the outstanding questions, and this doesn't need to be answered today, but I would like it answered by the Board meeting, the next Board meeting, is in consultation with Alli and Chip Lynch, and you, Mr. Chairman, and whoever else.

I would like to know whether or not the states have the ability, after they pass an Addendum, to implement. Make it a compliance requirement of the Plan for dual permit holders, and specify a timeline. Then let the NOAA process just work along behind it as a trailing action. We've done that before; it's been fairly effective. It's a way of putting a regulation in effect on a timely basis. The trick in it is that we need to be in lock step through dialogue with the National Marine Fishery Service on the various elements that Alli just mentioned. There is a coordination function that has to take place. If you would, Mr. Chairman, I would like that

question kind of evaluated between now and the next Board meeting, and get a report from Chip Lynch and others in a knowledgeable position, where they can respond to that.

CHAIR McKIERNAN: David, are you also kind of implying that each of our states needs to check with, like our at-home legal counsels, as to whether there would be sufficient state authority to move forward with this? Is that part of your question?

MR. BORDEN: Yes.

CHAIR McKIERNAN: Okay. I'm not sure Chip Lynch can provide the answer for every state, because different states may come back with a different response.

MR. BORDEN: Yes, that is a good point, and I think that should be factored in to it. We need to get some guidance on this. The big issue with me on trackers is, if I could mandate and implement trackers on all dual permit holders tomorrow, I would do it, as a way of buffering the industry from all of the changes that we see coming.

I am particularly concerned about the implications of the spread of wind energy, given the experience in Southern New England. It's going to spread up into the Gulf of Maine and out on Georges, and we need to know where this fishery takes place. We need to know the spatial and temporal footprint of the fishery, so that we can document it and try to minimize the impacts on the industry.

CHAIR McKIERNAN: Agreed. All right. Does anyone else care to comment, or even make a motion to possibly move forward with a future addendum?

MS. KERNS: You have Eric Reid with his hand up.

CHAIR McKIERNAN: Great. Eric.

MR. ERIC REID: I don't think we need to have any more conversation. The conversation has built the rationale for a motion that I'm happy to make, and Caitlin actually has it, if you would like it.

CHAIR McKIERNAN: Certainly, thank you.

MR. REID: Okay. I move to initiate an addendum to implementing electronic tracking for federally permitted vessels in the lobster and Jonah crab fishery, with the goal of collecting high resolution spatial and temporal effort data. This tracking data shall be collected under the authority of the Atlantic Coastal Fishery Cooperative Management Act. The PDT should use the Work Group report on vessel tracking as guidance when developing options and system characteristics. If I get a second that would be great. I don't have any additional rationale, Mr. Chairman, I don't think it's necessary.

CHAIR McKIERNAN: Is there a second?

MS. KERNS: I have Cheri Patterson.

CHAIR McKIERNAN: Okay, brilliant. Is there anyone who would like to discuss this motion in any detail, or should we just go to a vote?

MS. KERNS: Pat Keliher with his hand up.

CHAIR McKIERNAN: Go ahead, Pat.

MR. KELIHER: Mr. Chairman, I'll just take a second. I do want just to stress the point that you made at the very beginning, as we were getting ready for the meeting, about the importance of this work. There is a lot of opposition within the industry, and I've heard it. But I am going to support this motion. I am supporting this motion, because the fact is we are being asked to stand up and advocate in many cases for this industry, without the data that we need to do it. Right whales are the perfect case in point, so I will be supporting this motion.

I do want to just make sure that the record is clear, that this motion also ensures by using the authority of the Atlantic Coast Fisheries Cooperative Management Act, that this data that will be

collected through trackers will be confidential and protected as such, just as any other data would be. For clarity, I would like that to be reflected in the record. Thank you.

CHAIR McKIERNAN: Thank you, Pat, anyone else?

MS. KERNS: No additional hands, Mr. Chair.

CHAIR McKIERNAN: All right.

MS. KERNS: You have Alli Murphy, I apologize.

CHAIR McKIERNAN: Go ahead, Alli.

MS. MURPHY: Sorry for being slow at getting my hand up. First, I just wanted to express my sincere thanks to Caitlin and Toni for jumping in on this issue, and leading both the policy and the data focused working groups over the summer. I would also like to thank the Directors that participated, as well as your technical staff that contributed to all the progress this summer.

Obviously, we're supportive of this effort going forward. As an Addendum, and should this pass, GARFO is, me and other staff are going to continue to participate on development to be sure to get everything we need, and so that we're ready to hit the ground running, when and if the recommendation comes to us. You know we'll be looking, as said in the working group meetings, to continue to match the requirements with the objectives of the program. I think there is potentially some work on program administration and data flows, but I think if we have all of the right people in the room, we'll be able to get there. Thank you.

CHAIR McKIERNAN: Thanks, Alli, and I want to also refer back to David Borden's comments that states do have a long history of taking actions in advance of NMFS, and it often works. But when we have enacted certain things that have been incompatible with NMFS standards, it's been extremely painful, and it's set us back substantially.

I really appreciate the conversations that we've had in this working group, to try to get the various jurisdictions all on the same page, not only in terms of the objectives, but the technology issues. It's complicated, but it is so worth it, in my view. Is there anyone else with their hand up? Otherwise, we'll go to vote on this.

MS. KERNS: No, Mr. Chairman, I don't have any additional hands. We made a small correction, so do you mind rereading it into the record please?

CHAIR McKIERNAN: Certainly, the motion is to move to initiate an addendum to implement electronic tracking for federally permitted vessels in the lobster and Jonah crab fishery, with the goal of collecting high resolution spatial and temporal effort data. This tracking data shall be collected under the authority of the Atlantic Coast Fisheries Cooperative Management Act.

The PDT should use the Work Group report on vessel tracking as guidance when developing options and system characteristics. Motion by Mr. Reid, second by Ms. Patterson. Let's go to vote. Is there any objection to the motion that is on the board, please raise your hand?

MS. KERNS: I don't see any hands, Mr. Chair.
CHAIR McKIERNAN: Are there any abstentions?

MS. KERNS: No hands.

CHAIR McKIERNAN: **All right then, I'm going to declare it's approved by unanimous consent.** All right, we're only ten minutes behind.

JONAH CRAB PRE-ASSESSMENT REPORT AND CONSIDERATION OF A STOCK ASSESSMENT

CHAIR McKIERNAN: The next item in the agenda is Jonah Crab Pre-Assessment Report and Consideration of a Stock Assessment**.** Caitlin, do you kick it off and hand it over to Derek, or do we go right to Derek?

MS. STARKS: Derek will be the presenter, and Maya, I think you should be showing the slide.

CHAIR McKIERNAN: Maya, take it away. I guess Derek take it away, Maya is in control of the slides. Derek Perry.

MR. DEREK PERRY: My name is Derek Perry; I'm with the Massachusetts Division of Marine Fisheries, currently serving as Chair of the Jonah crab Technical Committee. Today I'll be talking about the Jonah Crab Pre-Assessment Data Workshop and Report. We'll go into a little background about how we got here, the TCs opinion that there is a need for a coastwide stock assessment, evaluation of available data sources, and potential stock assessment approaches, some research recommendations, and a recommendation on stock assessment schedule. The TC met in August, 2017, and again April, 2020, to discuss Jonah crab research and available data. They identified data limitations, but also a need for more in-depth data review, to determine the feasibility of a stock assessment.

The Board tasked the TC in August, 2020 with conducting a pre-assessment workshop, to report out potential stock assessment approaches supported by available data. This report is developed for that task. A virtual workshop was held November, 2020. We had three webinars, one in February and two in June of 2021 were conducted.

A report was developed from workshop and webinar discussions, and was included in meeting materials. There has been an increasing trend in landings for Jonah crabs, it has basically quadrupled in the last 20 or so years, as the price per pound has gone up about 100 percent. You're going to shift away from lobster to Jonah crabs in Southern New England.

It's unknown what the role of abundance has played in this increase in landings. One of the things we hope to get from an assessment is to determine the role that abundance has played in landings, and determine that relationship between landings abundance, to identify sustainable levels. There is a need for science-based management for Jonah crabs, and advice in light of Canadian Jonah crab stock declines.

There are no assessments of U.S. Jonah crab stocks, but there have been some in Canada. It showed in Canada that there has been a decline in stocks, based on a very short time of directed landings. We also wish to promote market development. You may recall that the Jonah crab FMP was put in place in 2015, largely based on the Fisheries Improvement Project that was brought to by a grocery store chain, which was concerned about sustainability of the product, and a lack of management.

There is now management in place, but still concerns about sustainability. Next, we'll go with some data sources for life history, indices of abundance and fisheries removals. The best available life history data we have is for size-at-maturity. After the FMP went in place, we have three new studies looking at size-at-maturity. All of them show that size-at-maturity for males and females from all regions in U.S. waters are below the current minimal legal size.

There is also a fair amount of data for juvenile growth, based on studies from Rhode Island and New Hampshire. For data limitations, one of the biggest ones we have is adult growth. We can get crabs to grow and molt in captivity at juvenile sizes, but not at adult sizes. We don't know how long it takes them to molt, or how much they grow from molt.

We have some tagging's that we looked at, where crabs were at liberty for three years that did not molt. It's unknown how long these crabs live, or what the natural mortality rates are. The TC looked at 31 different surveys that encounter Jonah crabs. There are some issues with some of them limiting utility of surveys for providing indices of abundance.

One of those was spatial coverage. Most of the fishery occurs in federal waters, whereas most of the surveys occurred in state waters. There are also some concerns about the small spatial scale of some of those surveys, some of them are just based on wind farms, they don't really have a large scale of which to determine abundance. There is also concern about time series, a private FMP in 2015, a lot of the surveys did not count Jonah crabs or take Jonah crab information, so all of them started around 2015 or thereafter.

There are also concerns about catchability. Jonah crabs will burrow in sediment, so therefore they are not really successful in trawl gear, as other species may be, below survey catch rates. What we have here is a number of surveys that we looked at. On the far left we have the surveys that we looked at. To the right of that we have a time series, whether or not they collect carapace width measurements.

Next to that column we have whether or not they collect sex information, next to that are those surveys that we don't think will be used for near-term assessment with the Ys. What we are left with is a CFRF Ventless Trap Survey, Maine/New Hampshire Trawl Survey and Mass Net Trawl Survey, New Jersey Ocean Trawl Survey and Northeast Fisheries Science Center Trawl Survey.
On the far right are the reasons why some of those surveys may not be useable for us. SS stands for small spatial domain, TS stands for short or discontinuous time series, CR stands for inadequate catch rates. We're left with five surveys which are good candidates. That last slide was based on post settlement and adults. This next one here is for settlement and end-of-year indices.

But with the eight different surveys, from those we have six surveys that are possible candidates. The Nomandeau Plankton Survey is probably not a good candidate, based on identification issues. They do identify the species for Cancer crabs, and the U. Maine Deepwater Collectors have a fairly short, discontinuous time series.

Looking at fisheries removal's landings, there are three main issues that were discussed, one of which being species identification. There are two close related species, Jonah crabs and rock crabs, Cancer Irroratus and Cancer Borealis. Some parts of the range their search was a lot of crabs of both species.

There was some concern that some fishermen report rock crabs as Jonah crabs, and therefore, landings may be off. This is anticipated to be a minor issue to the scale of Jonah crab landings relative to those of other Cancer crabs. There is also concern about under reporting. This is anticipated to be a minor issue following stricter reporting requirements and increase in harvest value in volume in the mid-2000s.

Part of that period of time, it's thought that there may have been some cash sales at the dock, but we think that is less of an issue now. There is also concern about landing units, these were corrected where encountered. The TC believes that 2006 is likely a reliable start year for landings time period, with seasonal and spatial data available for this time series are available if needed.

Looking at Biosampling, the table down below has year on the far left and quarter or season in the next column, and going across it's steadier at 537, 526 and 525. These represent most of the landings for Jonah crab in the United States, Area 537, which is south of Massachusetts, lands about 70 percent of the Jonah crab landings by year, 526 and 525 represent about 10 percent of landings. The areas that have most of the landings were sampling better, with still some room for improvement.

The time series is still too short for use in population dynamics modeling approaches. The color codes there are red, we basically haven't sampled much at all, yellow is fully covered, and green is well covered, so 537 we also confirm we have the best sampling in that region report and sea

sampling. There is number of trips there, number of samples.

Just looking at possible assessment approaches. This slide here represents the most likely methods we could use right now. Looking at stock indicators, the outputs, annual indicator values relative to time period-based reference values. This is used for American lobsters, spot and croaker.

We also use index-based methods. Outputs: Stock status based on ad-hoc historical time period or sustainable catch levels. This is used for horseshoe crabs. We have the data available, there are numerous options and flexibility, but there will be limited outputs. Other assessment models we could work towards would include biomass dynamics-based data poor models, or biomass dynamics models. We have data available, there are potential assumption violations.

Other models we could work towards in future assessments would be a Collie-Sissenwine Analysis, a Statistical Catch at Length Models. These have potential data limitations, but they have more robust outputs. The TC put together a list of priorities for research recommendations, starting with high, moderate and low.

I'll present here some of the high priority recommendations. The first one here is with genetics, for stock assessment purposes or stock ID purposes, rather. Information should be collected to help delineate stock boundaries, for example genetics. Identification of stock boundaries is an essential step in the stock assessment that will inform many subsequent steps including development of input data, and identification of methods applicable to the stocks.

Some genetic research is currently being conducted by GMGI that may address this recommendation. Female migration pathways, seasonality and larval duration and dispersal need to be researched. Anecdotal information suggests seasonal aggregations in inshore areas, but research would help to understand these mechanisms and inform stock boundaries.

Basically, what we're looking for is to see if there is a connection between inshore areas and offshore areas for stock ID purposes. Inter-molt duration of adult crab is currently unknown, and growth increment data for mature crab is limited. These data will be necessary to transition to a size or age-based assessment method, similar to what is used for lobster.

More high priority research recommendations. We would like to see development of fishery independent surveys, for example ventless trap surveys, to index post settlement Jonah crab abundance from offshore areas, where most of the fishery is executed. We would also like to see an increase of fisheries dependent monitoring of the offshore fleet. Sampling intensity by stat area should be based on landings. We would also like to see reproductive studies pertaining to male/female spawning size ratios, the possibility of successful spawning by physiological mature, but morphometrically immature male crabs, and potential for sperm limitations should be conducted.

This is largely based because it's a male dominated fishery, about 99 percent of the crabs that are landed are males, so if you remove the larger males, what happens to the reproductive potential of the rest of the fishery? The amount of directed commercial effort on Jonah crab or lobster should be quantified on a per-trip basis.

This is a mixed crustacean fishery, so it would be helpful for catch-per-unit effort data if we know what the fishermen are targeting. The stock assessment schedule, the TC recognizes that Jonah crab is a data poor species with limited assessment options, but also a pressing need for a formal assessment, based on the things I discussed earlier.

The NRCC and ASMFC stock assessment schedules currently include a placeholder for a 2023 Jonah

crab assessment. The TC recommends conducting a near-term stock assessment to be completed in 2023. With that I'll take any questions.

CHAIR McKIERNAN: Thank you, Derek, that was highly informative. Are there any questions for Derek from the Board?

MS. KERNS: Right now, I have Jason McNamee.

CHAIR McKIERNAN: Go ahead, Jason.

DR. McNAMEE: Thank you very much for the presentation, that was great. I thought what I would like to offer, in particular the discussion on the assessment types. I'll make a comment first, and just say I think there is nothing wrong, in particular when they are at kind of the advent of a species management, and an assessment process to allow that process to kind of evolve, you know start off with some simpler methods, and evolve as you collect the needed information.

I thought all of your research recommendations were spot on. I think those are critical for getting to that more analytical regime for assessment for this species. But what I wanted to flag for you, and for the Technical Committee is, the data limited tool kit is an option I think you all should investigate a little bit.

It's got, I think it's probably over 50 or 60 different data limited methods kind of built into it. It's in our package, and it has like a management strategy component built into it as well, so it has an ability to simulate. I think that would be a really valuable tool to investigate in the process, with the idea that you're going to have to use data limited approaches, at least in the beginning here. I just wanted to kind of put that on your radar.

MR. PERRY: Thank you, Jason, we'll look into that.

CHAIR McKIERNAN: Thanks, Jason. Anyone else on the Board?

MS. KERNS: I don't see any additional hands.

CHAIR McKIERNAN: Okay, so the deliverable for this Board is to potentially make a motion, take a vote on whether to initiate a stock assessment. Is there anyone on the Board that would like to do that?

MS. KERNS: Mr. Chairman, if there is just an oral consensus to do that, I don't think you need a written-out motion on the table. Just to make it easier for you. Ray Kane has his hand up.

CHAIR McKIERNAN: Oh, Ray, have you got something?

MR. RAYMOND W. KANE: Yes, I realized my hand works, as soon as Eric started making that motion, the previous motion, I raised my hand and wasn't sure if my hand was working**. I move to initiate a stock assessment for Jonah crab to be completed in 2023.**

CHAIR McKIERNAN: Thank you, Ray, is there a second?

MS. KERNS: David Borden.

CHAIR McKIERNAN: Thank you, David, is there any discussion? If not, we'll go right to a vote.

MS. KERNS: I guess, Mr. Chairman, I think I've made this confusing for Maya, because I said you don't need a written-out motion. You know you don't really need this, but go ahead.

CHAIR McKIERNAN: All right, is there any objection to the motion? Hearing none, it is approved by unanimous consent. Thank you, Toni. Well, we're pretty much on schedule. Thank you, Derek, for that great presentation and Jason for the feedback.

CONSIDER DEVELOPMENT OF A MANAGEMENT STRATEGY EVALUATION OF THE AMERICAN LOBSTER FISHERIES

CHAIR McKIERNAN: The second to the last item, Number 7 on the agenda is Development of a Management Strategy Evaluation of the American Lobster Fishery. Jeff Kipp.

MR. JEFF KIPP: I'm Jeff Kipp; I'm the Stock Assessment Scientist working on American Lobster and I'm here to talk about continuing development of a management strategy evaluation for American lobster. Just to recap the last discussion the Board had about this issue. The TC presented some recommendations at the last meeting, the May meeting, on a lobster MSE and the potential development of one.

The first recommendation was on the option the TC recommended, among some options they provided for, some potential pathways for a lobster MSE and that was a two-phased Gulf of Maine/Georges Bank focused MSE. They also provided two recommendations for next steps for developing an MSE.

The first was to form a steering committee to further guide development of an MSE, and develop a comprehensive, fully flushed out work plan for completing an MSE. The TC also provided a recommended next step of convening a management Objectives and Goals Workshop. Following the review of those recommendations, the Board postponed further consideration of MSE development until this meeting, the August, 2021 meeting. The reasoning for postponing and making that a motion was to prioritize work on Draft Addendum XXVII, acknowledging that there would be several folks that would overlap in working both on the Addendum and development of that Addendum, and sort of next steps in moving forward in MSE.
That motion was made in anticipation of Addendum XXVII being reviewed at this meeting for public comment, but as Caitlin showed earlier, we're now anticipating the Addendum being reviewed at the October annual meeting, and so the timeline is a little different than when this motion was made.

But, because the motion was made specifically noting the August, 2021 meeting there is the need to bring this back up and get some Board guidance on how to proceed with a potential MSE for lobster. Now I'll go over just some additional detail, and the TCs recommended next steps, and then put forward a suggested path forward to the Board for consideration.

Again, the first next step that the TC recommended was developing a steering committee. The steering committee would complete additional scoping, including the format of stakeholder outreach opportunities, and processes within the MSE, and also for identifying all the funding sources, and all of the necessary personnel that would be needed for completing an MSE.

The Steering Committee charge would be to develop a comprehensive work plan, to ensure a successful MSE process, but not to direct the content within an MSE process. All of that information and process would develop as the MSE was formally initiated, and started going in to some of the milestones and workshops and stakeholder outreach parts of the MSE.

I just wanted to make that clear, that that was sort of the direction of the Technical Committee in that recommendation. The MSE start date would depend on completion of that management workshop, Management Objectives and Goals Workshop, and the outcome of the Steering Committee finding.

The idea here is that this Steering Committee is sort of a preliminary step. They would provide a comprehensive work plan, so that the Board can understand all of the components of an MSE, and then following that the Board would decide whether the MSE would be formally started, or not. The next step recommended by the TC was a management workshop.

This was recommended because there was recognition that the Technical Committee, and also this Steering Committee if formed, would need Board and stakeholder input to guide the MSE. The idea of this management workshop would be to provide big picture goals, both short and long term, to guide the focus of the two phases of that Gulf of Maine/Georges Bank MSE.

The Technical Committee offered an example to follow that was the Management Objectives Workshop with the Commission, coordinated when developing ecological reference points. It's just noted that this should be conducted parallel to the Steering Committee's work and development of a work plan, so that the final recommendations of the Steering Committee are relevant to the objectives and goals for the future of the lobster fishery. For the next steps, because again the Board postponed further consideration of developing an MSE until this meeting. Staff got together and thought out a plan of where we could go from here, recognizing that Addendum XXVII work does continue. What could potentially be done in progressing an MSE, while not impeding the necessary work for finalizing Addendum XXVII.

The proposed next step here would be to move forward with the development of a steering committee. I think staff generally saw this as something that can be done to further develop an MSE, that isn't going to require considerable work, particularly on folks that are continuing to work on Addendum XXVII work, the Technical Committee members and PDT members.

If this was agreed to by the Board the staff could continue to work with Board and TC members, sort of behind the scenes and, as time allows, to populate the steering committee and get the correct representation on that committee. Then the idea here would be that we could have a steering committee formed, and bring that back to the Board for their review, and consensus once Addendum XXVII is completed.

Just to provide a timeline, noting Addendum XXVII work that is ongoing, and these potential next steps for an MSE. At this meeting, if the Board chooses, staff could begin to work with Board members and TC to populate that MSE Steering Committee. At the annual meeting in October, the Board will be reviewing, and hopefully approving, Draft Addendum XXVII for public comment, and then between annual meeting and the next Commission meeting in February of 2022, the Addendum XXVII draft would go out for public hearings.

Again, staff could continue to work on reaching out to the right folks to populate an MSE Steering Committee. Then we would get to the winter meeting in February, 2022, the Board would be reviewing the final Draft Addendum XXVII, and following that the Board could review the membership of the MSE Steering Committee that was developed over the next several months.

Then following, hopefully approval of Draft Addendum XXVII at the February meeting, work on MSE and development of an MSE could then pick up following that meeting, where the MSE Steering Committee meets, and starts to work on this work plan, and also along with that could be coordinating and developing this Management Goals and Objectives Workshop. Those are the proposed next steps for continuing development of a lobster MSE, and that's all I had to show, and I can stop and see if there are any questions on what I showed.

CHAIR McKIERNAN: Any questions from the Board?

MS. KERNS: You have Pat Keliher.

CHAIR McKIERNAN: Go ahead, Pat.

MR. KELIHER: Jeff, thanks for that update. Jeff, can you just explain to me what you're thinking of for the makeup of the Steering Committee science, either science/technical, policy? The reason I ask is we have now added a second addendum to everybody's work list or work plans. As the maker of the motion the last time to delay, my thinking was we would delay with the understanding where we were going with Addendum XXVII, now we've got a second Addendum that frankly I think

personally, I would have it take precedence over the Resiliency Addendum. But I think that is for some further Board discussion, possibly. But I'm afraid we've made our mess even worse now, when it comes to MSE, and we may need to think about postponing until a date later out in the year, into 2022.

MR. KIPP: Yes, thanks for your question. I may have glossed over one slide I had there that did provide some detail on the TCs recommendation for the membership of the steering committee, so apologies for that. But the TC did recommend representatives from the Board, from the Technical Committee, from ASMFC staff, industry stakeholders, folks from the Commission's Committee on Economics and Social Sciences, and potentially some members from the Commission's Assessment and Science Committee.

That was kind of the background the TC thought would be necessary for the Steering Committee, and the TC did make a note that it would be ideal to have some members amongst those folks with MSE experience to guide this. For a number of Steering Committee members, the TC recommended 12 as a maximum, and potentially fewer than that, but that is sort of the details of the membership that the TC recommended.

MR. KELIHER: Just a follow up comment, Mr. Chairman.

CHAIR McKIERNAN: Yes, go ahead, Pat.

MR. KELIHER: Yes, I just want to reiterate the workload that we have in front of us with the two addendums. I hate to continue to delay work on MSE, I think it does have some merit to do that work. I'm not sure if the pending whale conservation framework might not trump some of this as it progresses, but I certainly don't want to not start the process in some of those important conversations. I just think we need to have a realistic conversation about the timing of initiating any MSE Steering Committee. Thank you.

CHAIR McKIERNAN: Any other Board members like to weigh in? Toni, my screen is just plain blue, so I'm not sure if everyone else is seeing that.

MS. KERNS: Yes, it's not just you.

CHAIR McKIERNAN: Okay, so if you could help me. Are there any other Board members with their hands up?

MS. KERNS: David Borden.

CHAIR McKIERNAN: Great, thank you. David Borden.

MR. BORDEN: Mr. Chairman, I don't know if this is appropriate now, or under other business, but I want to talk about the issue that Pat Keliher brought up on priorities. Do you want to mix it with this agenda item, or do you want to take it up separately?

CHAIR McKIERNAN: This is the final item for the agenda, so if you think that we can blend these, and still get through the agenda, because this is our last item of business, so go ahead.

MR. BORDEN: Okay, and I'll keep this brief. I agree with some of what Pat said, but I would come at it from a slightly different perspective. I think the priorities, I mean we have limits on staff time and technical time. That is what we're all talking about. We've got this kind of a parallel issue of; how do we deal with work priorities.

All of these issues are important, and I don't think anybody would dispute that. But given the limitations on staff time, I think at the next meeting we should have a discussion on priorities. My own view, so everyone knows where I'm going with this. My own view is Resilience Amendment should be split into two parts; the first phase would be some fairly simple, straightforward adjustments to some of the measures.

We would stay away from the more complicated issues of triggers and gauge changes and so forth. Then the second priority would be the tracking action, and then the third priority, I think would be Phase 2 of Resilience. Then the Management Strategy Evaluation would come in with Phase 2. To me, and I'm just offering that. We don't need to debate that. I'm just offering that so people know my thinking on it. I think we have to prioritize some of these actions, and get on with the ones that we think are most important, and really use our staff time wisely.

CHAIR McKIERNAN: Well David, before you go away. I mean from my perspective as the Director at Mass DMF, I'm seeing a different set of staff working on tracking than would be working on those other issues. I don't know how the other states see that, but I wouldn't want to back burner the Tracking Addendum, because of the workload associated with Resiliency. I don't know if Pat or Jason or Cheri want to weigh in about those staff assignments, relative to those different tasks.

MR. BORDEN: My only comment, Mr. Chairman would be that your perspective is probably a function of the number of staff you have.

MS. KERNS: You have Pat Keliher with his hand up.

CHAIR McKIERNAN: Go ahead, Pat.

MS. KERNS: Then Jason McNamee behind.

MR. KELIHER: Your point around staffing. There is a difference, at least around for us. I was thinking kind of more holistically up and down the coast, but for Maine we would have different staff working on the Tracker Addendum versus Resiliency Addendum, so from that standpoint, I do agree. If other states are in the similar situation, then maybe those two do move forward at the same time. David's point around splitting Resiliency, I'm not sure I'm there yet. I would need to think about it and talk more about it. I'm certainly open to the discussion.

CHAIR McKIERNAN: Is that a discussion that can take place at the next meeting, based on whatever progress is made on those two issues?

MR. KELIHER: Yes, I mean we're going to be potentially splitting it and moving portions of it ahead for public hearing, instead of the entire document, so possibly we could take that approach.

CHAIR McKIERNAN: All right, Jason.

DR. McNAMEE: Maybe I'll start off with a general comment. You know, as we kind of came into this meeting, I was looking and you know this group has high activity level, high overlap, and we're asking for a lot of stuff. For me it's hard. I think the MSE is very important, but I'm in line with the comments generally that you've heard so far, where I'm okay if the MSE gets pushed a little bit, as long as it stays on the radar.

But if it gets pushed to clear the decks a little bit here, with some of this other stuff, that I agree is important, and also more pressing, you know currently than it will be to have the MSE completed. I also have a little bit of comfort that I think there is going to be some work going on in the background, you know with some, I don't know if the grants have been awarded or whatever, but I know there is interest out there in kind of getting some of this work started.

My hope is that some of that proceeds and so it won't be like starting from scratch whenever we do get back to the MSE, but long story short, I think, you know thinking about priorities, the Tracking Addendum, which we just approved, lump on top of that the Jonah crab assessment, which I think will have some of that high overlap that is indicated in the meeting materials.

I think it makes sense to kind of postpone working on the MSE for a bit. I'm not sure the exact thing, and maybe that's something we should discuss before we dispense with this. But I just wanted to

get on the record to let folks know that I was comfortable punching on the MSE for a little bit, to get working on some of this other stuff quicker.

CHAIR McKIERNAN: Jeff, would it make sense for you to bring up that last slide that had to do with scheduling, and get your feedback on what you're hearing from Board members, and how you think this could proceed?

MR. KIPP: Yes, I can bring that up.

MS. KERNS: Dan, while he's doing that. Cheri and then David have their hands in the queue.

CHAIR McKIERNAN: Go ahead, Jeff.

MR. KIPP: This is the slide with that timeline, and this is just acknowledging again sort of where we know we're going with Addendum XXVII, and those recommendations on sort of proceeding with MSE development. Notably, the TC recommended next steps. The point was made that this doesn't include the now initiated addendum on Tracking, so that is not captured here. But this would be based on sort of staff's recommended next steps for MSE.

CHAIR McKIERNAN: I apologize, Toni, I didn't write down those names that are in the queue.

MS. KERNS: No worries, I have Cheri and then I think David.

CHAIR McKIERNAN: David Borden again.

MS. KERNS: Yes.
CHAIR McKIERNAN: All right, Cheri.

MS. PATTERSON: I agree with Pat. I think we're going to have a heavy lift with the Tracking. If we can slow down the MSE, I think that that would be better overall, considering we have the Tracking and the Jonah crab stock assessment, which is dealing with a data poor species, that has a tendency to add its own complexity. If there is some suggested timeline at the next meeting, from Jeff, to indicate how it can still be moving forward, but just be at a slower track. I think I would appreciate that. Thanks.

CHAIR McKIERNAN: David Borden.

MR. BORDEN: Just a quick point, Mr. Chairman. As I suggested before, I think once we get more information at the next meeting, we'll be able to have a more informed discussion of this. I think that is a timeline that we should act on it. The only reason I floated those ideas was, I wanted people to think about them in the interim phase. Thank you.

CHAIR McKIERNAN: Jeff, I'm looking at this third line. It looks like the November to December is when, no I'm sorry. The August/October staff begin to work to populate the MSE Steering Committee. Can that be delayed by a quarter or two, and would it effect the ability to pursue the funding, for which you folks I think are going to have to pursue to accomplish this?

MR. KIPP: No, I mean I think this was just to kind of keep the ball rolling. Developing the Steering Committee was seen as something that would require minimal work that could occur in the background, sort of just some leg work that could get done between now and the February meeting, when Addendum XXVII is to be completed.

I think that this could be delayed, and we could still meet the timeline of coming to the February meeting with an MSE Steering Committee formed. It's basically just going to be getting recommendations from technical folks and some of those folks from things like the Committee on Socioeconomics and Science.
You know I think that that can be done on a shorter timeframe, something like, you know if it was the annual meeting and the Board was okay with moving forward with developing that Steering Committee. I don't think that would necessarily delay things too much, relative to how they are laid out here. I don't know if that answers your question, Dan.

CHAIR McKIERNAN: I guess I would ask Pat Keliher to weigh in. It sounds like Jeff is recommending that we still create a steering committee between now and, or maybe between now and the meeting, or maybe at the next meeting, but slow walk it a little bit after that. Is that what I'm hearing? Pat, are you good if we still create a Steering Committee, say at the next Board meeting in October?

MR. KELIHER: We would create the Steering Committee at that meeting?

CHAIR McKIERNAN: I think that is what Jeff is sort of implying. Jeff?

MR. KIPP: No, I think the idea here was that that would be sort of initiated right now, if we went with the suggested timeline here, and then the Board would review the membership at the February meeting, so they would review final draft of Addendum 27, and then the next step would be to review the MSE Steering Committee membership at that February meeting.

It could be something where we just hold off for now, or we revisit this at the annual meeting, and if the Board would change their direction there, and consider going to Steering Committee at that point, I think we could stay on that February timeframe, or we can just consider developing the Steering Committee, which would be the next step from the TC, I think. I think any way we lay it out on a timeline here, that would be the next step. If the Board thinks that it is necessary to delay that further than the February meeting, that could be reflected in a timeline here.
CHAIR McKIERNAN: Go ahead, Pat.

MR. KELIHER: Mr. Chairman, I like the idea of delaying, and having this conversation at the annual meeting, because frankly it may give some of us the opportunity to just have an informal meeting around staff constraints, because if we were trying to do something between now and then, I would say the ability for Maine DMR staff to participate would be severely limited. But if we can all get on to the same page between now and the October meeting, that may be a better use of time.

CHAIR McKIERNAN: Okay, so we're hitting the pause button, and we're going to reconvene on this issue at the October meeting, and just continue the conversation. Maybe individual states can maybe bring forward some potential names at that point, or be thinking about who they would like to nominate. Do I have that right?

MR. KELIHER: I think that would be a good idea, Mr. Chairman, and then a bunch of us could just jump on a call at some point, when the time is right between now and October, just to talk about the complexities and the timing issues.

CHAIR McKIERNAN: Okay, Toni, did you want to speak up?

MS. KERNS: It's all good, Dan.

CHAIR McKIERNAN: All right, so we're good? Any other discussion on this matter?

MS. KERNS: I don't see any other hands.

OTHER BUSINESS/ADJOURN ADJOURNMENT

CHAIR McKIERNAN: Cool. All right, is there any other business to come before the Board? No, Toni?

MS. KERNS: No hands, sorry.

CHAIR McKIERNAN: Well, thank you everyone.

(Whereupon the meeting convened at 3:40 p.m. on Monday, August 2, 2021.)

Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: **American Lobster Management Board**

FROM: **American Lobster Technical Committee**

DATE: **October 1, 2021**

SUBJECT: **2021 American Lobster Data Update**

Background

An annual Data Update process between American lobster stock assessments was recommended during the 2020 stock assessment to more closely monitor changes in stock abundance. The objective of this process is to present information—including any potentially concerning trends—that could support additional research or consideration of changes to management. Data sets recommended for this process were generally those that indicate exploitable lobster stock abundance conditions expected in subsequent years and include:

- YOY settlement indicators
- Trawl survey indicators, including recruit abundance (71-80 mm carapace length lobsters) and survey encounter rate
- Ventless trap survey sex-specific model-based abundance indices (53 mm+ carapace length lobsters)

For this first Data Update, data sets were updated with data since the stock assessment (i.e., 2019 and 2020). Indicator status (negative, neutral, or positive – see table below) was determined relative to the percentiles of the stock assessment time series (i.e., data set start year through 2018).

Indicator	< 25th percentile	Between 25th and 75th percentile	> 75th percentile
YOY settlement (larval or YOY)	Negative	Neutral	Positive
Trawl survey recruit abundance	Negative	Neutral	Positive
Trawl survey encounter rate	Negative	Neutral	Positive
Ventless trap survey abundance	Negative	Neutral	Positive

The five year means provided during the stock assessment (2014-2018) for terminal indicator status determinations were also updated with the new years of data. This treatment of data is consistent with the stock indicators provided during stock assessments (see Section 5 in the stock assessment report for more detail) with two important notes. First, the ventless trap survey abundance indices have not been presented as stock indicators in past assessments due to concerns that the short time series is not representative of the stock's productivity potential. These indices are included in this Data Update, along with the other data sets, specifically to show changes in stock conditions since the 2020 stock assessment. The Technical Committee recommended these indices be presented as indices by NOAA statistical area. Stratification of the ventless trap survey was designed around these statistical areas, unlike the trawl surveys, and these indices provide better spatial resolution to examine abundance

trends within the stock boundary. The ventless trap survey index model developed during the stock assessment was structured to estimate stockwide indices and has not been evaluated for estimating indices by statistical area, so these indices are design-based calculations as opposed to model-based indices originally recommended for the Data Update process. Second, the covid-19 pandemic had substantial impacts on data collection in 2020 and many of the trawl surveys providing these data sets did not sample which impacts the updated five year means provided in the results. Below are the results of the data updates by sub-stock.

Results

Gulf of Maine (GOM)

- YOY conditions showed improvements, but were still not positive (Table 1 and Figure 1).
    - Updated five year means were all neutral, whereas two of five were negative during the stock assessment.
    - All 2019 and 2020 values were neutral except the MA 514 value in 2019 which was negative.
- Trawl survey recruit abundance indicators showed positive conditions similar to conditions during the stock assessment (Table 2 and Figure 2).
    - Five of six indicators were not available for 2020 due to covid-19 sampling restrictions.
    - Updated five year means were all positive, as they were during the stock assessment.
    - The only value available for 2020 (ME/NH Fall) was the first neutral annual value observed since 2015.
    - Fall indicators tended to show declining trends in the last few years of available data that were not apparent in spring indicators.
- Trawl survey encounter rates were similar to conditions during the stock assessment, but did show some deterioration from positive to neutral conditions (Table 3 and Figure 3).
    - Five of six indicators were not available for 2020 due to covid-19 sampling restrictions.
    - Three of six updated five year means were neutral, whereas only one was neutral during the stock assessment. All others were positive.
- Ventless trap survey indices showed abundance declining since the stock assessment (Table 4 and Figure 4).
    - Six of eight updated five year means were neutral, whereas only four of eight were neutral during the stock assessment. All others were positive.
    - The two positive updated five year means were for the two sexes in the northern-most statistical area (511). Despite the positive means, the 2020 values for both sexes showed strong declines to neutral conditions.
    - The female survey value in 2020 and the male value in 2019 and 2020 in the southern-most statistical area (514) were negative, the first negative values observed in the stock since 2014.

Georges Bank (GBK)

- Trawl survey recruit abundance indicators showed deteriorating conditions since the stock assessment (Table 5 and Figure 5).
    - No indicators were available for 2020 due to covid-19 sampling restrictions.
    - Updated means for one of the two indicators changed from neutral to negative. Both were neutral during the stock assessment.

    - These indicators tend to be noisier than some of the other abundance indicators, with high interannual variability and lack of discernible trends.
- Trawl survey encounter rates were positive and similar to conditions during the stock assessment (Table 6 and Figure 6).
    - No indicators were available for 2020 due to covid-19 sampling restrictions.
    - Updated means for both indicators were positive. This is unchanged from the stock assessment.

Southern New England (SNE)

- YOY conditions deteriorated slightly and were negative across the stock (Table 7 and Figure 7).
    - Updated five year means were all negative, whereas one of three was neutral during the stock assessment.
    - All 2019 and 2020 values were negative except the RI value in 2020 which was neutral.
    - No YOY have been caught during the MA survey for the last six years.
- Trawl survey recruit abundance indicators generally showed neutral conditions offshore deteriorating to negative conditions inshore, which were similar to conditions during the stock assessment (Table 8 and Figure 8).
    - Six of eight indicators were not available for 2020 due to covid-19 sampling restrictions.
    - Updated five year means for both offshore indices (NEFSC Spring and Fall) and one inshore index (MA Fall) were neutral while all other inshore indices were negative. These are unchanged from five year means during the stock assessment.
    - Both offshore indices were negative in 2019.
- Trawl survey encounter rates were similar to conditions during the stock assessment (Table 9 and Figure 9).
    - Six of eight indicators were not available for 2020 due to covid-19 sampling restrictions.
    - Updated means for two of eight indicators were neutral (both in the fall) while the remaining six were negative. This is unchanged from the stock assessment.
- Ventless trap survey indices showed conditions similar to conditions during the stock assessment (Table 10 and Figure 10).
    - Updated five year means were all neutral. This included the updated mean for males in statistical area 539 flipping from negative to neutral. However, both the 2019 and 2020 annual values were negative.
    - Female values for 2019 and 2020 in statistical area 539 were also both negative, while all 2019 and 2020 values in statistical area 538 were neutral.
    - It is important to note that the ventless trap survey has only taken place during depleted stock conditions coinciding with an adverse environmental regime, so interannual variability can be misleading without the context of a longer time series encompassing varying stock conditions.

Tables and Figures

Table 1. GOM abundance indicators: YOY indices.

YOUNG-OF-YEAR INDICES					
Survey	*ME*				*MA*
	511	*512*	*513 East*	*513 West*	*514*
1981					
1982					
1983					
1984					
1985					
1986					
1987					
1988					
1989			1.64		
1990			0.77		
1991			1.54		
1992			1.30		
1993			0.45		
1994			1.61		
1995		0.02	0.66		1.01
1996		0.05	0.47		0.00
1997		0.05	0.46		0.10
1998		0.00	0.14		0.03
1999		0.04	0.65		0.43
2000	0.00	0.10	0.13	0.17	0.07
2001	0.24	0.43	2.08	1.17	0.43
2002	0.13	0.29	1.38	0.85	1.00
2003	0.22	0.27	1.75	1.22	0.78
2004	0.18	0.36	1.75	0.67	1.13
2005	1.59	1.36	1.77	0.82	1.11
2006	0.58	1.13	0.84	0.82	0.46
2007	0.84	1.34	2.01	1.27	1.38
2008	0.42	0.83	1.08	0.97	0.33
2009	0.69	0.48	1.25	0.45	0.17
2010	0.28	0.72	0.80	0.47	0.50
2011	0.41	1.10	2.33	0.67	0.64
2012	0.53	0.73	1.06	0.22	0.09
2013	0.10	0.20	0.48	0.12	0.00
2014	0.16	0.43	0.83	0.33	0.11
2015	0.11	0.22	0.43	0.05	0.00
2016	0.13	0.21	0.47	0.12	0.08
2017	0.16	0.36	0.70	0.20	0.08
2018	0.27	0.32	0.71	0.20	0.03
2014-2018 mean	0.17	0.31	0.63	0.18	0.06
2019	0.42	0.61	1.03	0.35	0.06
2020	0.29	0.49	1.17	0.25	0.19
2016-2020 mean	0.25	0.40	0.82	0.23	0.09

25th	0.15	0.18	0.52	0.20	0.08
median	0.24	0.34	0.84	0.47	0.25
75th	0.48	0.72	1.59	0.84	0.67

Figure 1. GOM abundance indicators: YOY indices.

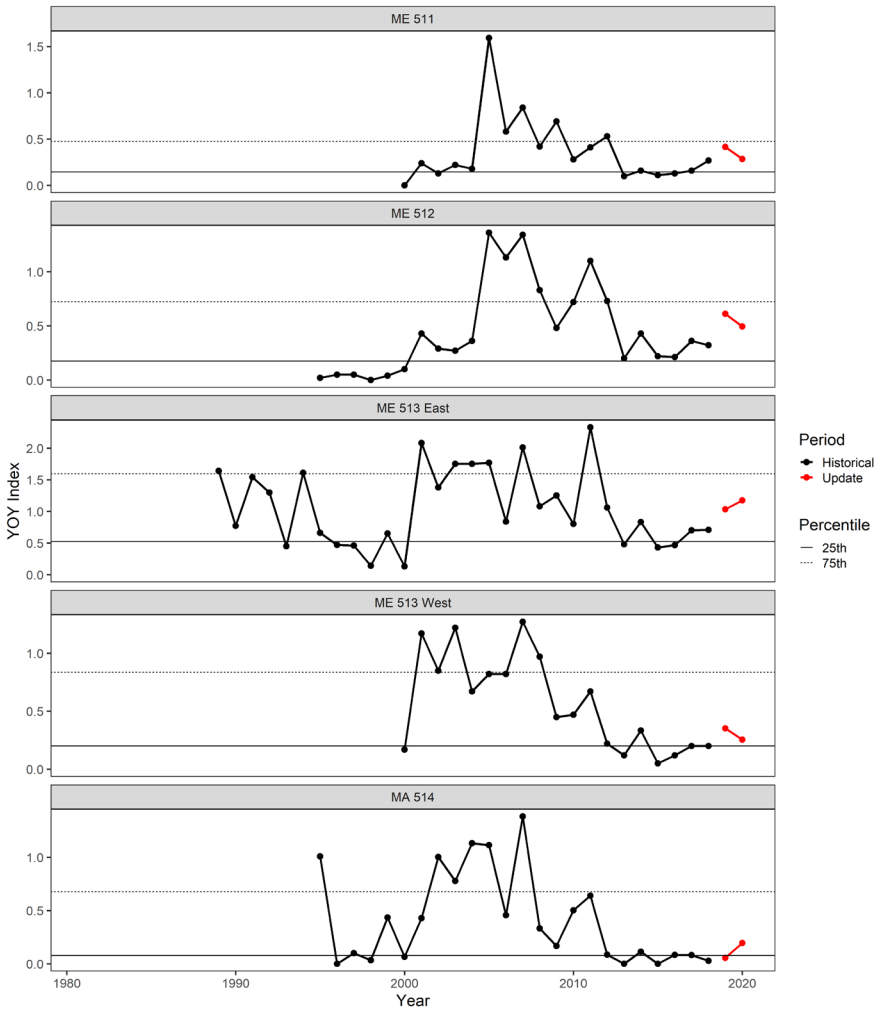

Table 2. GOM abundance indicators: trawl survey recruit abundance.

RECRUIT ABUNDANCE (SURVEY)						
Abundance of lobsters 71 - 80 mm CL (sexes combined)						
Survey	*NEFSC*		*ME/NH*		*MA 514*	
	Spring	*Fall*	*Spring*	*Fall*	*Spring*	*Fall*
1981	0.13	0.06			6.43	4.80
1982	0.29	0.42			2.77	3.89
1983	0.28	0.90			1.77	9.71
1984	0.20	0.31			2.17	6.13
1985	0.14	1.41			4.44	9.50
1986	0.27	1.29			2.99	3.83
1987	0.67	0.57			2.42	1.17
1988	0.67	1.21			2.50	4.14
1989	0.00	1.61			4.45	7.53
1990	0.27	1.76			6.12	15.36
1991	0.55	1.41			2.74	7.55
1992	0.50	1.37			4.32	9.01
1993	0.25	0.86			5.14	3.20
1994	0.15	2.75			7.54	13.87
1995	1.45	1.44			4.55	12.18
1996	0.76	4.59			3.11	11.96
1997	2.02	2.12			4.59	6.48
1998	1.59	2.16			4.52	7.54
1999	1.51	3.01			4.25	8.73
2000	4.64	3.01		24.09	4.25	8.89
2001	1.05	1.51	9.28	17.81	4.31	1.59
2002	1.08	1.91	22.00	22.41	3.41	5.00
2003	1.41	0.36	10.65	18.32	1.96	0.67
2004	0.84	2.26	7.55	12.29	2.47	1.30
2005	0.34	0.87	18.51	25.90	4.40	2.12
2006	2.17	1.27	18.07	18.30	6.09	5.29
2007	1.62	0.64	15.91	16.82	0.77	1.58
2008	0.99	2.41	17.88	31.61	2.54	6.14
2009	4.88	4.90	24.72	32.67	3.20	8.91
2010	2.98	4.53	17.66	37.35	2.20	9.53
2011	10.27	11.83	39.25	46.09	5.24	14.98
2012	11.25	6.74	36.55	37.12	3.03	11.35
2013	10.93	18.12	34.50	37.86	4.82	12.16
2014	11.66	21.54	50.79	41.95	3.35	7.05
2015	14.44	17.89	38.51	67.99	7.09	17.86
2016	13.25	22.54	50.83	60.07	13.58	17.41
2017	15.74		48.42	48.13	7.85	13.63
2018	14.15	15.87	42.77	55.84	5.25	25.62
2014-2018 mean	13.84	19.46	46.27	54.80	7.43	16.31
2019	16.69	7.62	46.37	50.85	10.78	14.61
2020				34.65		
2016-2020 mean	14.95	15.34	47.10	49.91	9.37	17.82
25th	0.30	1.21	17.72	20.36	2.75	4.30
median	1.07	1.76	23.36	32.67	4.28	7.55
75th	4.23	4.53	39.07	44.02	5.06	11.81

Figure 2. GOM abundance indicators: trawl survey recruit abundance.

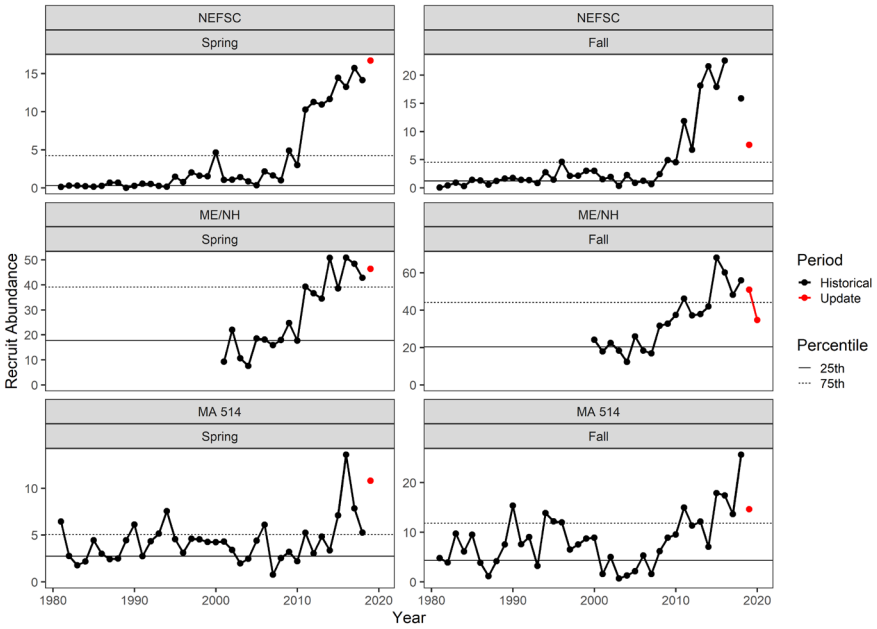

Table 3. GOM abundance indicators: trawl survey encounter rate.

SURVEY LOBSTER ENCOUNTER RATE Proportion of postive tows						
Survey	*NEFSC*		*ME/NH*		*MA 514*	
	Spring	*Fall*	*Spring*	*Fall*	*Spring*	*Fall*
1981	0.44	0.25			0.86	0.73
1982	0.34	0.18			0.50	0.70
1983	0.26	0.33			0.76	0.76
1984	0.28	0.36			0.76	0.76
1985	0.38	0.49			0.71	0.67
1986	0.33	0.47			0.68	0.83
1987	0.43	0.24			0.85	0.54
1988	0.31	0.30			0.76	0.58
1989	0.19	0.35			0.78	0.95
1990	0.41	0.32			0.86	0.95
1991	0.42	0.32			0.87	0.94
1992	0.40	0.24			0.93	0.77
1993	0.41	0.39			0.97	0.82
1994	0.45	0.40			1.00	0.93
1995	0.41	0.37			0.93	0.93
1996	0.54	0.54			0.91	0.96
1997	0.64	0.35			0.93	0.86
1998	0.52	0.40			0.76	0.69
1999	0.51	0.42			0.73	0.91
2000	0.63	0.42		0.94	0.93	0.98
2001	0.57	0.40	0.88	0.86	0.93	0.72
2002	0.75	0.53	0.94	0.95	0.91	0.73
2003	0.69	0.44	0.92	0.85	0.82	0.55
2004	0.87	0.31	0.89	0.86	0.84	0.56
2005	0.77	0.36	0.95	0.91	0.95	0.67
2006	0.72	0.60	0.93	0.93	0.91	0.88
2007	0.72	0.43	0.97	0.85	0.51	0.54
2008	0.84	0.49	0.92	0.86	0.83	0.75
2009	0.82	0.63	0.98	0.92	0.89	0.87
2010	0.85	0.75	0.98	0.96	0.87	0.98
2011	0.83	0.74	0.99	0.96	0.89	0.85
2012	0.86	0.78	0.98	0.98	0.91	0.95
2013	0.87	0.73	1.00	0.93	0.96	0.96
2014	0.90	0.71	1.00	0.99	0.79	0.96
2015	0.93	0.69	1.00	0.96	0.98	0.95
2016	0.94	0.75	1.00	0.96	0.96	0.97
2017	0.86		0.99	0.94	0.84	0.98
2018	0.86	0.71	0.98	0.96	0.84	0.90
2014-2018 mean	0.90	0.72	0.99	0.96	0.88	0.95
2019	0.83	0.71	0.99	0.95	0.85	0.93
2020				0.96		
2016-2020 mean	0.87	0.72	0.99	0.95	0.87	0.94
25th	0.41	0.35	0.93	0.89	0.78	0.72
median	0.60	0.42	0.98	0.94	0.86	0.86
75th	0.84	0.60	0.99	0.96	0.93	0.95

Figure 3. GOM abundance indicators: trawl survey encounter rate.

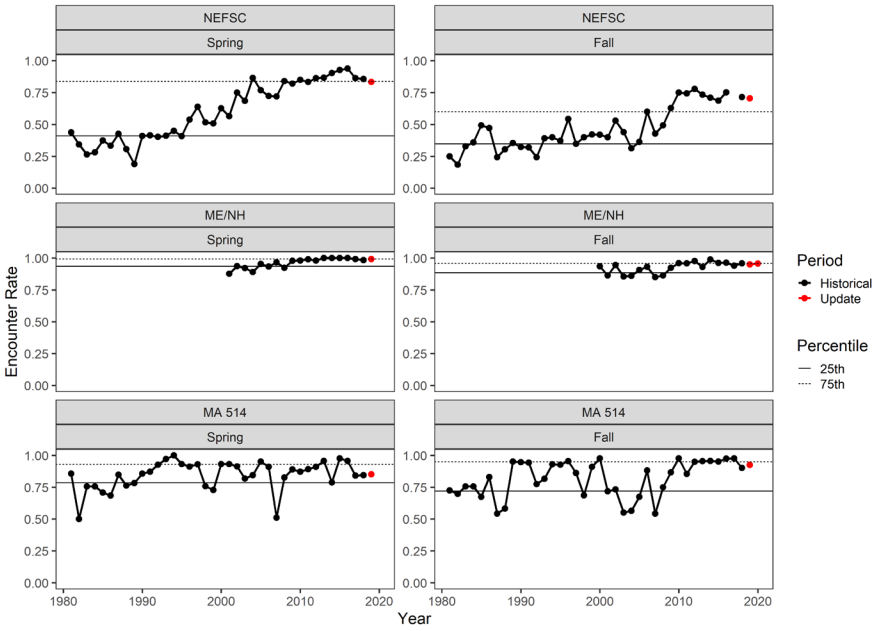

Table 4. GOM abundance indicators: ventless trap survey abundance.

VENTLESS TRAP ABUNDANCE Abundance of lobsters ≥ 53 mm CL								
Survey	*511*		*512*		*513*		*514*	
	Female	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
1981								
1982								
1983								
1984								
1985								
1986								
1987								
1988								
1989								
1990								
1991								
1992								
1993								
1994								
1995								
1996								
1997								
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2005								
2006	7.65	5.34	6.87	5.38	5.73	4.37	3.10	3.40
2007	5.06	3.91	3.95	3.83	5.82	4.35	1.85	1.84
2008	4.94	3.87	5.78	4.95	5.78	4.97	2.77	2.51
2009	3.60	2.65	6.31	5.35	6.89	5.53	2.72	2.66
2010	5.66	3.90	6.95	5.69	6.61	5.27	2.49	2.22
2011	8.70	6.52	11.10	8.48	7.32	5.60	3.47	2.60
2012	10.95	7.64	12.06	9.47	11.40	7.72	5.21	4.52
2013	11.14	7.95	11.87	8.64	9.36	6.49		
2014	10.38	6.63	11.92	8.04	7.74	4.96	3.15	2.35
2015	8.47	4.63	10.39	7.70	8.57	5.50	4.01	3.16
2016	14.59	9.15	14.34	10.75	10.78	7.56	4.79	3.56
2017	11.69	7.07	11.61	8.52	8.46	5.56	3.38	2.45
2018	15.10	9.43	11.26	8.23	9.57	6.37	3.47	2.43
2014-2018 mean	12.05	7.38	11.90	8.65	9.02	5.99	3.76	2.79
2019	12.93	8.27	8.23	5.96	8.59	5.20	2.85	1.93
2020	7.65	5.44	7.95	5.95	9.29	6.61	2.50	1.69
2016-2020 mean	12.39	7.87	10.68	7.88	9.34	6.26	3.40	2.41

25th	5.66	3.91	6.87	5.38	6.61	4.97	2.76	2.41
median	8.70	6.52	11.10	8.04	7.74	5.53	3.27	2.56
75th	11.14	7.64	11.87	8.52	9.36	6.37	3.61	3.22

Figure 4. GOM abundance indicators: ventless trap survey abundance.

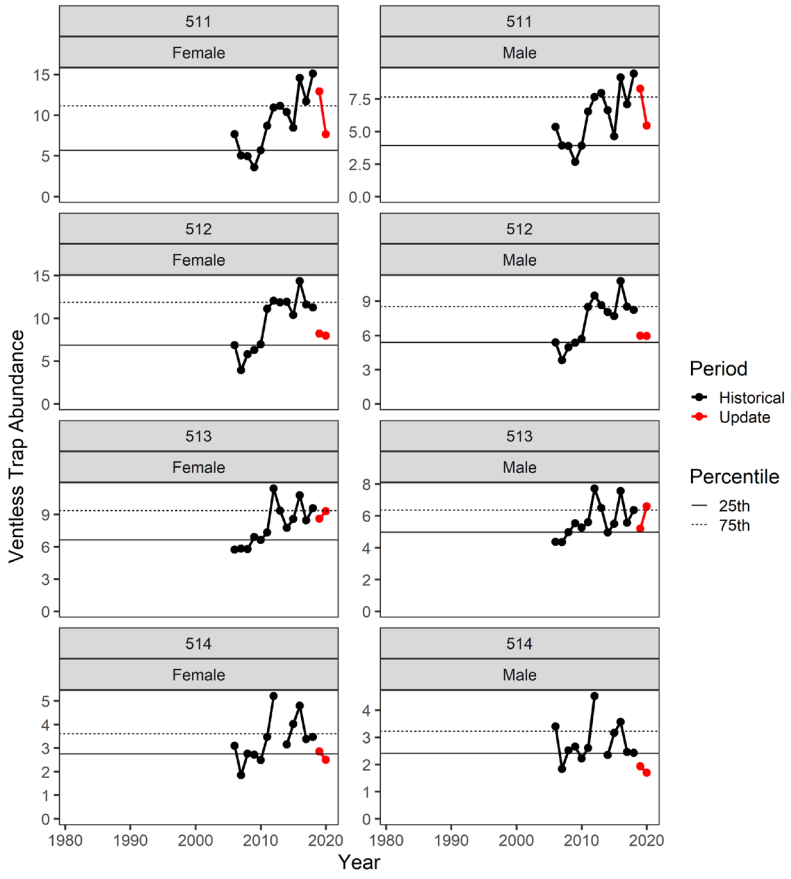


Table 5. GBK abundance indicators: trawl survey recruit abundance.

RECRUIT ABUNDANCE (SURVEY)		
Abundance of lobsters 71 - 80 mm CL (sexes combined)		
Survey	*NEFSC*	
	Spring	*Fall*
1981	0.08	0.28
1982	0.18	0.41
1983	0.16	0.33
1984	0.09	0.40
1985	0.19	0.26
1986	0.57	0.64
1987	0.43	0.54
1988	0.09	0.36
1989	0.04	0.23
1990	0.44	0.47
1991	0.08	0.34
1992	0.13	0.62
1993	0.50	0.22
1994	0.01	0.13
1995	0.03	0.14
1996	0.00	0.35
1997	0.06	0.90
1998	0.01	0.33
1999	0.07	0.29
2000	0.27	0.33
2001	0.47	0.45
2002	0.06	0.56
2003	0.29	0.16
2004	0.04	0.18
2005	0.09	0.13
2006	0.16	0.12
2007	0.03	0.23
2008	0.05	0.17
2009	0.30	0.33
2010	0.30	0.15
2011	0.09	0.35
2012	0.15	0.17
2013	0.14	0.24
2014	0.16	0.21
2015	0.06	0.44
2016	0.15	0.13
2017	0.35	
2018	0.04	0.22
2014-2018 mean	0.15	0.25
2019	0.16	0.13
2020		
2016-2020 mean	0.17	0.16

25th	0.06	0.18
median	0.11	0.29
75th	0.25	0.40

Figure 5. GBK abundance indicators: trawl survey recruit abundance.

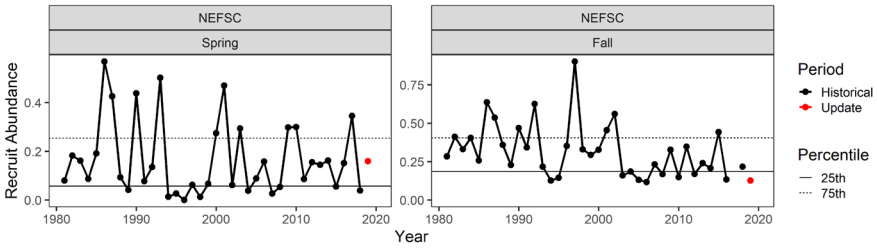


Table 6. GBK abundance indicators: trawl survey encounter rate.

SURVEY LOBSTER ENCOUNTER RATE		
Proportion of postive tows		
Survey	*NEFSC*	
	Spring	*Fall*
1981	0.23	0.52
1982	0.23	0.43
1983	0.18	0.38
1984	0.12	0.34
1985	0.19	0.35
1986	0.27	0.36
1987	0.18	0.35
1988	0.34	0.40
1989	0.14	0.38
1990	0.18	0.44
1991	0.19	0.45
1992	0.26	0.49
1993	0.22	0.36
1994	0.11	0.38
1995	0.14	0.42
1996	0.16	0.40
1997	0.10	0.48
1998	0.10	0.40
1999	0.16	0.58
2000	0.23	0.41
2001	0.23	0.49
2002	0.29	0.55
2003	0.27	0.44
2004	0.18	0.53
2005	0.16	0.58
2006	0.24	0.54
2007	0.26	0.46
2008	0.29	0.55
2009	0.34	0.54
2010	0.38	0.62
2011	0.30	0.69
2012	0.35	0.57
2013	0.33	0.65
2014	0.37	0.61
2015	0.27	0.59
2016	0.45	0.55
2017	0.40	
2018	0.29	0.59
2014-2018 mean	0.36	0.58
2019	0.36	0.57
2020		
2016-2020 mean	0.37	0.57

25th	0.18	0.40
median	0.23	0.48
75th	0.29	0.55

Figure 6. GBK abundance indicators: trawl survey encounter rate.

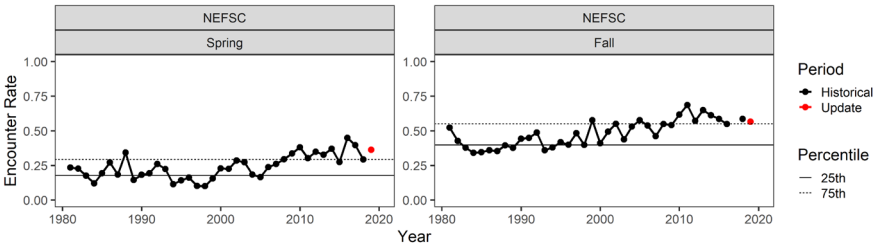


Table 7. SNE abundance indicators: YOY indices.

YOUNG-OF-YEAR INDICES			
Survey	***MA***	***RI***	***CT / ELIS Larvae***
1981			
1982			
1983			
1984			0.43
1985			0.53
1986			0.90
1987			0.78
1988			0.74
1989			0.74
1990		1.18	0.81
1991		1.45	0.55
1992		0.63	1.44
1993		0.51	1.19
1994		1.21	0.98
1995	0.17	0.34	1.46
1996	0.00	0.15	0.31
1997	0.08	0.98	0.21
1998	0.28	0.54	0.55
1999	0.06	0.89	2.83
2000	0.33	0.28	0.78
2001	0.11	0.72	0.32
2002	0.11	0.25	0.64
2003	0.00	0.70	0.25
2004	0.06	0.40	0.45
2005	0.17	0.54	0.49
2006	0.28	0.44	0.71
2007	0.17	0.36	0.37
2008	0.00	0.14	0.37
2009	0.06	0.06	0.19
2010	0.00	0.08	0.35
2011	0.00	0.00	0.26
2012	0.00	0.09	0.12
2013	0.17	0.19	0.16
2014	0.11	0.22	0.06
2015	0.00	0.17	0.19
2016	0.00	0.03	0.45
2017	0.00	0.03	0.10
2018	0.00	0.03	0.17
2014-2018 mean	0.02	0.09	0.19
2019	0.00	0.03	0.21
2020	0.00	0.14	0.10
2016-2020 mean	0.00	0.05	0.20

25th	0.00	0.14	0.26
median	0.06	0.34	0.45
75th	0.17	0.63	0.76

Figure 7. SNE abundance indicators: YOY indices.

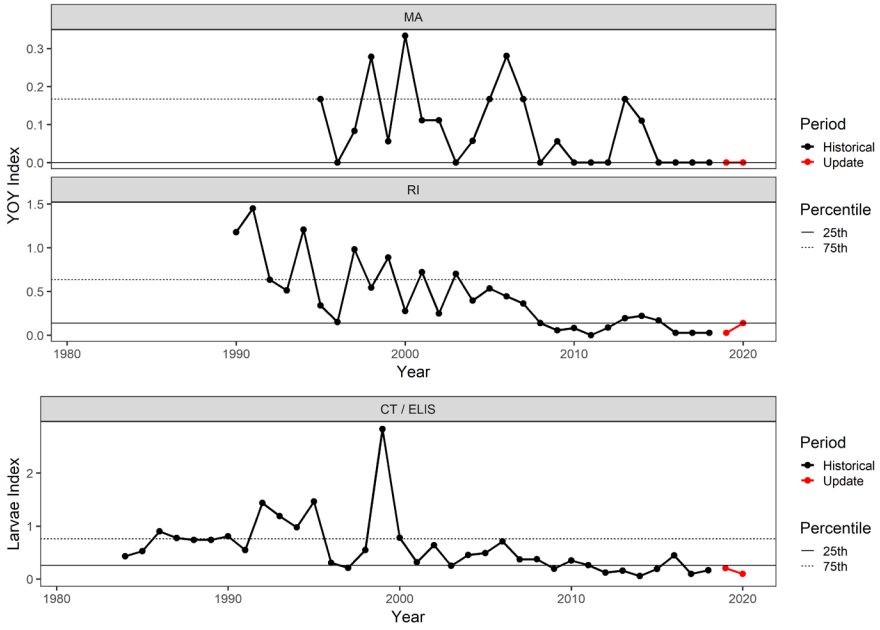


Table 8. SNE abundance indicators: trawl survey recruit abundance.

RECRUIT ABUNDANCE (SURVEY)								
Abundance of lobsters 71 - 80 mm CL (sexes combined)								
Survey	*NEFSC*		*MA*		*RI*		*CT*	
	Spring	*Fall*	*Spring*	*Fall*	*Spring*	*Fall*	*Spring*	*Fall*
1981	0.10	0.89	0.66	0.07	0.89	1.31		
1982	0.74	0.74	0.10	0.04	0.26	0.64		
1983	0.45	0.62	0.10	0.04	0.94	0.43		
1984	0.10	0.81	0.42	0.01	1.03	1.35	10.09	6.80
1985	1.99	1.01	0.33	0.09	0.28	0.97	3.08	3.93
1986	0.18	0.59	0.17	0.19	0.91	1.28	2.77	5.76
1987	1.04	0.45	0.27	0.17	0.79	3.14	2.93	6.86
1988	0.55	0.60	0.24	0.16	0.47	4.05	1.85	4.88
1989	0.09	1.65	0.14	0.42	0.90	3.26	4.86	5.28
1990	0.71	0.83	2.34	0.32	2.17	2.69	6.89	7.74
1991	0.31	0.51	1.23	0.87	4.77	3.10	10.83	10.32
1992	0.19	0.94	0.10	0.55	0.62	1.97	10.31	10.65
1993	0.59	0.42	0.25	0.52	7.81	8.29	7.78	15.18
1994	0.15	0.38	0.95	0.42	1.00	3.88	5.07	11.51
1995	0.01	0.61	1.13	0.03	1.33	4.50	12.13	11.20
1996	0.40	2.39	0.40	0.32	1.60	6.55	11.37	11.08
1997	1.64	1.60	1.44	0.12	2.58	6.10	15.42	24.99
1998	0.78	1.06	1.11	0.11	1.63	3.24	24.06	12.72
1999	2.43	0.66	0.73	0.19	1.71	2.07	24.57	12.96
2000	0.67	1.27	0.55	0.13	1.54	1.83	13.37	8.27
2001	0.39	0.45	0.18	0.03	2.97	2.17	10.77	7.41
2002	1.63	0.39	0.34	0.00	2.68	0.73	8.07	2.75
2003	0.34	0.33	0.07	0.00	0.29	0.93	3.52	4.08
2004	0.27	0.28	0.05	0.00	1.86	1.48	2.38	3.37
2005	0.11	0.24	0.08	0.00	1.07	2.53	2.26	1.54
2006	0.19	0.32	0.09	0.03	3.63	2.24	2.02	1.38
2007	0.19	0.35	0.07	0.00	0.68	2.68	2.65	1.12
2008	0.21	0.29	0.16	0.01	0.64	2.95	2.20	1.27
2009	0.15	0.35	0.16	0.05	1.14	1.36	1.20	1.33
2010	0.21	0.73	0.05	0.19	0.44	1.21	1.26	
2011	0.10	0.64	0.19	0.00	0.42	1.02	0.43	0.18
2012	0.11	0.99	0.06	0.21	0.30	0.18	0.44	0.08
2013	0.23	0.44	0.11	0.04	0.16	0.02	0.23	0.06
2014		0.67	0.04	0.00	0.02	0.14	0.15	0.05
2015	0.03	0.28	0.07	0.30	0.05	0.37	0.15	0.06
2016	0.83	0.69	0.05	0.13	0.57	0.25	0.16	0.00
2017	0.10		0.13	0.16	0.14	0.41	0.03	0.00
2018	0.08	0.38	0.02	0.01	0.18	0.68	0.00	0.01
2014-2018 mean	0.26	0.51	0.06	0.12	0.19	0.37	0.10	0.03
2019	0.06	0.32	0.01	0.02	0.52	0.50	0.03	0.00
2020					0.23	0.32		
2016-2020 mean	0.27	0.47	0.05	0.08	0.33	0.43	0.06	0.00

25th	0.11	0.38	0.08	0.02	0.42	0.78	1.23	1.16
median	0.23	0.61	0.16	0.10	0.91	1.65	2.93	4.48
75th	0.67	0.83	0.42	0.19	1.62	3.07	10.20	9.81

Figure 8. SNE abundance indicators: trawl survey recruit abundance.

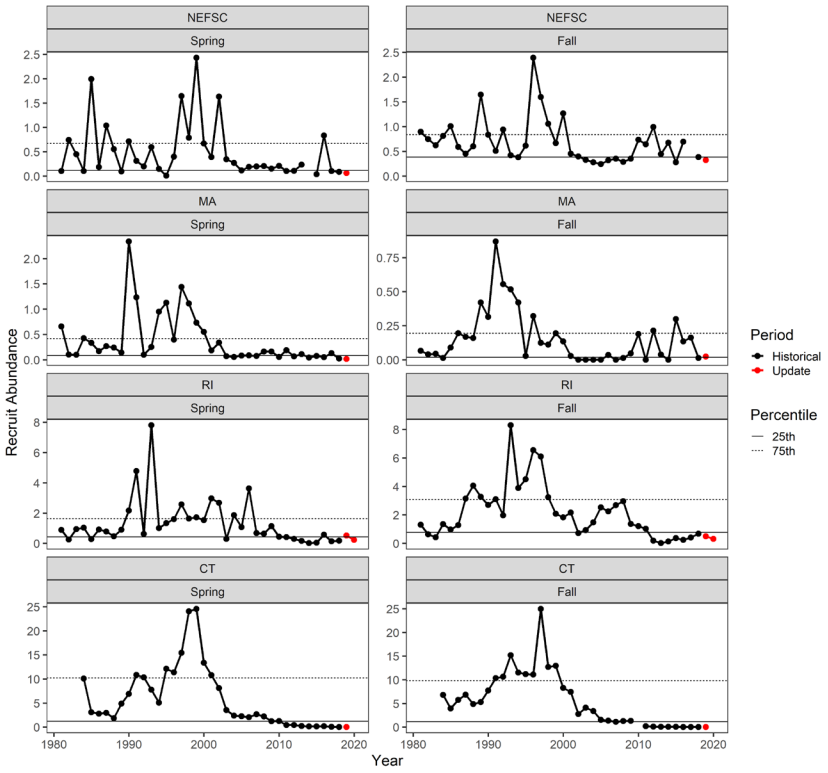


Table 9. SNE abundance indicators: trawl survey encounter rate.

SURVEY LOBSTER ENCOUNTER RATE Proportion of postive tows								
Survey	*NEFSC*		*MA*		*RI*		*CT*	
	Spring	*Fall*	*Spring*	*Fall*	*Spring*	*Fall*	*Spring*	*Fall*
1981	0.18	0.47	0.38	0.15	0.49	0.41		
1982	0.26	0.35	0.28	0.21	0.30	0.43		
1983	0.14	0.26	0.21	0.16	0.46	0.37		
1984	0.08	0.32	0.40	0.18	0.59	0.44	0.63	0.76
1985	0.21	0.34	0.51	0.22	0.31	0.50	0.57	0.69
1986	0.17	0.25	0.39	0.39	0.64	0.46	0.67	0.61
1987	0.13	0.23	0.28	0.18	0.35	0.47	0.63	0.76
1988	0.09	0.28	0.39	0.21	0.49	0.55	0.65	0.66
1989	0.13	0.40	0.50	0.33	0.52	0.57	0.75	0.63
1990	0.14	0.44	0.66	0.44	0.64	0.53	0.73	0.76
1991	0.14	0.33	0.41	0.40	0.77	0.69	0.81	0.77
1992	0.22	0.34	0.51	0.23	0.40	0.57	0.77	0.68
1993	0.12	0.27	0.54	0.27	0.50	0.71	0.73	0.75
1994	0.09	0.25	0.51	0.20	0.58	0.57	0.73	0.74
1995	0.05	0.35	0.44	0.13	0.55	0.67	0.77	0.68
1996	0.10	0.39	0.30	0.16	0.79	0.76	0.66	0.78
1997	0.25	0.28	0.45	0.21	0.75	0.71	0.71	0.81
1998	0.12	0.34	0.54	0.13	0.59	0.55	0.83	0.71
1999	0.22	0.28	0.41	0.21	0.76	0.59	0.78	0.79
2000	0.13	0.31	0.45	0.15	0.68	0.63	0.81	0.73
2001	0.21	0.25	0.28	0.18	0.65	0.60	0.77	0.58
2002	0.19	0.24	0.28	0.03	0.61	0.45	0.73	0.59
2003	0.11	0.26	0.14	0.03	0.51	0.40	0.71	0.64
2004	0.10	0.19	0.28	0.03	0.54	0.50	0.61	0.66
2005	0.08	0.19	0.34	0.15	0.49	0.45	0.63	0.54
2006	0.14	0.23	0.43	0.03	0.79	0.62	0.61	0.51
2007	0.13	0.21	0.34	0.10	0.44	0.54	0.70	0.53
2008	0.10	0.22	0.33	0.10	0.55	0.52	0.63	0.65
2009	0.17	0.32	0.50	0.05	0.57	0.40	0.49	0.55
2010	0.12	0.33	0.23	0.24	0.47	0.45	0.54	
2011	0.13	0.35	0.18	0.05	0.30	0.23	0.46	0.28
2012	0.13	0.34	0.18	0.15	0.27	0.16	0.43	0.20
2013	0.10	0.28	0.18	0.08	0.20	0.09	0.28	0.15
2014		0.26	0.13	0.08	0.07	0.23	0.26	0.10
2015	0.06	0.27	0.10	0.05	0.12	0.16	0.27	0.10
2016	0.15	0.25	0.08	0.11	0.30	0.14	0.25	0.03
2017	0.08		0.08	0.16	0.16	0.23	0.08	0.03
2018	0.08	0.29	0.11	0.06	0.09	0.18	0.09	0.01
2014-2018 mean	0.09	0.27	0.10	0.09	0.15	0.19	0.19	0.05
2019	0.05	0.26	0.05	0.11	0.16	0.11	0.09	0.00
2020					0.16	0.16		
2016-2020 mean	0.09	0.27	0.08	0.11	0.17	0.16	0.13	0.02

25th	0.10	0.25	0.21	0.08	0.32	0.40	0.52	0.52
median	0.13	0.28	0.34	0.16	0.51	0.49	0.65	0.64
75th	0.17	0.34	0.44	0.21	0.60	0.57	0.73	0.74

Figure 9. SNE abundance indicators: trawl survey encounter rate.

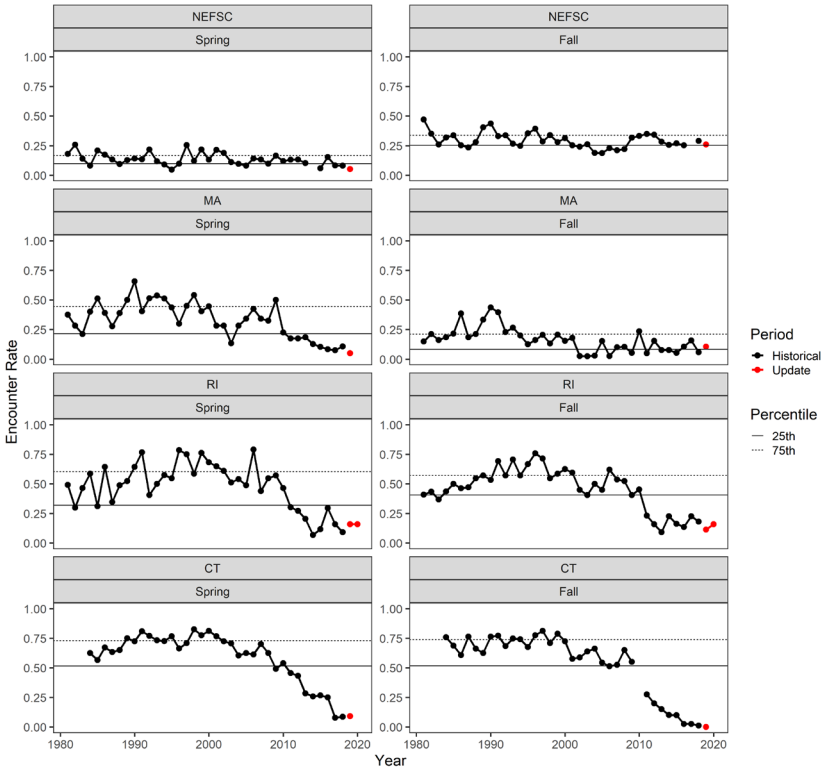
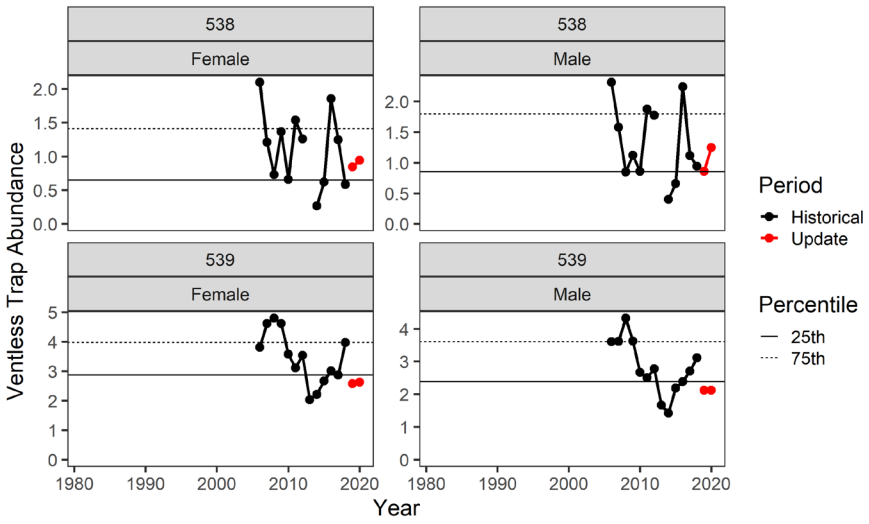


Table 10. SNE abundance indicators: ventless trap survey abundance.

VENTLESS TRAP ABUNDANCE Abundance of lobsters ≥ 53 mm CL				
Survey	*538*		*539*	
	Female	*Male*	*Female*	*Male*
1981				
1982				
1983				
1984				
1985				
1986				
1987				
1988				
1989				
1990				
1991				
1992				
1993				
1994				
1995				
1996				
1997				
1998				
1999				
2000				
2001				
2002				
2003				
2004				
2005				
2006	2.10	2.31	3.81	3.60
2007	1.21	1.58	4.61	3.61
2008	0.73	0.85	4.80	4.32
2009	1.37	1.12	4.61	3.62
2010	0.66	0.86	3.57	2.67
2011	1.54	1.88	3.11	2.50
2012	1.26	1.77	3.53	2.77
2013			2.03	1.67
2014	0.27	0.40	2.22	1.42
2015	0.62	0.66	2.66	2.18
2016	1.85	2.24	3.01	2.38
2017	1.25	1.11	2.86	2.71
2018	0.58	0.94	3.97	3.12
2014-2018 mean	0.91	1.07	2.94	2.36
2019	0.84	0.86	2.57	2.12
2020	0.94	1.25	2.63	2.12
2016-2020 mean	1.09	1.28	3.01	2.49
25th	0.65	0.85	2.86	2.38
median	1.23	1.12	3.53	2.71
75th	1.41	1.80	3.97	3.60

Figure 10. SNE abundance indicators: ventless trap survey abundance.



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: **American Lobster Plan Development Team**

FROM: **American Lobster Technical Committee**

DATE: **September 10, 2021**

SUBJECT: **Technical Committee Recommendations for Development of Draft Addendum XXVII on Gulf of Maine/Georges Bank Resiliency**

Background

At the February 2021 meeting, the Board reinitiated work on Draft Addendum XXVII, which aims to proactively address resiliency of the Gulf of Maine/Georges Bank (GOM/GBK) stock given recent declines in young-of-year indicators, despite the stock not experiencing overfishing and abundance being near time-series highs. The Board specified the scope of the action through the following motion:

> *"Move to re-initiate PDT and TC work on the Gulf of Maine resiliency addendum. The addendum should focus on a trigger mechanism such that, upon reaching of the trigger, measures would be automatically implemented to improve the biological resiliency of the GOM/GBK stock."*

To inform the development of the document, the Plan Development Team (PDT) requested the Technical Committee (TC) perform several analyses and make recommendations on the range of options to be considered in the draft addendum. The TC defined resiliency as the ability of the stock to recover from a disturbance, and their recommendations are based on the understanding that the Board is interested in increasing stock resiliency by adding an additional biological buffer to the stock through the protection of spawning stock biomass across LCMAs. This memo outlines these analyses and recommendations for the PDT's consideration.

Summary of Technical Committee Recommendations

Below are the key recommendations arising from the TC analysis and discussion. Specifically, the TC made recommendations on proposed options for Draft Addendum XXVII related to the trigger mechanism for implementing a change to management measures, the trigger levels, and the management measures that should be considered. The subsequent sections of the memo provide additional information on the analyses performed and rationale for each set of recommendations.

- ***Recommendation on trigger mechanism***
    - The TC recommends using an annual trigger index that can be used to establish whether relative abundance has reached a specific trigger level. This index will be calculated as the average of recruit (71-80 mm carapace length) indices from (1) the combined ME/NH and MA DMF spring trawl surveys, (2) the combined ME/NH and MA DMF fall trawl surveys, and (3) the combined Gulf of Maine Ventless Trap Survey. The three-year running average of the trigger index (using the current year being evaluated and two preceding years) would trigger management action when it falls below the selected trigger level(s).

- ***Recommendations on trigger levels***
    - For trigger levels based on annual abundance indices, the TC recommends the document consider the following trigger levels:
        - Management triggered by the three-year running average of the trigger index (using the current year being evaluated and two preceding years) when it declines by 17% from the reference period. This trigger level approximates the Fishery/Industry Target reference point, calculated as the 25th percentile of the model abundance during the high abundance regime.
        - Management triggered by the three-year running average of the trigger index (using the current year being evaluated and two preceding years) when it declines by 32% from the reference period. This trigger level approximates the abundance level where the regime shift occurred from the moderate to high abundance regime, as defined in the 2020 stock assessment.
        - Management triggered by the three-year running average of the trigger index (using the current year being evaluated and two preceding years) when it declines by 45% from the reference period. This trigger level approximates the 75th percentile of the moderate abundance regime.
        - The TC does not recommend the PDT include the option for management to be triggered by a 51% decline in indices from the reference period in this addendum.
    - The TC recommends an option be added to the document for immediate action to increase minimum legal size while the stock conditions are favorable. The purpose of this option is to address the issue of growth overfishing, as demonstrated with the potential increase in catch weight in projections done for this memo, as well as to increase the proportion of females that reach maturity prior to the gauge.
- ***Recommendations on the range of management options for increasing resiliency***
    - The TC analyzed a broad range of changes to the minimum and maximum gauge sizes in the LCMAs within the GOM/GBK stock. The TC recommends the draft document only consider management measures that 1) are projected to increase SSB, and 2) result in the minimum gauge size increasing to or above the size at 50% maturity (L50) for each LCMA (LCMA 1: eastern GOM L50 = 88 mm, western GOM L50 = 83 mm, LCMA 3: Georges Bank L50 = 91 mm). See enclosed report for the projected impacts of gauge size combinations. The gauge sizes analyzed by the TC and the current gauge sizes by area are provided in Table 1.
    - It should be noted that for this addendum, the Board directed the PDT only to consider changes to biological management measures currently in place for the lobster fishery (e.g., gauge and vent sizes, v-notching rules, and seasons). The TC agreed that of these management tools, the measures most likely to provide increases to stock resiliency are the minimum and maximum gauge sizes. Therefore, the TC analysis focuses primarily on changes to the current minimum and maximum gauge sizes in the GOM/GBK stock.

Trigger Mechanism: Analysis and Recommendations

Recruit (71-80 mm carapace length) indices are used as model-free indicators of recruitment to the lobster fishery in the following year. During the 2020 stock assessment, recruit indicators were found to

be correlated with the stock assessment model estimates of reference abundance (78+ mm carapace length), providing a reliable means to track abundance changes and potential need for management response more frequently than through intermittent stock assessments. There are eight GOM/GBK stock recruit indicators updated for each assessment: spring and fall indices for each of the ME/NH, MA DMF, NEFSC GOM, and NEFSC GBK bottom trawl surveys. The NEFSC indicators in the GOM and GBK regions are considered to be indicators of offshore recruitment which differs from the GOM/GBK stock-wide recruitment dynamics. Therefore, the TC recommends using only the inshore surveys (ME/NH and MA DMF) where the bulk of the population and fishery occur, which are assumed to be more representative of stock-wide recruitment. These trawl surveys employ similar methodologies and, along with selectivity and swept area calibration factors, can be combined into two indices, a spring index and a fall index. Additionally, the TC recommends using the standardized index from the Ventless Trap Survey as an indicator of recruitment during the summer.

To calculate a trigger index, each of the three individual indices were scaled to their 2017 reference levels so they are on the same scale. The one year lag expected between recruit indices and reference abundance due to growth results in 2017 recruit indices mapping to the terminal year reference abundance used in the 2020 stock assessment status determination (2018). The TC recommends linking the trigger index to the reference abundance in this way so the trigger index is an indication of proportional changes to the reference abundance since the 2020 stock assessment. Proportional changes in the trigger index are compared directly to proportional changes between the terminal year reference abundance and abundance reference points established in the assessment to provide an early indication of reference abundance falling below the reference points. Scaled indices were then averaged across surveys to generate a single trigger index. The final trigger index value represents proportional change from 2017 recruitment (and, therefore, expected proportional change from the reference abundance one year later in 2018 - the terminal year of the stock assessment). A value of one indicates no change, a value greater than one indicates an increase (e.g., 1.2 indicates a 20% increase), and a value less than one indicates a decrease (e.g., 0.8 indicates a 20% decrease).

During the 2020 stock assessment, the peer review panel supported using a smoothing algorithm, such as the running average used in past assessments, to determine stock status, but also recommended exploring alternatives (e.g., running median) to evaluate the robustness of status determinations. To evaluate performance of different methods for a trigger mechanism, akin to evaluating stock status in a stock assessment, a simulation analysis was conducted using the trigger index annual point value, three-year running average, and three-year running median to identify need for management action. For each method, all three individual indices were scaled to a 2017 reference level calculated with the same method used to calculate the index. That is, the 2017 reference level was the 2017 point value for the annual index trigger method, the 2015-2017 average for the three-year running average trigger method, and the 2015-2017 running median for the three-year running median trigger method. The scaled individual and combined indices are compared to various trigger points that have been discussed by the TC in Figure 1.

One potential trigger point discussed by the TC was 0.68 (i.e., a 32% decline) which represents the proportional change between the terminal year stock assessment reference abundance level and the boundary between the high and moderate abundance regimes. This trigger point was treated as the trigger for action in the simulation analysis. Each individual index was projected from 2018 to 2025 following a steady decline that reflected a 32% decline from the observed 2017 index value in 2021. This projected trend is hypothetical to evaluate the performance of the three calculation methods being considered and does not necessarily reflect the true status or projection of the population. It was

unclear what impacts the method used to calculate the starting point of the projected trend would have on performance of each trigger mechanism, so declines projected from the (1) 2017 point value, (2) 2015-2017 running average, and (3) 2015-2017 running median were evaluated in three separate scenarios. Indices were then sampled from these simulated trends with CVs equal to the average CV over the respective index's time series, assuming a lognormal error structure. These simulations only consider observation error and do not account for process error. Indices were scaled to their reference level as described above, averaged across surveys, and the combined trigger index was evaluated for whether or not it would trigger action ($\leq$0.68) in each year of the projection period. This was repeated 1,000 times for each scenario and action determinations were tallied by year for each of the methods.

Results show similar patterns between the scenarios using a simulated decline from the 2017 point value and from the 2015-2017 average (Table 2; Figures 2-3). The 2015-2017 running median was equal to the 2017 point value for all indices, so the results with a simulated decline from this value were identical to the 2017 point value scenario (Table 2; Figure 4). Incorrect action is triggered very infrequently (< 3% of the time) by the annual and running median methods in the first two years of the projection period and never by the running average method. On average, the annual and running median methods incorrectly triggered action about 9% of the time and about 15 times more frequently than the running average method the year before the decline reached the threshold (2020), but also correctly triggered action ≈38% of the time and roughly twice as frequently as the running average method in the year when the threshold was met (2021). The running average method then tended to perform as well as or better than the other methods from 2022-2025, albeit generally at smaller margins of difference, as all methods tended to perform relatively well in these later years when the decline is exacerbated. The delayed response of the running average method can be seen in Figures 5-7, where the median trigger index value across simulations tends to be slightly higher than the annual and running median methods. The variance in index values, however, is lower for the running average method resulting in more consistency across simulations in terms of guidance for management action, whereas the other methods result in mixed guidance for some of the more extreme simulations in more years than the running average method.

Based on these results, the trigger mechanisms using the annual point value and the running median may be considered precautionary methods that perform better for an immediate trigger, on average, but with more variable guidance than the running average method. The running average method may provide a less responsive trigger mechanism that is less likely to incorrectly trigger premature action, and performs well and more consistently after the initial risk of not triggering action when first needed.

The TC recommends the running average method for calculating the trigger index. The individual surveys display interannual variation that might be related to environmental impacts on catchability (for example), an issue that was identified in the stock assessment and is expected to continue to impact these indices index data sets into the future. This simulation analysis suggests the running average method is more robust to interannual variation than the other methods and therefore can be interpreted with higher confidence.

Trigger Levels: Discussion and Recommendations

At the May 2021 ASMFC meeting, the Lobster Board directed the PDT to include some relatively conservative trigger levels in the draft addendum document, such that a change to measures would occur before abundance falls significantly from current levels. Additional guidance was provided by the

Board at the August 2021 meeting. Board members agreed that they are interested in a tiered approach with multiple trigger levels. They also expressed that while they do want to consider trigger options that are proactive, they did not want to consider trigger levels that may have already been met. Based on this feedback, the TC discussed the risks and rewards associated with the trigger levels that have been suggested by the PDT. TC recommendations related to each option are included below.

Trigger level 1 = 17% decline in indices from reference period: The PDT suggested this trigger level to approximate the Fishery/Industry Target reference point. The fishery/industry target is calculated as the 25th percentile of the abundance during the high abundance regime. This trigger level is the most proactive and would likely result in a change to regulations occurring at a higher stock abundance than the other trigger options. The TC recommends its inclusion in the draft addendum.

Trigger level 2 = 32% decline in indices from reference period: The PDT suggested this trigger level to approximate the abundance level where the regime shift occurred from the moderate to high abundance regime, as defined in the 2020 stock assessment. This trigger level is the second-most conservative of the PDT's suggestions, and would likely trigger management action while stock abundance is relatively high. The TC recommends this option be included in the draft addendum.

Trigger level 3= 45% decline in indices from reference period: The PDT suggested this trigger level to approximate the 75th percentile of the moderate abundance regime. This is slightly less conservative than the previous trigger, but still provides an opportunity for action before reaching the abundance limit. The TC recommends this option be included in the draft addendum for public comment, but this is the least proactive trigger level that the TC recommends for inclusion in the draft addendum.

Trigger level 4 = 51% decline in indices from reference period: The PDT suggested this trigger level to approximate the abundance limit reference point. The abundance limit is calculated as the median abundance during the moderate abundance regime. The TC does not recommend the PDT include this trigger level in this draft addendum because it is inconsistent with the addendum's goal of increasing resiliency. If the stock abundance falls below this point, the stock is considered depleted and the stock's ability to replenish itself is diminished. At this level of abundance, management measures should focus on rebuilding strategies as opposed to increasing stock resiliency.

The TC agreed that in general, taking action to increase the minimum gauge size more immediately while abundance is at its highest levels has the potential to enhance the resiliency of the stock. Conversely, if action to increase the minimum gauge size is taken only after the stock has experienced a decline in abundance, the resulting improvement in resiliency is comparatively less. The negative impacts to lobster catch of implementing an increased gauge size (temporarily reduced catch) coupled with a decreased and declining population available to the fishery would be comparatively more detrimental to industry than if the management measures were implemented while stock abundance is greater. None of the above trigger options would allow for a change in management measures to occur before any decline in stock abundance. Therefore, the TC recommends that the document consider an additional option to change the legal gauge size immediately or within a short time-frame, rather than waiting for the change to be triggered by declines in abundance indices. This will have less of an impact to industry if it were implemented sooner, versus waiting until declining abundance is negatively affecting catch. Impacts to catch specifically resulting from an increase in minimum legal size will be temporary, and will result in increased weight of harvested individuals. This approach could also provide industry with more advance notice of an upcoming change in regulations.

Management Options: Analysis and Recommendations

Based on the stated objective of Draft Addendum XXVII "to increase the biological resiliency of the GOM/GBK stock", and Board guidance to focus on the types of biological management measures currently in place, the TC focused their analysis on evaluating the impacts of alternate minimum and maximum sizes for the LCMAs within the stock. The analysis involved updating existing simulation models with more recent data to estimate the impacts of specific minimum and maximum gauge size combinations on total weight of lobsters landed, number of lobsters landed, spawning stock biomass (SSB) and exploitation. Additionally, an analysis specifically for LCMA 3 was performed due to concerns that the offshore fishery in LCMA 3 is considerably different from the inshore (which tends to drive stock-wide modelling results), and, thus may not be accurately represented due to a misparameterized simulation model. The full report on these analyses is enclosed with this memo.

The TC made recommendations for management measures that could be considered to increase biological resiliency of the stock, but wanted to provide clarity on the premises for these recommendations. First, the TC defined resiliency as the ability of the stock to recover from a disturbance, and second, they based their recommendations on the understanding that the Board's intended approach to increasing stock resiliency is to add an additional biological buffer to the stock through the protection of spawning stock biomass across LCMAs.

Based on these premises and the analyses performed, for area-specific management measures, the TC provided the following recommendations for each LCMA in order to provide an increase to biological resiliency of the overall stock.

LCMA 1

Minimum Gauge Size

- The TC recommends the Addendum only consider options that <u>increase</u> the minimum gauge size in LCMA 1.
- The current minimum size in LCMA 1 is significantly below the stock-wide estimated size at 50% maturity (87 mm). Increasing the minimum legal size would allow more females to reproduce prior to harvest, providing a benefit to the stock.
    - There are spatial differences within LCMA 1 in the size at 50% maturity, ranging from 83 mm to 88 mm, from western to eastern GOM. While the magnitude of impacts of increasing minimum size may vary spatially, some level of resiliency should be provided throughout the region from an increase in minimum size for LCMA 1.
    - At the least, increasing the minimum legal size to 86 mm in LCMA 1 would standardize the minimum legal size for all inshore management areas, but this size would still be below the GOM/GB stock wide L50.
- Growth overfishing is occurring in LCMA 1; most of the catch consists of individuals within one molt of minimum legal size, which results in a much smaller yield per recruit than could be achieved if individuals were allowed to attain larger sizes. Increasing the minimum size in LCMA 1 will lessen the extent to which the stock is growth overfished.
- In general, the greater the increase to the minimum size, the greater the expected benefit to stock resiliency.
    - It should be noted that the effects of increasing SSB on recruitment are difficult to predict and are likely heavily influenced by other factors. The analysis conducted on changes to SSB did not attempt to model recruitment subsidies that may result, thus the

estimated increases in landings, abundance and SSB may be underestimated by not accounting for a positive feedback between spawners and recruits and should be considered a conservatively low bound on expected effect. Conversely, the negative influence of environmental factors (e.g. declining larval food resources) on recruitment processes may have a stronger impact on recruitment success than the number of spawners, thus it is not certain that increases to SSB resulting from gauge changes will result in subsequent increases to recruitment.

Maximum Gauge Size

- Increasing the maximum size in LCMA 1 is not expected to have a benefit to stock resiliency, since it would allow harvest of currently protected individuals. Therefore it is not recommended.
    - There is uncertainty on how changing maximum size in LCMA Area 1 would impact stock resiliency, and how.
    - There is uncertainty in how increases to maximum size inshore will influence population dynamics offshore.
- The TC did not analyze the impacts of decreasing the maximum size for LCMA 1, as it is currently the smallest maximum size across LCMAs in the stock.

LCMA 3

Minimum Gauge Size

- The addendum should not consider decreasing the minimum size in LCMA 3.
- Increasing the minimum size in LCMA 3 is not a high priority for increasing resiliency.
    - While the current gauge size is already close to the size at which 50% of females are mature (91 mm for Georges Bank); increases to the minimum legal size will ensure even more females are able to reproduce prior to becoming susceptible to harvest, providing additional benefits to the stock.
    - It is important to note that at the current minimum size, growth overfishing is occurring; lobsters still have very large scope for additional growth. There could be an industry benefit to increasing minimum legal size, but it is not a significant biological concern given the current stock condition. Currently, exploitation of smaller legal-sized lobsters appears to be relatively low, thus there may be less benefit to increasing the minimum gauge size.

Maximum Gauge Size

- Due to the complexities of growth and reproduction of larger lobsters, there is considerable uncertainty on the quantitative impact of decreasing maximum size in LCMA 3 on stock resiliency, but in general it is thought to have biological benefits. Some considerations are included below:
    - Decreasing the maximum size would have some benefit by putting forever protections on a small portion of the stock, including larger individuals of both sexes. Protecting larger individuals reduces the risk to the long-term sustainability of the population by increasing egg production as well as the diversity of breeders, which leads to more successful egg production under a variety of environmental conditions (DFO 2009). There is also evidence that in addition to fecundity, overall larval survival rates may also be increased as a result of increasing the duration and number of hatching locations (DFO 2009).

- Though there is a well-documented increase in clutch size with increased female size, reproductive dynamics of very large lobsters are not well understood. Unknowns include the frequency at which very large females produce clutches, and whether the currently skewed sex ratio is resulting in sperm limitation that may limit female reproductive output.
- The impact of decreasing the maximum size would depend greatly on the magnitude of the decrease.
- It is expected that a maximum size below 6 inches would result in greater negative impacts to catch (and the impacts will likely differ spatially within LCMA 3) but a larger portion of the population would benefit from forever protections.
    - There is some concern as to whether such a large change in the maximum size would intensify fishing mortality on the smaller or other harvestable size classes in an effort to compensate for the lost catch from a maximum size gauge change. A prospective shift could potentially truncate the size structure and increase the probability of lobsters being harvested from these previously less harvested size classes. This in turn would result in fewer lobsters surviving to subsequent molt stages and/or reproducing.

OCC

<u>The TC recommends that measures within OCC should be standardized for state and federal permit holders.</u>

- While the biological benefits of this will not be large due to the size of the fleet and relative amount of landings, there will be some benefit to standardizing the v-notch definition to ⅛" and to implementing the maximum size for all permit holders. This will apply a consistent conservation strategy within the management area.
- There is a clear benefit to law enforcement's ability to enforce conservation measures at the local dealers.

Minimum Gauge Size

- The TC does not recommend decreasing the minimum size in OCC.
- For increases to minimum size, in general, the greater the increase, the greater the benefit to stock resiliency.
    - OCC is considered a transitional area with most lobsters moving in from other locations. Size at maturity is not estimated for this area because of the mixed origins.

Maximum Gauge Size

- Similar to LCMA 3, there is significant uncertainty on how decreasing maximum size in OCC would impact stock resiliency.
- OCC represents a small component of the stock-wide fishery, therefore decreasing the maximum gauge size is unlikely to have a large positive impact to stock resiliency. However, decreasing maximum gauge size could have a minor benefit by putting forever protections on a small portion of the stock, including larger individuals of both sexes.

Additional Considerations

Though the primary focus of this addendum has shifted from the standardization of biological measures across LCMAs to increasing biological resiliency of the stock, the TC noted that there are some benefits to standardization that warrant consideration. Standardization of measures across areas would simplify

the stock assessment and evaluation of management strategies, particularly since management areas do not align with stock boundaries (see for example the difficulties with predicting impacts to LCMA 3 and OCC in this document). In addition, there are benefits for enforcement and commerce. In particular standardization of v-notching requirements and definitions would provide a consistent conservation strategy and simplify enforcement across areas.

Based on the Board's guidance to focus primarily on current measures such as gauge changes, the TC had only limited discussions around alternatives to biological management measures. However, the TC feels it is important to note that other types of management strategies may also provide increases to stock resiliency and should be given more in depth consideration in the future.

Trap reductions have the potential to provide a means to reduce fishing mortality, however the relationship among trap limits, the number of traps in the water, haul frequency, and catch is complex and difficult to predict. It is highly likely that aggressive trap reductions would be necessary to meaningfully reduce fishing mortality. We believe there is considerable latent effort in the LCMA 1 fishery, in terms of both permits and individual traps, and efforts to address these issues in the short-term may increase the Board's ability to manage effort in the future. Note that LMCA 3 has already undergone considerable reductions in traps (both total and individual allocations), which was intended to remove latent effort. Similar efforts should be considered in LCMA 1.

Quotas are a traditional method to control fishing mortality. However, the Board has shown little interest in pursuing the use of quotas. Defining the appropriate level at which to set a quota would require significantly more work due to the current levels of uncertainty around the magnitude of abundance estimates. The current stock assessment model does well with estimating trends in abundance, but less so with magnitude estimates.

The TC emphasized that it may not be realistic to expect that changes to management measures will result in the maintenance of record high abundance levels. To address the Board's goal of increased resiliency, the TC recommendations are expected to partially address growth overfishing, mitigate some effects of a decline in productivity, and improve the stock's ability to rebound from future declines by increasing the proportion of females that can reproduce prior to harvest. This does not imply nor guarantee that the stock could recover to these record high levels, nor should it imply that this action alone is sufficient to ensure long-term sustainability of the fishery. The TC notes that increasing the minimum gauge size to the point where 50% of the population is mature at the minimum legal size is an improvement. However, given the American lobster's scope for growth, maternal effects (fecundity increases with size) and lifetime reproduction potential, further increasing the minimum gauge size to allow as many individuals as possible to reproduce prior to harvest would be beneficial. Additional measures as discussed above could provide the Board better options for managing fishing mortality if that becomes necessary, and should be considered as options for implementation in the future, especially if the stock abundance declines to lower levels of abundance.

Literature Cited

DFO. 2009. Biological Basis for the Protection of Large Lobsters in Lobster Fishing Areas 33 to 38. DFO Can. Sci. Advis. Sec. Sci. Resp. 2008/017.

Tables and Figures

Table 1. Gauge sizes analyzed by TC and current gauge sizes by LCMA.

Min size	inches	mm		Max size	inches	mm	
3 1/4	3.25	82.5	**LCMA 1 minimum**	**5**	5	127.0	**LCMA 1 Max**
3 5/16	3.31	84.1		**5 1/2**	5.5	139.7	
3 3/8	3.38	85.7	**OCC minimum**	**6**	6	152.4	
3 15/32	3.47	88.1		**6 1/4**	6.25	158.7	
3 17/32	3.53	89.7	**LCMA 3 minimum**	**6 1/2**	6.5	165.1	
3 19/32	3.59	91.3		**6 3/4**	6.75	171.4	**LCMA 3/OCC Max**
				9	9	228.6	

Table 2. Percentage of 1,000 simulated indices that triggered action for three simulated decline starting point scenarios, and the averages of these scenarios. The simulated stock was projected to decline 32% in 2021.

Simulated Decline Starting Point	Index Calculation Method	2018	2019	2020	2021	2022	2023	2024	2025
2017 Point Value	Annual	0%	2%	12%	50%	85%	97%	100%	100%
	Three-Year Running Average	0%	0%	1%	27%	86%	100%	100%	100%
	Three-Year Running Median	0%	2%	12%	44%	84%	98%	100%	100%
2015-2017 Average	Annual	0%	0%	3%	21%	59%	89%	99%	100%
	Three-Year Running Average	0%	0%	0%	3%	46%	95%	100%	100%
	Three-Year Running Median	0%	0%	3%	19%	60%	90%	99%	100%
2015-2017 Running Median	Annual	0%	2%	12%	50%	85%	97%	100%	100%
	Three-Year Running Average	0%	0%	1%	27%	86%	100%	100%	100%
	Three-Year Running Median	0%	2%	12%	44%	84%	98%	100%	100%
Average	**Annual**	**0%**	**2%**	**9%**	**40%**	**76%**	**94%**	**100%**	**100%**
	Three-Year Running Average	**0%**	**0%**	**1%**	**19%**	**73%**	**98%**	**100%**	**100%**
	Three-Year Running Median	**0%**	**1%**	**9%**	**36%**	**76%**	**95%**	**100%**	**100%**

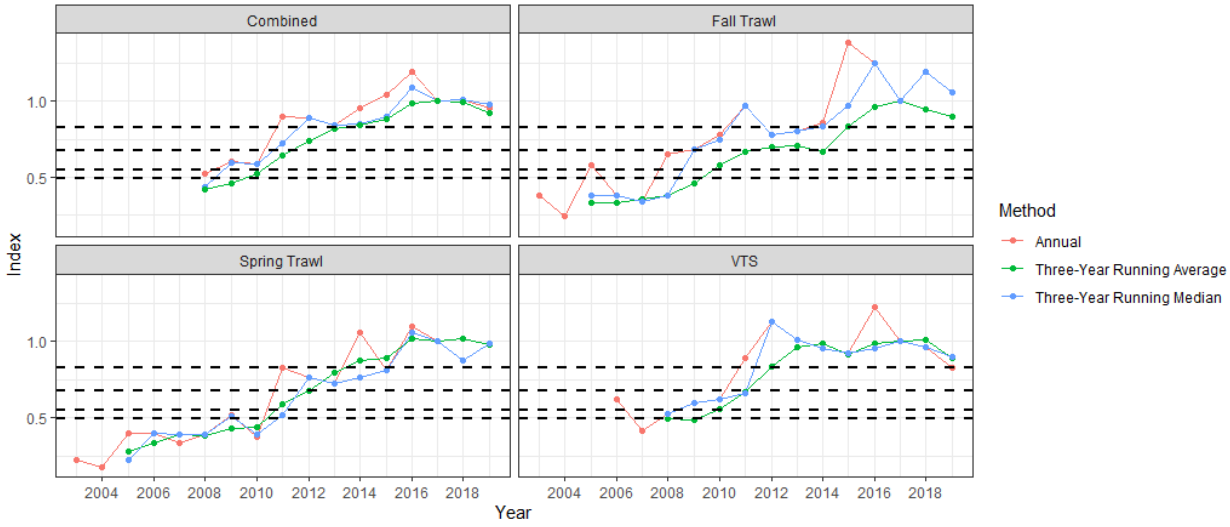

Figure 1. Scaled individual and combined indices using three calculation methods compared to four trigger levels (0.83 – Fishery/Industry Target, 0.68 – Moderate/High Abundance Regime Shift Level, 0.55 – Abundance Limit, 0.49 – Abundance Threshold) identified from potential reference abundance declines (dashed lines).

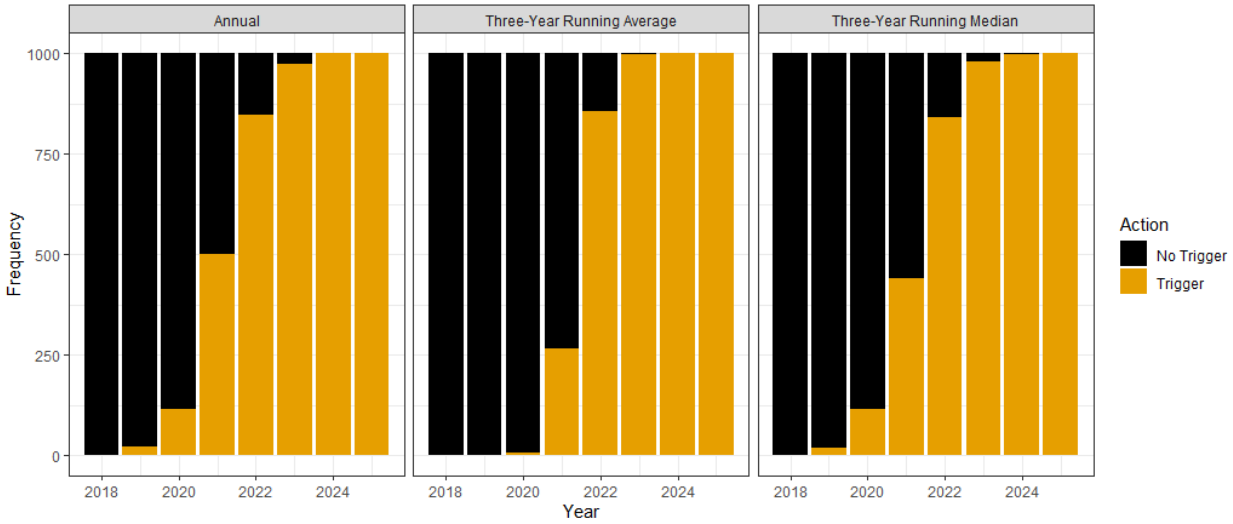

Figure 2. Annual action determinations by method from 1,000 simulated indices with the simulated population declining from the 2017 point value. The simulated stock was projected to decline 32% in 2021.

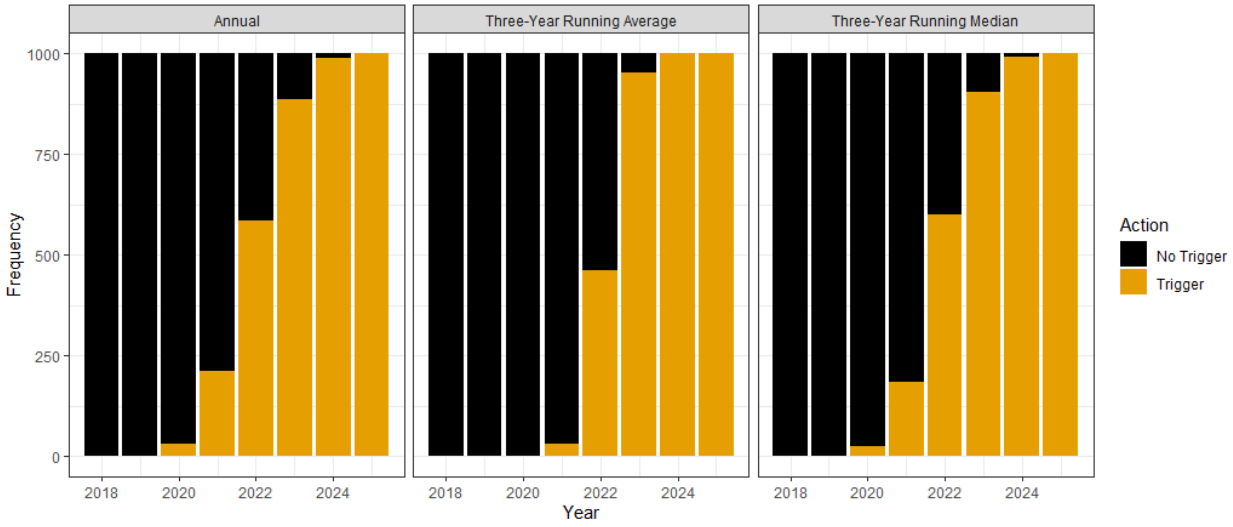

Figure 3. Annual action determinations by method from 1,000 simulated indices with the simulated population declining from the 2015-2017 average. The simulated stock was projected to decline 32% in 2021.

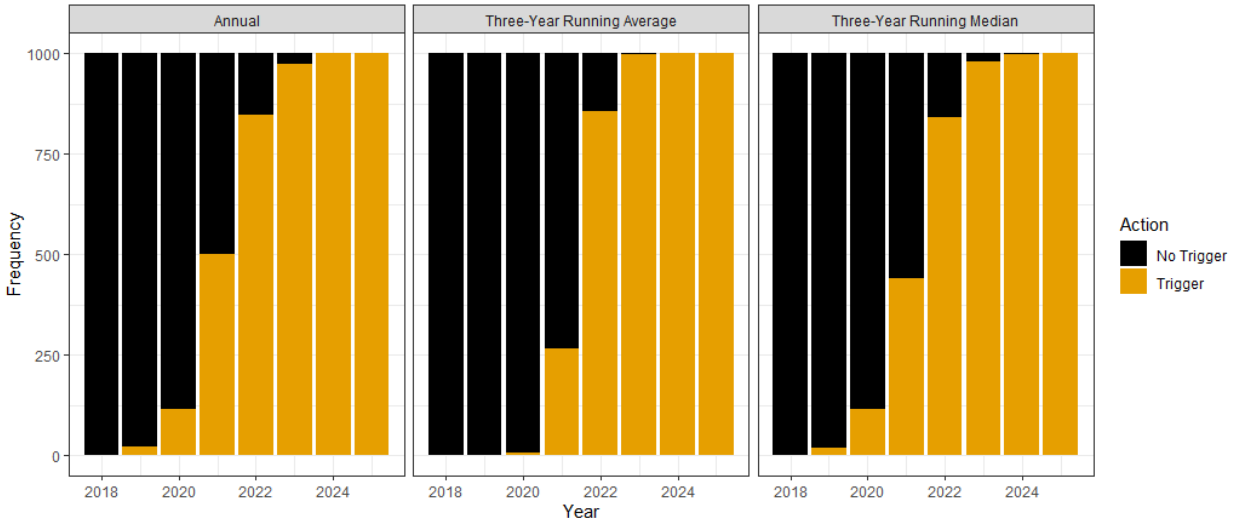

Figure 4. Annual action determinations by method from 1,000 simulated indices with the simulated population declining from the 2015-2017 median. The simulated stock was projected to decline 32% in 2021.

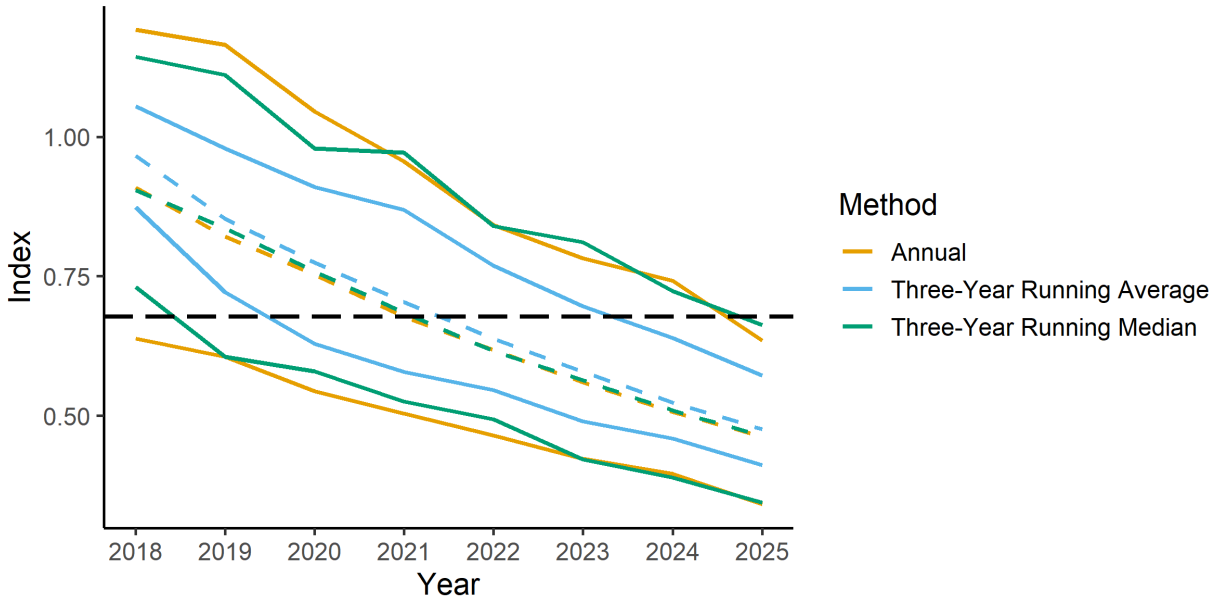

Figure 5. Distribution of index values by method from 1,000 simulations with the simulated population declining from the 2017 point value. The dashed colored lines are the median index values across simulations, the solid color lines are the minimum and maximum index values across simulations, and the dashed black line is the trigger level. The simulated stock was projected to decline 32% in 2021.

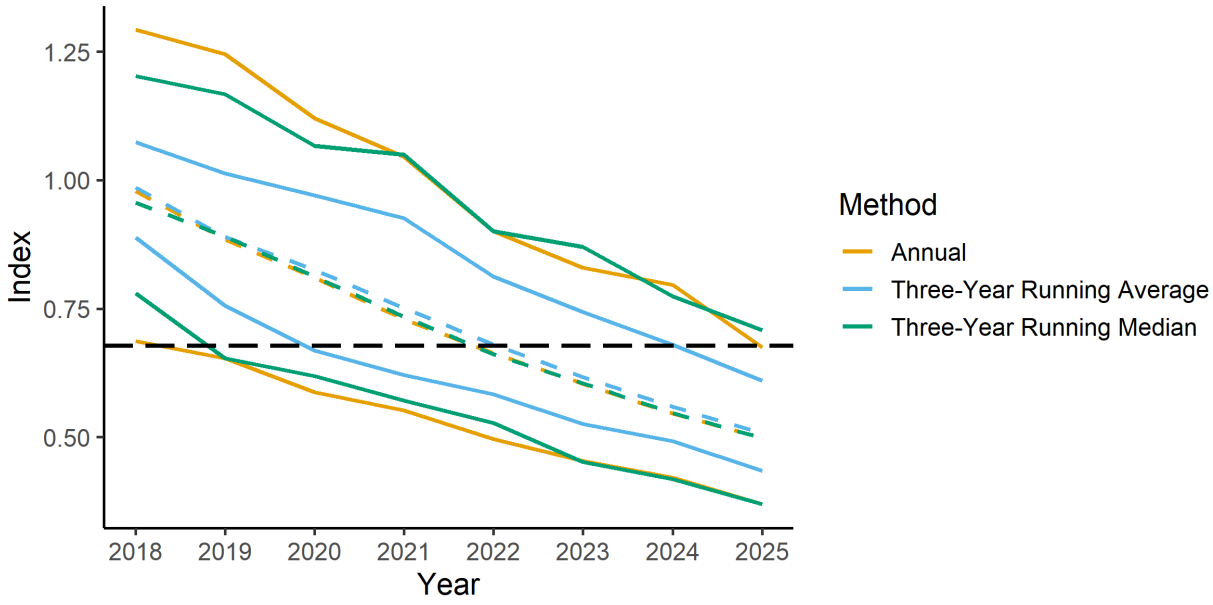

Figure 6. Distribution of index values by method from 1,000 simulations with the simulated population declining from the 2015-2017 running average. The dashed colored lines are the median index values across simulations, the solid color lines are the minimum and maximum index values across simulations, and the dashed black line is the trigger level. The simulated stock was projected to decline 32% in 2021.

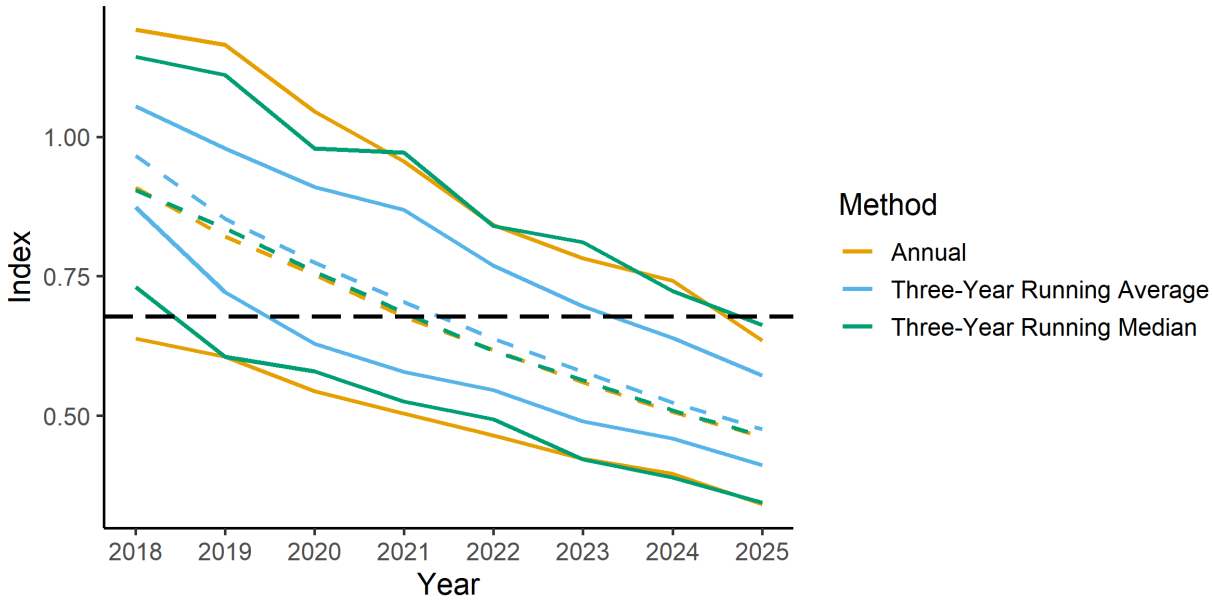

Figure 7. Distribution of index values by method from 1,000 simulations with the simulated population declining from the 2015-2017 running median. The dashed colored lines are the median index values across simulations, the solid color lines are the minimum and maximum index values across simulations, and the dashed black line is the trigger level. The simulated stock was projected to decline 32% in 2021.

Analysis of alternate minimum and maximum sizes as management options for Lobster Management Areas in the Gulf of Maine. Report to the ASFMC Lobster TC and PDT.

Burton Shank and Jeff Kipp

Sept. 9, 2021

The Lobster TC provided analysis to the ASFMC Lobster Board ahead of the Spring 2021 meeting with estimated outcomes to the Gulf of Maine / Georges Bank lobster fishery given the implementation of alternative management measures (min and max gauge size), including changes to total weight of lobsters landed, number of lobsters landed, Spawning Stock Biomass and Exploitation. The analysis included an attempt to examine how fisheries in different LMAs would be affected though the population simulation model was not re-parameterized for each LMA. In discussions, we concluded that the simulations for LMA1 were probably reasonably accurate because:

1. Many of the inputs for the simulations are taken from the 2020 stock assessment. Because the vast majority of the landings come from LMA1, the stock assessment parameters are essentially already tuned to the parameters of the LMA1 fishery.
2. LMA1 is primarily a recruitment-based fishery in inshore or nearshore habitats and, therefore, likely to be representative of the full stock model.

However, there was concern that the offshore fishery in Lobster Management Area 3 was considerably different from the full stock model and, thus, may have inaccurate outcomes due to a mis-parameterized simulation model. The parameters for the Outer Cape Cod fishery are probably somewhere between LMA1 and LMA3 as it consists of both a resident lobster population and a seasonally-migrating population, moving between inshore and offshore habitats.

To address these differences between the LMAs in population simulations, we performed the following:

1. For the LMA1 simulations, we used the stock assessment parameters as the inputs.
2. For LMA3 simulations, we attempted to manually tune the population simulation model to match the catch characteristics of the LMA3 fishery, under the assumption that a simulation model that could reproduce the catch characteristics of the fishery may more accurately project changes in the fishery given changing management measures.
3. For the OCC simulations, we ran two sets of simulations, using the input parameters for both LMA1 and LMA3 under the assumption that this bounds the dynamics we might see in OCC.

For all simulations, populations were initiated with zero abundance and run for 50 years with constant recruitment to allow population abundances and length comps to reach equilibrium. The equilibrium populations were then compared across the various legal selectivity scenarios to determine the effect of these different management alternatives.

For a simple, model-free analysis of the fishery catch composition for LMA1 and LMA3, we calculated the cumulative proportion of catch by weight at length by converting catch-at-size to weight-at-size and weighting for unequal sex ratios and seasonality of landings.

<u>LMA1 Simulations</u>

The input parameters for the LMA1 simulations were primarily drawn from the 2020 stock assessment. This includes the recruitment seasonality, length composition and sex ratio, growth model, gear, legal and conservation selectivities and mean estimated fishing mortality from the terminal years.

LMA1 Results

The cumulative catch weight-by-length curve indicates that the mean size of lobsters landed in the LMA1 fishery is within the smallest legal size bin (83-91mm, Figure 1). Nearly 90% of the catch are below 100mm CL and only about 2% of the catch are over 120mm CL. This supports the perspective that LMA1 landings involve a narrow range of small lobster sizes and is primarily a recruitment-dependent fishery.

Increasing the minimum legal size is projected to decrease the total number of lobsters landed but result in a net increase in yield-per-recruit (YPR) and total weight of catch (Table 1 and 2). However, the magnitude of these changes are small enough that they may not be detectable in the actual fishery given inter-annual variations in recruitment and catch. Changing the maximum legal size is projected to have very little effect on either catch number or weight.

Note that these are purely yield-per-recruit simulations so recruitment subsidies from increased SSB are not assumed in the calculations of catch weight or number so, thus, probably represent a conservative, lower bound. A less conservative upper bound would be the product of change in YPR and the change in SSB.

Increasing the minimum legal size is projected to result in large increases in SSB (Table 3). Minimum legal sizes that approach or exceed the size of maturity produce increasing returns on SSB as this allows a much larger portion of the population to reproduce at least once. Thus, increasing minimum legal size to 88mm is projected to result in a near doubling in SSB. Increasing maximum size can result in a large decrease SSB, particularly as the minimum legal size increases and more of the population survives to reach the current maximum legal size.

Increasing legal size would result in moderate to large decreases in exploitation as more of the stock becomes protected (Table 4) with exploitation decreasing by nearly 30% at a minimum legal size of 88mm. As with catch weight and number, changing maximum legal size has little effect on exploitation rates as these sizes represent a very small portion of the LMA1 population.

LMA3 Simulations

We first analyzed the port and sea sampling data provided for the 2020 benchmark assessment but constrained to LMA3 to estimate fishery characteristics, including catch size composition, catch sex ratio, and conservation selectivity (discarding due to egg-bearing or v-notch status).

We then specified the conservation selectivity from the biosamples and current legal selectivity appropriate for LMA3 in the population simulation model and iteratively tuned the following parameters:

1. Fully-selected fishing mortality, assumed constant across seasons
2. Recruitment sex ratio
3. Recruitment size composition for each sex.

For a given tuning run, the population simulation model was provided an updated set of input parameters and projected forward 25 year to reach equilibrium. The resulting catch composition from the model run was then compared to the average catch composition from the last five years of the biosamples to determine accuracy of the simulation models. Comparisons were conducted both visually for obvious lack-of-fit and by correlating the simulated and observed catch compositions. Correlations were performed on both the catch proportions and logit-transformed catch proportions, the latter to place more emphasis on length compositions that occur in smaller proportions.

Once the model was tuned to perform as well as might be expected, given minor, seasonal lack-of-fit that could not be easily resolved, the simulation model was then run with the tuned parameters for all combinations of proposed minimum and maximum size limits. We then summarized the outputs from the different simulations as values relative to the current minimum and maximum size regulations in place for LMA3.

Results

The cumulative catch weight-by-length curve indicates that 110 mm carapace length is the approximate mean size of lobsters landed in the LMA3 fishery (Figure 1). However, the cumulative curve is nearly linear from 90mm through 130mm, indicating lobsters across this size range are about equally important to the landings of this fishery. Lobsters less than about 92mm constitute the lower 10% quantile of landings while lobsters greater than 136mm constitute the upper 10% quantile with lower and upper quartiles around 98mm and 123mm respectively. This suggests that LMA3 landings include a broad range of lobster sizes, unlike typical inshore lobster fisheries that are primarily recruitment-driven.

The final tuned parameters included a quarterly fishing mortality of 0.1 (0.4 total annual mortality) and a 70:30 female to male recruitment sex ratio. The tuned recruit length compositions are bi-modal for both sexes, indicating recruitment to the fishery comes both from growth of smaller individual within the LMA and immigration from outside the LMA (Figure 2). With these compositions, about 80% of male recruitment and 30% of female recruitment is attributed to growth with the remainder of new individuals coming from immigration from outside the LMA.

Fitting the simulation length comps by manually tuning these parameters resulted in reasonably good fits to the observed length compositions (Figures 3, 4, and 5). Some lack-of-fit is still evident within seasons but this lack-of-fit is generally contrary to the lack-of-fit observed in other seasons, making it difficult to further improve the fit with just the parameters of interest. Correlations between observed and predicted compositions were 0.981 for simple proportions and 0.97 for logit-transformed proportions, suggesting both high and low proportion values for observed length comps are well matched by the simulation and we deemed this adequate to a basis to examine alternative management options.

Decreasing either the minimum or maximum legal size is projected to decrease total weight of catch (Table 5). However, contrary to the previous analysis for the full stock or inshore LMA's, changes to the maximum size have much larger impacts on landings than changes to the minimum size, particularly once the maximum size drops to between 140 and 150mm. Decreasing the maximum size from 171mm to 127mm is projected to decreases landings by about 30% while decreasing the minimum size from 90mm to 83mm is only projected to decrease landings by a couple of percent.

Decreasing the minimum legal size is projected to marginally increase the number of lobsters being landed but decreasing the maximum size marginally to moderately decreases the number of lobsters landed, producing neutral effects for many of the management options explored here (Table 6).

Decreasing maximum legal size from current regulations is projected to increase spawning stock biomass (SSB), possibly significantly, but decreasing minimum sizes would decrease SSB (Table 7). The greatest observed increase would be from holding the minimum size at current values but maximally decreasing maximum sizes, essentially narrowing the length range where lobsters are legal, which is estimated to result in a 64% increase in spawning stock. As above, changes to maximum size have bigger effects on SSB than changes to minimum sizes.

Decreasing maximum sizes would result in a decrease in exploitation but decreasing minimum sizes would increase exploitation (Table 8), countering each other and paralleling patterns observed for SSB. Because the calculation of exploitation is based on numbers of individuals rather than mass, decreasing minimum sizes have larger effects on exploitation than observed above for landings or SSB. Again, changes in exploitation increase rapidly with decreasing maximum sizes once the alternate maximum gauge size reaches a size that includes a significant portion of the catch for the LMA.

OCC Simulations

Due to time and data constraints, we did not attempt to tune a simulation model for OCC. Rather, we assume that population dynamics and fishing mortality rates in OCC are bounded by the conditions observed in the LMA1 and LMA3 fisheries. Thus, we ran simulations for OCC using the OCC legal size range with both the LMA1 and LMA3 parameterizations and present both sets of results with the understanding that results for OCC should fall between these extremes.

In general, outputs (catch weight, number, SSB and exploitation) show different responses for the LMA1 than the LMA3 parameterizations. LMA1 parameterizations tend to produce simulations that are very sensitive to changes in minimum legal size but not maximum legal size, while simulations with LMA3 parameterization only slightly sensitive to changes in minimum legal size but moderately to highly sensitive to changes in maximum legal size.

Total weight of landings is projected to be sensitive to changing minimum legal size with the LMA1 parameterization but be insensitive with the LMA3 parameterization (Table 9 A & B). With the LMA1 parameterization, decreasing minimum size is projected to decrease landings by ~5% while increasing legal size to 88mm would increase landings by 8%. Conversely, landings weight is insensitive to changes in maximum legal size for the LMA1 parameterization but sensitive to changes for the LMA3 parameterization.

Total catch number simulations shows trend similar to catch weight with the LMA1 parameterization being sensitive to changes in minimum size and the LMA3 parameterization sensitive to changes in maximum size (Figure 10 A & B). The pattern otherwise holds that larger minimum legal sizes result in lower catch numbers.

For SSB, the LMA1 parameterization is responsive to both changes in minimum and maximum legal size while the LMA3 parameterization is more sensitive to changes in maximum size (Figure 11 A & B). For example, decreasing minimum legal size to 127mm would increase SSB by between 24% and 65% for the LMA1 and LMA3 parameterizations, respectively. The ranges of minimum size tested in simulations

produce changes in SSB in the rage of -26% to +76% for the LMA1 parameterization and -1% to +6.8% for the LMA3 parameterization.

Decreasing minimum legal size produce increases moderate to small increases in exploitation (16% to 4% for LMA1 and LMA3 parameterizations, respectively, Figure 12 A & B). Either increasing minimum legal size or decreasing maximum legal size decrease serve to decrease exploitation with a maximum decrease of ~39% observed at the largest minimum and smallest maximum size and the LMA3 parameterization.

Discussion

There is a stark difference in cumulative landings by size between LMA1 and LMA3. LMA1 is clearly a recruitment-based fishery that would be highly sensitive to variations in recruitment. The LMA3 fishery, in contrast, is fishing a broad range of lobster sizes, and therefore ages, and is thus somewhat buffered from interannual variation in recruitment dynamics.

The LMA1 fishery is highly sensitive to changes in minimum legal size because of high exploitation rates on newly-recruited lobsters. The range of minimum sizes tested in simulations encompasses size range that represents the majority of landings for the inshore / nearshore fishery. Thus, changes to minimum size would dramatically change the length composition of the catch. Increases in the minimum size will have temporarily but significantly depress landing in the years immediately after are implemented but the benefits to SSB would be similarly immediate. Increasing the minimum legal size can add to the resilience of the fishery by marginally increasing the spread of effort across multiple year classes and significantly increasing SSB and egg production which may buffer the effects in any future change in productivity.

Generally, decreasing maximum gauge sizes have larger effects for LMA3 both relative to decreasing minimum sizes in LMA3 or for changing maximum sizes for the other LMAs. This matches the conclusions based on the cumulative catch curve (Figure 1) that showed that the LMA3 fishery lands a much broader size range of individuals than the inshore LMAs, with the upper portion of length compositions overlapping proposed alternative maximum sizes.

This analysis for LMA3 matches previous analysis conducted for inshore LMAs, finding that larger minimum legal sizes had positive effects across population parameters including higher catch weights, increased SSB and decreased exploitation. However, decreasing maximum legal sizes has mixed effects, decreasing immediate landings but increasing SSB, potentially by a larger margin. Because recruitment subsidies from increasing SSB are not included in this simulation, the net effect of these two opposing changes are uncertain. While decreasing maximum legal sizes would decrease immediate landings and make a larger portion of the population inaccessible to the fishery permanently (i.e. excluded lobsters won't grow into a legal size in the future), this increase in SSB may eventually produce a recruitment subsidy that could offset this loss of catch. The net effect would depend on multiple factors including the connectivity of the added SSB to larval settlement habitat and the migration patterns of these large females into adjacent habitats including inshore Gulf of Maine and international waters.

Finally, it is important to note the importance of large female lobsters that dominate the landings for much of LMA3. This both highlights the partial dependence of this fishery on immigration from adjacent habitats and adds uncertainty to this analysis. The growth and molt cycling of such large females is

poorly understood and are not particularly well informed in the current growth model. Thus, the tuned parameters may be biased by mis-specification of the growth model and results in this analysis may be sensitive to the growth model used in some cases. Interpretation of tuned parameters and confidence in the precise results of this analysis should be taken with some caution. However, the general patterns of changing catch, SSB and exploitation with changes in minimum and maximum legal sizes is consistent across this and previous analyses so may be treated with higher confidence.

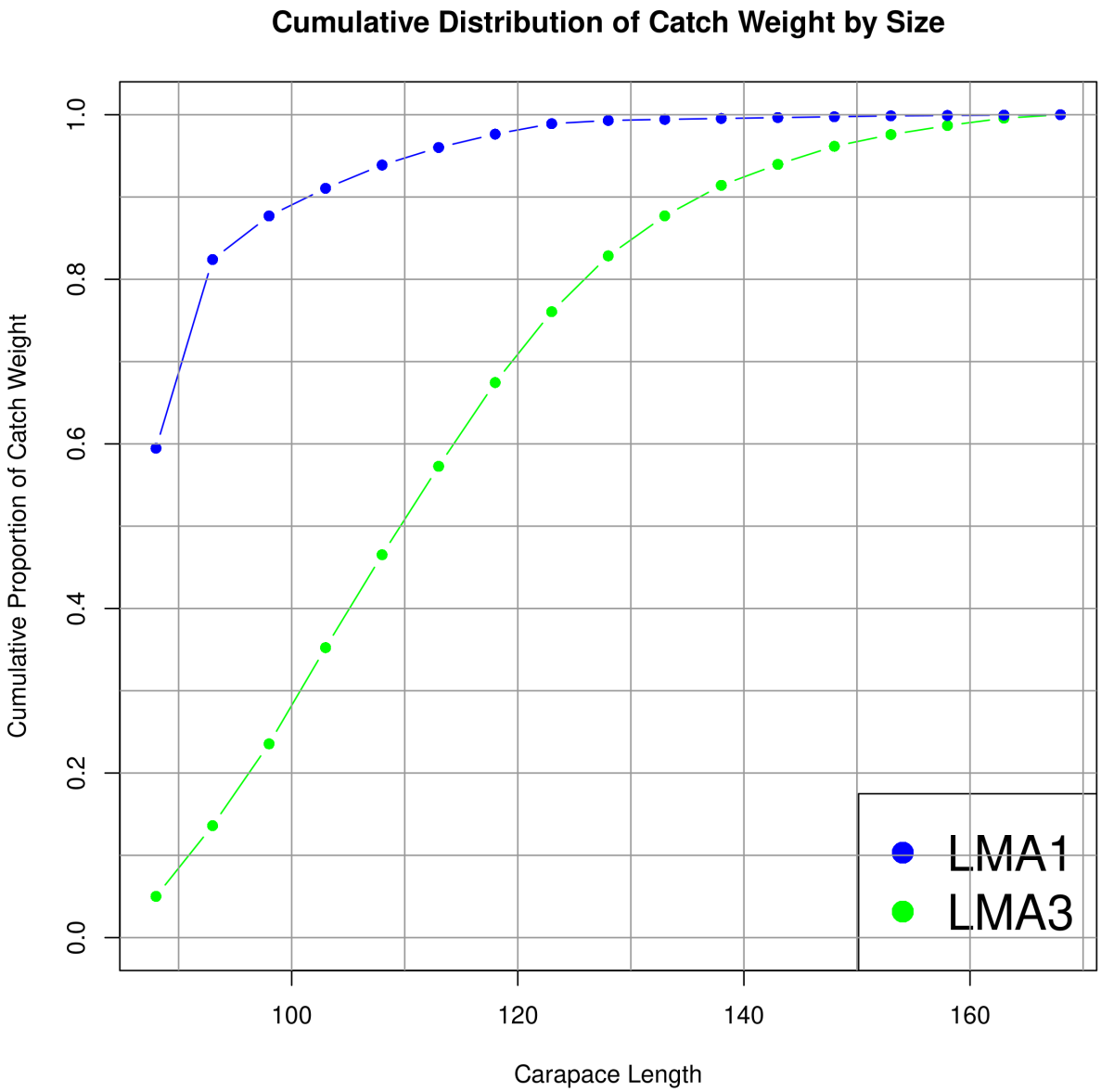

Figure 1. Cumulative proportion of catch weight by carapace length. To interpret, lobsters less than 90mm constitute approximately 8% of landings, while lobsters less than 130mm constitute approximately 85% of landings.

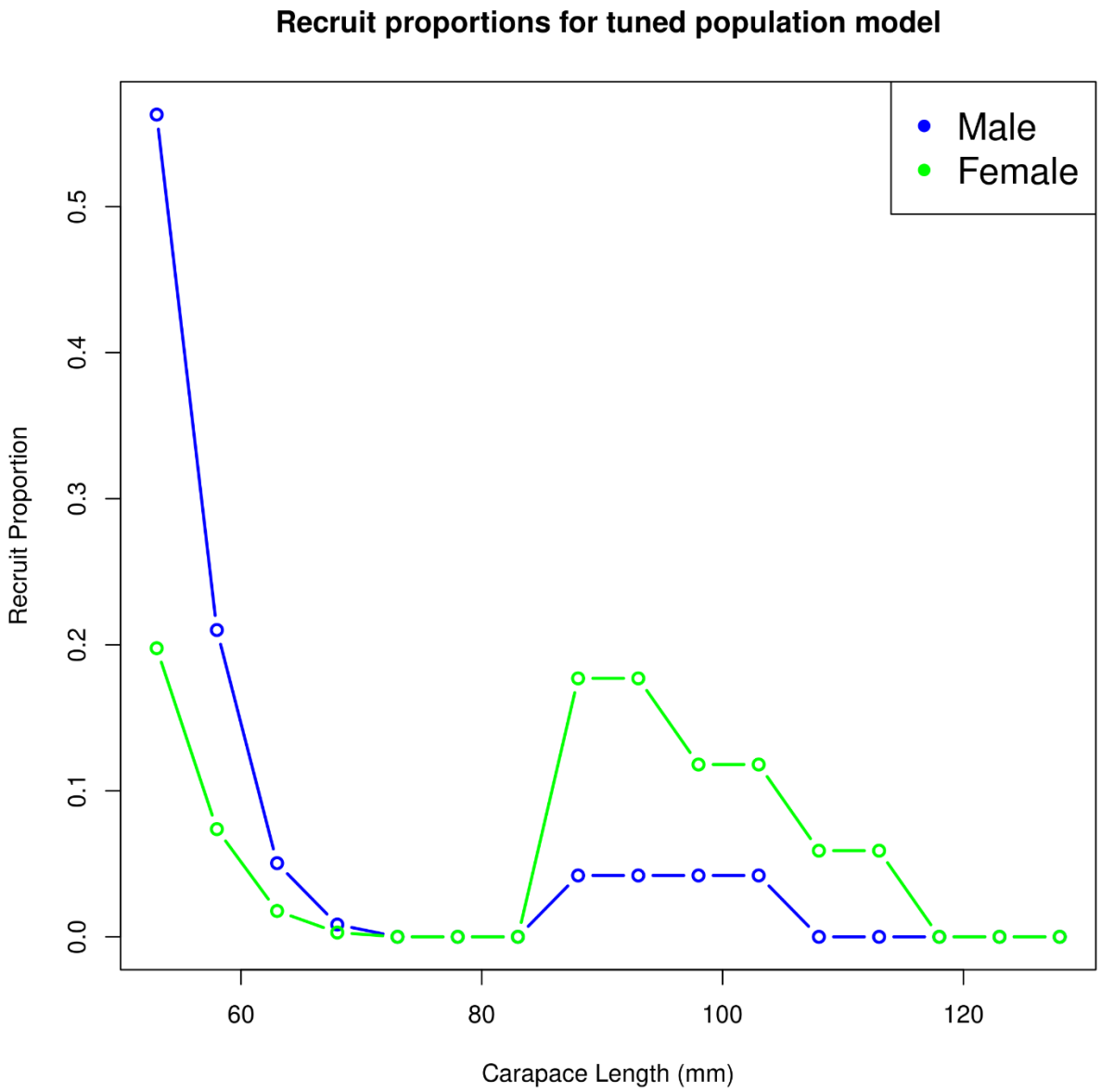

Figure 2. Tuned recruitment length compositions for the fitted model. The bi-modal length distribution suggests a combination of recruitment by growth (individuals <70mm) and migration (individuals >85 mm) with males primarily recruiting by growth and females primarily recruiting by migration as mature adults.

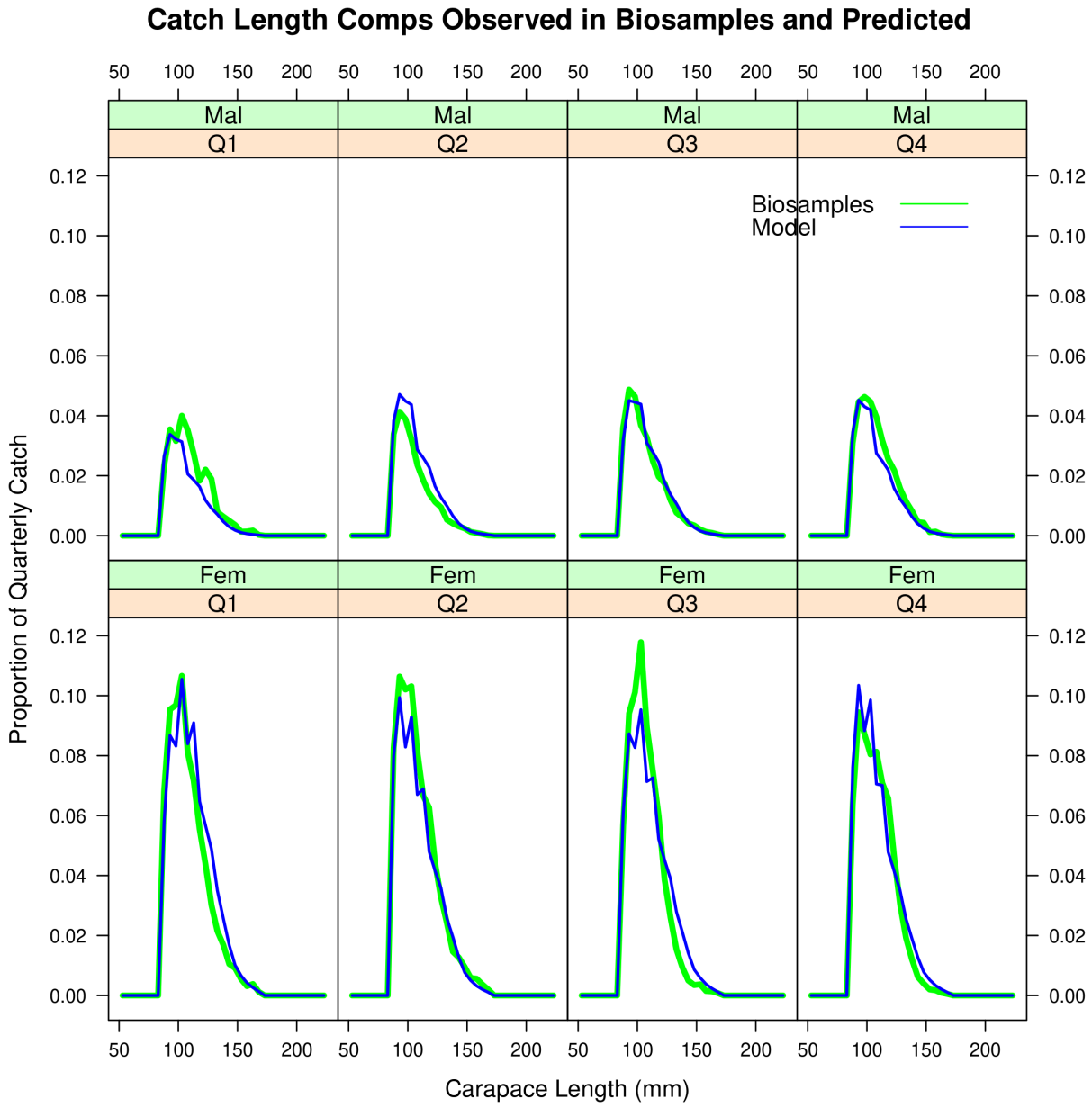

Figure 3. LMA 3 catch length compositions by sex and quarter based on biosampling and from the tuned population model.

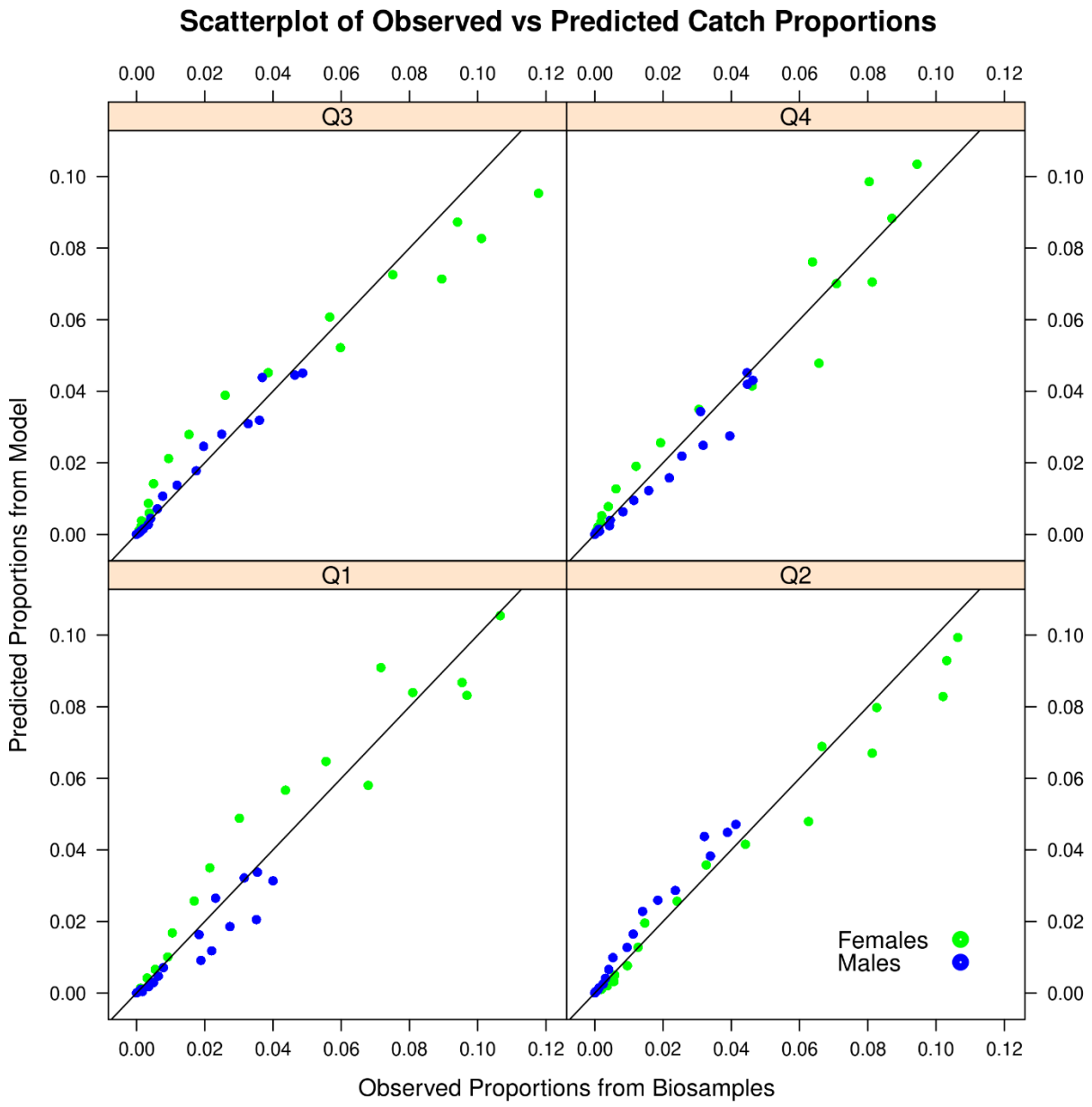

Figure 4. Relationship between length composition proportions observed in biosamples and predicted in the tuned population model by quarter and sex. The diagonal 1:1 line shows an ideal fit between the data sets.

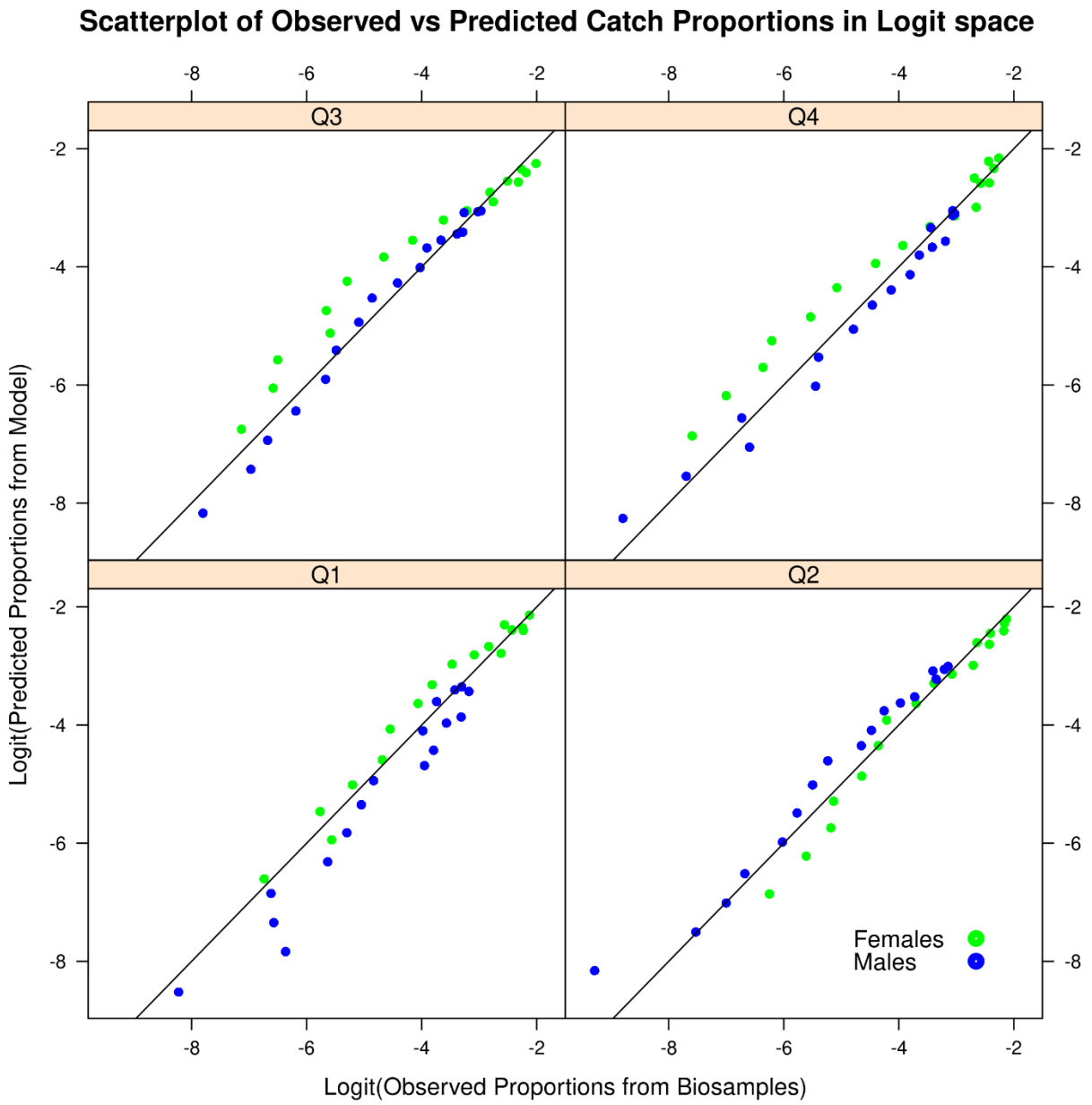

Figure 5. Relationship between length composition proportions observed in biosamples and predicted in the tuned population model by quarter and sex. Data points are logit-transformed to emphasize fit to lengths that occur in low proportions. The diagonal 1:1 line shows an ideal fit between the data sets.

Table 1. LMA1 projected relative changes to Weight of Landings resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	0.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
3.31in / 84mm	3.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
3.38in / 86mm	5.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
3.47in / 88mm	13.00%	14.00%	14.00%	14.00%	14.00%	14.00%	14.00%
3.53in / 90mm	14.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
3.594in / 91mm	16.00%	18.00%	18.00%	18.00%	18.00%	18.00%	18.00%

Table 2. LMA1 projected relative changes to Number of lobsters Landed resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	0.00%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%
3.31in / 84mm	-2.00%	-1.80%	-1.80%	-1.80%	-1.80%	-1.80%	-1.80%
3.38in / 86mm	-3.60%	-3.30%	-3.30%	-3.30%	-3.30%	-3.30%	-3.30%
3.47in / 88mm	-8.50%	-8.10%	-8.00%	-8.00%	-8.00%	-8.00%	-8.00%
3.53in / 90mm	-9.50%	-9.00%	-9.00%	-9.00%	-9.00%	-9.00%	-9.00%
3.594in / 91mm	-11.30%	-10.80%	-10.70%	-10.70%	-10.70%	-10.70%	-10.70%

Table 3. LMA1 projected relative changes to Spawning Stock Biomass resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

Minimum Gauge Size	Maximum Gauge Size: 5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	0.00%	-16.50%	-18.30%	-18.50%	-18.50%	-18.60%	-18.60%
3.31in / 84mm	19.00%	-1.40%	-3.60%	-3.80%	-3.90%	-3.90%	-3.90%
3.38in / 86mm	38.00%	13.90%	11.30%	11.00%	10.90%	10.90%	10.90%
3.47in / 88mm	98.00%	61.00%	56.90%	56.60%	56.50%	56.40%	56.40%
3.53in / 90mm	117.00%	75.80%	71.30%	70.90%	70.70%	70.70%	70.70%
3.594in / 91mm	151.00%	101.70%	96.40%	95.90%	95.70%	95.70%	95.60%

Table 4. LMA1 projected relative changes to Exploitation resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

Minimum Gauge Size	Maximum Gauge Size: 5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	0.00%	0.80%	0.80%	0.80%	0.80%	0.80%	0.80%
3.31in / 84mm	-8.50%	-7.70%	-7.60%	-7.60%	-7.60%	-7.60%	-7.60%
3.38in / 86mm	-14.40%	-13.60%	-13.50%	-13.50%	-13.50%	-13.50%	-13.50%
3.47in / 88mm	-29.40%	-28.40%	-28.30%	-28.30%	-28.30%	-28.30%	-28.30%
3.53in / 90mm	-32.10%	-31.00%	-30.90%	-30.90%	-30.90%	-30.90%	-30.90%
3.594in / 91mm	-36.50%	-35.40%	-35.30%	-35.20%	-35.20%	-35.20%	-35.20%

Table 5. LMA3 projected relative changes to Weight of Landings resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

Minimum Gauge Size	Maximum Gauge Size: 5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	-31.30%	-14.60%	-6.30%	-4.20%	-2.80%	-2.10%	-0.80%
3.31in / 84mm	-31.20%	-14.30%	-6.00%	-3.80%	-2.40%	-1.60%	-0.40%
3.38in / 86mm	-31.20%	-14.00%	-5.60%	-3.40%	-2.00%	-1.20%	0.00%
3.47in / 88mm	-31.10%	-13.60%	-5.00%	-2.70%	-1.30%	-0.50%	0.80%
3.53in / 90mm	-31.40%	-13.40%	-4.60%	-2.30%	-0.90%	0.00%	1.30%
3.594in / 91mm	-31.70%	-13.20%	-4.10%	-1.70%	-0.30%	0.60%	1.90%

Table 6. LMA3 projected relative changes to Number of lobsters Landed resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

Minimum Gauge Size	Maximum Gauge Size: 5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	-11.10%	-0.80%	3.20%	4.00%	4.50%	4.70%	5.00%
3.31in / 84mm	-12.20%	-1.70%	2.30%	3.20%	3.70%	3.90%	4.20%
3.38in / 86mm	-13.20%	-2.60%	1.50%	2.30%	2.80%	3.10%	3.40%
3.47in / 88mm	-15.20%	-4.20%	-0.10%	0.80%	1.30%	1.50%	1.80%
3.53in / 90mm	-17.10%	-5.90%	-1.70%	-0.80%	-0.30%	0.00%	0.30%
3.594in / 91mm	-19.50%	-7.90%	-3.60%	-2.60%	-2.10%	-1.90%	-1.50%

Table 7. LMA3 projected relative changes to Spawning Stock Biomass resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

Minimum Gauge Size	Maximum Gauge Size: 5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	56.00%	19.00%	3.00%	-1.50%	-3.80%	-5.20%	-6.90%
3.31in / 84mm	57.00%	20.00%	3.00%	-0.80%	-3.10%	-4.50%	-6.20%
3.38in / 86mm	59.00%	21.00%	4.00%	0.00%	-2.40%	-3.70%	-5.50%
3.47in / 88mm	61.00%	23.00%	6.00%	1.50%	-0.90%	-2.30%	-4.10%
3.53in / 90mm	64.00%	25.00%	8.00%	3.80%	1.40%	0.00%	-1.80%
3.594in / 91mm	69.00%	29.00%	11.00%	6.70%	4.20%	2.80%	1.00%

Table 8. LMA3 projected relative changes to Exploitation resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

Minimum Gauge Size	Maximum Gauge Size: 5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	-20.40%	-0.30%	8.40%	10.30%	11.40%	11.90%	12.50%
3.31in / 84mm	-22.30%	-2.40%	6.30%	8.10%	9.20%	9.70%	10.30%
3.38in / 86mm	-24.10%	-4.40%	4.10%	6.00%	7.00%	7.50%	8.10%
3.47in / 88mm	-27.40%	-8.10%	0.30%	2.20%	3.10%	3.70%	4.30%
3.53in / 90mm	-30.60%	-11.60%	-3.30%	-1.50%	-0.50%	0.00%	0.60%
3.594in / 91mm	-34.20%	-15.60%	-7.50%	-5.70%	-4.80%	-4.20%	-3.70%

Table 9. OCC projected relative changes to Weight of Landings resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell), based on (A) LMA1 or (B) LMA3 paramerizations.

A.

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	-5.60%	-5.00%	-4.90%	-4.90%	-4.90%	-4.90%	-4.90%
3.31in / 84mm	-2.70%	-2.00%	-1.90%	-1.90%	-1.90%	-1.90%	-1.90%
3.38in / 86mm	-0.90%	-0.10%	0.00%	0.00%	0.00%	0.00%	0.00%
3.47in / 88mm	6.60%	7.80%	8.00%	8.00%	8.00%	8.00%	8.00%
3.53in / 90mm	7.40%	8.80%	8.90%	8.90%	8.90%	8.90%	8.90%
3.594in / 91mm	9.30%	11.00%	11.20%	11.20%	11.20%	11.20%	11.20%

B.

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	-30.40%	-13.50%	-5.20%	-3.00%	-1.60%	-0.80%	0.00%
3.31in / 84mm	-30.30%	-13.20%	-4.80%	-2.60%	-1.20%	-0.40%	1.00%
3.38in / 86mm	-30.30%	-13.00%	-4.40%	-2.20%	-0.80%	0.00%	1.00%
3.47in / 88mm	-30.30%	-12.50%	-3.80%	-1.50%	-0.10%	0.70%	2.00%
3.53in / 90mm	-30.60%	-12.40%	-3.40%	-1.10%	0.40%	1.20%	3.00%
3.594in / 91mm	-30.90%	-12.10%	-2.90%	-0.50%	1.00%	1.90%	3.00%

Table 10. OCC projected relative changes to Number of lobsters Landed resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell), based on (A) LMA1 or (B) LMA3 paramerizations.

A.

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	3.40%	3.60%	3.60%	3.60%	3.60%	3.60%	3.60%
3.31in / 84mm	1.30%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%
3.38in / 86mm	-0.30%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
3.47in / 88mm	-5.40%	-4.90%	-4.90%	-4.90%	-4.90%	-4.90%	-4.90%
3.53in / 90mm	-6.40%	-5.90%	-5.90%	-5.90%	-5.90%	-5.90%	-5.90%
3.594in / 91mm	-8.30%	-7.70%	-7.70%	-7.70%	-7.70%	-7.70%	-7.70%

B.

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	-13.80%	-3.70%	0.10%	0.90%	1.40%	1.60%	1.90%
3.31in / 84mm	-14.80%	-4.60%	-0.70%	0.10%	0.60%	0.80%	1.10%
3.38in / 86mm	-15.80%	-5.50%	-1.50%	-0.70%	-0.20%	0.00%	0.30%
3.47in / 88mm	-17.70%	-7.10%	-3.10%	-2.20%	-1.70%	-1.50%	-1.20%
3.53in / 90mm	-19.60%	-8.70%	-4.60%	-3.70%	-3.20%	-3.00%	-2.70%
3.594in / 91mm	-21.90%	-10.70%	-6.40%	-5.50%	-5.00%	-4.80%	-4.50%

Table 11. OCC projected relative changes to Spawning Stock Biomass resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell), based on (A) LMA1 or (B) LMA3 paramerizations.

A.

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	-9.80%	-24.70%	-26.40%	-26.50%	-26.60%	-26.60%	-26.60%
3.31in / 84mm	7.00%	-11.10%	-13.10%	-13.30%	-13.30%	-13.30%	-13.30%
3.38in / 86mm	24.30%	2.70%	0.30%	0.10%	0.00%	0.00%	0.00%
3.47in / 88mm	78.20%	45.10%	41.50%	41.20%	41.10%	41.00%	41.00%
3.53in / 90mm	95.50%	58.50%	54.40%	54.00%	53.90%	53.90%	53.90%
3.594in / 91mm	126.20%	81.80%	77.00%	76.60%	76.50%	76.40%	76.40%

B.

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	63.00%	24.00%	7.00%	2.00%	-0.10%	-1.50%	-3.30%
3.31in / 84mm	64.00%	25.00%	7.00%	3.00%	0.60%	-0.70%	-2.60%
3.38in / 86mm	65.00%	26.00%	8.00%	4.00%	1.40%	0.00%	-1.80%
3.47in / 88mm	67.00%	27.00%	10.00%	5.00%	2.90%	1.50%	-0.30%
3.53in / 90mm	71.00%	30.00%	12.00%	8.00%	5.30%	3.90%	2.00%
3.594in / 91mm	75.00%	34.00%	15.00%	11.00%	8.30%	6.80%	4.90%

Table 12. OCC projected relative changes to Exploitation resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell), based on (A) LMA1 or (B) LMA3 paramerizations.

A.

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	15.60%	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%
3.31in / 84mm	5.80%	6.70%	6.80%	6.80%	6.80%	6.80%	6.80%
3.38in / 86mm	-1.10%	-0.10%	0.00%	0.00%	0.00%	0.00%	0.00%
3.47in / 88mm	-18.40%	-17.30%	-17.10%	-17.10%	-17.10%	-17.10%	-17.10%
3.53in / 90mm	-21.50%	-20.20%	-20.10%	-20.10%	-20.10%	-20.10%	-20.10%
3.594in / 91mm	-26.70%	-25.30%	-25.20%	-25.20%	-25.20%	-25.20%	-25.20%

B.

Minimum Gauge Size \ Maximum Gauge Size	5in / 127mm	5.5in / 140mm	6in / 152mm	6.25in / 159mm	6.5in / 165mm	6.75in / 171mm	None
3.25in / 83mm	-26.00%	-7.30%	0.80%	2.60%	3.60%	4.10%	4.60%
3.31in / 84mm	-27.70%	-9.20%	-1.20%	0.60%	1.50%	2.00%	2.60%
3.38in / 86mm	-29.40%	-11.10%	-3.20%	-1.40%	-0.50%	0.00%	0.60%
3.47in / 88mm	-32.50%	-14.50%	-6.70%	-5.00%	-4.10%	-3.60%	-3.00%
3.53in / 90mm	-35.40%	-17.70%	-10.00%	-8.40%	-7.50%	-7.00%	-6.50%
3.594in / 91mm	-38.80%	-21.50%	-13.90%	-12.30%	-11.40%	-10.90%	-10.40%

Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: **American Lobster Management Board**

FROM: **American Lobster Technical Committee**

DATE: **April 16, 2021**

SUBJECT: **Lobster Management Strategy Evaluation Options**

The Atlantic States Marine Fisheries Commission's Lobster Technical Committee (TC) was tasked by the American Lobster Management Board (Board) at the Commission's 2021 Winter Meeting to develop a set of prioritized options, timelines, and draft budgets to assist the Board in considering if management strategy evaluation (MSE) could be of use for management of the lobster fisheries. The TC met via webinar two times following the Winter Meeting to develop and prioritize these options. Options are outlined at the end of the memorandum, and include anticipated personnel needs, major budget line items, and timelines with milestones that would incur a substantial cost. However, the TC indicated that due to the highly interdisciplinary nature of MSE, additional perspectives are needed to provide a comprehensive work plan. Therefore, the TC has provided some recommendations for next steps for MSE development in addition to a recommended option to pursue. In addition to the line item cost estimates for each option, it is important to keep in mind that these costs do not include time and, consequently, indirect costs of several participants' time being allocated to participating in the MSE process (e.g., TC members); workloads would have to be prioritized and modified to accommodate the MSE workload. Competing workloads include the next lobster stock assessment (tentatively scheduled for 2025) and a potential Jonah crab stock assessment (tentatively scheduled for 2023), at a minimum. The details of the options provided at the end of the memorandum are considered preliminary and may change dependent on management goals and objectives (e.g., need to include anthropologists to address human dimensions objectives).

TC Recommendations on MSE Focus

The TC recommends the option for a two-phase MSE of the Gulf of Maine/Georges Bank (GOM/GBK) stock. The first phase of this option would provide an intermediate MSE at a coarser spatial resolution (i.e., stock level) that can be used to support a management framework in a relatively short timeframe, while also allowing time to build knowledge and tools to develop a subsequent, spatially-explicit MSE in phase two. This phased approach provides short term management guidance, while concurrently building the framework to expand to a spatially explicit approach in phase two. The extended timeframe may also allow several large-scale changes on the horizon for the lobster fishery to develop that could impact the lobster fishery and management goals, and thus better guide the cost and focus of incorporating spatial considerations explicitly into the MSE.

The TC believes MSE has potential for supporting a management framework for the Southern New England (SNE) stock, but believes a SNE-focused MSE is a lower priority option for several reasons. First, the scale of the fisheries in terms of fleet size and landings make the GOM/GBK stock a higher priority. Second, MSEs are generally focused on proactive management strategies for the future of the fishery, such as strategies intended to promote stock resilience, as opposed to reactive management strategies responding to stock conditions estimated in past stock assessments; the TC believes this further skews cost-benefit considerations of MSE in favor of the GOM/GBK stock. Third, the TC anticipates unique

challenges that would require more complex tools to provide a successful SNE MSE. These challenges include the dominant mixed-crustacean nature of the fishery, and the degree and rate at which the lobster population and fishery have changed in response to climate change. These factors require modeling aspects of both Jonah crab and lobster population dynamics and distributions, as well as spatial dynamics of the fishery in any MSE option. There is also a high likelihood for an MSE to require customized model development and data collection by stock (e.g., socio-economic indicators), making MSE focused on one stock at a time most feasible.

TC Recommendations on Next Steps

The TC recommends two next steps for development of an MSE. First, a formal process is recommended to develop management goals and objectives for the future of the lobster fisheries. A good example is the process used by the Ecosystems Management Objectives Workshop conducted by the Commission to guide development of ecological reference points for Atlantic menhaden. Objectives developed from such a process would be used to further develop an MSE work plan for lobster. The second recommendation is to form a steering committee for additional scoping and development of a comprehensive work plan with a detailed timeline, including: outreach components that are not anticipated to incur a substantial cost but are imperative to the success of an MSE (e.g., outreach at regularly scheduled industry association meetings), identification of funding sources for the MSE costs, and identification of personnel. Representation recommended for the steering committee includes Board members, TC members, Commission staff, members of the Commission's Committee on Economics and Social Sciences, industry stakeholders (preferably those with past experience in MSE), and members of the Commission's Assessment and Science Committee or Management and Science Committee with past experience in MSE. To be effective, the number of people in the steering committee should be limited to approximately a dozen members.

The TC discussed two ongoing developments that will potentially streamline the development of a formal MSE approximately a year from now. First, University of Maine researchers have submitted a proposal to the current round of the Sea Grant's American Lobster Research Program funding; while funding is uncertain, the project is to evaluate population dynamics simulations that will incorporate environmental effects into the biological modeling framework likely to be used in a lobster MSE. Second, work towards the conceptualization of an economics model and economic data gathering is being funded by NOAA Fisheries; this will support development of an economic model within the MSE modeling framework. These developments support the TC recommendation for the formation of a steering committee, with a start date for the MSE to be determined pending the results of the steering committee's findings.

GOM/GBK MSE Option (high priority)

Phase One - Stockwide GOM/GBK MSE

Purpose: Evaluate performance of management strategies at the stock level for the GOM/GBK stock in response to changes in recruitment with biological, fishery, and other socio-economic performance metrics.

Timeline: Three years. One modeler workshop in the first year and one modeler and one stakeholder workshop in years two and three.

Personnel and responsibilities:

- ASMFC Lobster TC – Stakeholder recruitment and engagement, data gathering, guidance on technical aspects of the MSE, report writing, and training for using the MSE tools in future updates

- ASMFC Staff – Project management, data gathering, workshop coordination, and report writing/publishing
- ASMFC Lobster Board Members – Define management goals and provide guidance on the direction of the MSE based on established goals, participate in stakeholder input gathering (webinars and workshops)
- Stakeholders – Identify desired objectives and outcomes of an MSE and provide guidance on the direction of the MSE, participate in stakeholder input gathering (surveys, webinars, and workshops)
- Biological modeler – Couple existing assessment model and operating model in a closed-loop model (six months to program, six months to modify based on workshop feedback and to provide training to TC members)
- Economics modeler – Develop an economics model guided by NOAA Fisheries' economic model conceptualization and data gathering work and couple with the assessment model and operating model in a closed-loop model.
- Professional facilitator - Facilitate stakeholder webinars and workshops, assist with stakeholder input survey development and analysis

Costs:

- Facilitator - $25,000
- Travel - $37,500 for two in-person stakeholder workshops (30 people), $22,500 for three in-person modeler workshops (12 people)
- Biological model development - $85,000 (one year postdoc with ASMFC indirect cost cap)
- Economic model development - $115,000 (one year full time or two six month full time contractors)
- Total - $285,000

Phase Two - Spatially-Explicit GOM/GBK MSE

Purpose: Evaluate performance of spatially-directed management strategies for the GOM/GBK stock triggered by external forces (e.g., whale interactions, wind farm development and operation, climate change).

Costs: Estimates to be developed during phase one.

Spatially-Explicit SNE MSE Option (low priority)

Purpose: Evaluate performance of spatially-directed management strategies for the SNE stock in response to changes in recruitment and diversification of the fishery (targeting lobster and Jonah crab) with biological, fishery, and other socio-economic performance metrics.

Timeline: Five years. One modeler workshop in years one through five. One stakeholder workshop in years two, four, and five.

Personnel and responsibilities:

- ASMFC Lobster TC – Stakeholder recruitment and engagement, data gathering, guidance on technical aspects of the MSE, report writing, and training for using the MSE tools in future updates

- ASMFC Staff – Project management, data gathering, workshop coordination, and report writing/publishing
- ASMFC Lobster Board Members – Define management goals and provide guidance on the direction of the MSE based on those pre-defined goals, participate in stakeholder input gathering (webinars and workshops)
- Stakeholders – Identify desired objectives and outcomes of an MSE and provide guidance on the direction of the MSE, participate in stakeholder input gathering (surveys, webinars, and workshops)
- Biological modeler – Conceptualize modeling of the spatial dynamics necessary to address stakeholder objectives by integrating lobster population distribution models along with Jonah crab population distribution and the resulting fleet dynamics. Identify biological and fleet spatial dynamics and resolution of each that can and cannot be modeled with available data to guide configuration of operating and assessment model. Couple assessment model and operating model in a closed-loop model (eighteen months to program, eighteen months to modify based on workshop feedback and provide training to TC members).
- Economics modeler – Conceptualize modeling of the economic processes driven by lobster landings, and interactions between lobster and Jonah crab effort and landings. Identify processes that can and cannot be modeled with available data to guide configuration of model. Couple economics model with the assessment model and operating model in a closed-loop model.
- Professional facilitator – Facilitate stakeholder webinars and workshops, assist with stakeholder input survey development and analysis
- ***Potentially others dependent on management and stakeholder objectives (e.g., reduce whale interactions would require a whale biologist and protected resource personnel)***

Costs:

- Facilitator - $42,000
- Travel - $56,250 for three in-person stakeholder workshops (30 people), $46,875 for five in-person modeler workshops (15 people)
- Spatially-explicit closed-loop model development: $255,000 (three year postdoc with ASMFC indirect cost cap)
- Economic model development: $345,000 (three year full time or two one and half year full time contractors)
- Total - $745,125 (minimum with potential for additional costs dependent on stakeholder objectives)

Atlantic States Marine Fisheries Commission

Atlantic Herring Management Board

October 18, 2021
12:45 – 1:15 p.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1.	Welcome/Call to Order (*C. Patterson*)	12:45 p.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from February 2021	12:45 p.m.
3.	Public Comment	12:50 p.m.
4.	Set Quota Period for the 2022 Area 1A Fishery *(E. Franke)* **Final Action**	1:00 p.m.
5.	Other Business/Adjourn	1:15 p.m.

The meeting will be held via webinar, click here for details.

MEETING OVERVIEW

Atlantic Herring Management Board
October 18, 2021
12:45 p.m. – 1:15 p.m.
Webinar

Chair: Cheri Patterson (NH) Assumed Chairmanship: 02/20	Technical Committee Chair: Renee Zobel (NH)	Law Enforcement Committee Representative: Delayne Brown (NH)
Vice Chair: Megan Ware (ME)	Advisory Panel Chair: Jeff Kaelin (NJ)	Previous Board Meeting: February 2, 2021
Voting Members: ME, NH, MA, RI, CT, NY, NJ, NMFS, USFWS (9 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from February 2021

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Set Quota Period for the 2022 Area 1A Fishery (1:00-1:10 p.m.) Final Action

Background

- In February 2021, the Board set specifications for the 2021-2023 fishing years. The 2022 sub-annual catch limit (sub-ACL) for Area 1A is 1,184 metric tons.
- Per Amendment 3, quota periods shall be determined annually for Area 1A.
- For the 2021 fishing year for Area 1A, the Board adopted a seasonal quota approach with 72.8% available June-September, and 27.2% available October-December.

Presentations

- Overview of Amendment 3 quota period system by E. Franke

Board actions for consideration at this meeting

- Set quota periods for the 2022 Area 1A Fishery.

5. Other Business/Adjourn (1:15 p.m.)

Atlantic Herring Technical Committee Task List

Activity Level: Medium

Committee Overlap Score: Medium

Committee Task List
While there are no Board tasks for the TC at present, there are several annual activities in which TC members participate, both through the Commission and NEFMC • Participation on ASMFC PDT • Participation on NEFMC PDT (currently working on Framework 7) • Summer/fall collection of spawning samples per the spawning closure protocol • Annual state compliance reports are due February 1

TC Members

Renee Zobel (NHFG – Chair), Kurt Gottschall (CT DMF), Dr. Matt Cieri (ME DMR), Micah Dean (MA DMF), Corinne Truesdale (RI DFW), Matthew Heyl (NJ DEP), Deirdre Boelke (NEFMC), Jonathan Deroba (NOAA NEFSC), Carrie Nordeen (NOAA)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

ATLANTIC HERRING MANAGEMENT BOARD

Webinar
February 2, 2021

These minutes are draft and subject to approval by the Atlantic Herring Management Board.
The Board will review the minutes during its next meeting.

TABLE OF CONTENTS

INDEX OF MOTIONS

1. **Move to approve agenda** by Consent (Page 1).

2. **Move to approve proceedings of October 2020** by Consent (Page 1).

3. **Move to approve the following Atlantic herring specifications for 2021-2023 as recommended by the New England Fishery Management Council contingent on the final rule being published by NOAA Fisheries:**

   For 2021:
   - **Annual Catch Limit (ACL) = 4,814 mt**
   - **Domestic Annual Harvest = 4,814 mt**
   - **Border Transfer = 0 mt**
   - **Area 1A Sub-ACL = 1,391 mt**
   - **Area 1B Sub-ACL = 207 mt**
   - **Area 2 Sub-ACL = 1,338 mt**
   - **Area 3 Sub-ACL = 1,877 mt**
   - **Fixed Gear Set-Aside = 30 mt**
   - **Research Set-Aside as % of Sub-ACLs= 3%**

   For 2022 and 2023:
   - **Annual Catch Limit (ACL) = 4,098 mt**
   - **Domestic Annual Harvest = 4,098 mt**
   - **Border Transfer = 0 mt**
   - **Area 1A Sub-ACL = 1,184 mt**
   - **Area 1B Sub-ACL = 176 mt**
   - **Area 2 Sub-ACL = 1,139 mt**
   - **Area 3 Sub-ACL = 1,598 mt**
   - **Fixed Gear Set-Aside = 30 mt**
   - **Research Set-Aside as % of Sub-ACLs= 0%**

   Motion by Megan Ware; second by Dennis Abbott (Page 3). Motion carried (Page 3).

4. **Motion to adjourn** by Consent (Page 7).

ATTENDANCE

Board Members

Megan Ware, ME, proxy for P. Keliher (AA)
Sen. David Miramant, ME (LA)
Cheri Patterson, NH (AA), Chair
G. Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Dan McKiernan, MA (AA)
Raymond Kane, MA (GA)
Rep. Sarah Peake, MA (LA)
Conor McManus, RI, proxy for J. McNamee (AA)
David Borden, RI (GA)
Matt Gates, CT, proxy for J. Davis (AA)
Bill Hyatt, CT (GA)
Jim Gilmore, NY (AA)
John McMurray, NY, proxy for Sen. Kaminsky (LA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Houghtaling (LA)
Allison Murphy, NMFS
Rick Bellavance, NEFMC, proxy for T. Nies

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Renee Zobel, Technical Committee Chair
Jeff Kaelin, Advisory Panel Chair
Delayne Brown, Law Enforcement Representative

Staff

Robert Beal
Toni Kerns
Maya Drzewicki
Kristen Anstead
Emilie Franke
Chris Jacobs
Jeff Kipp
Dustin Colson Leaning
Kirby Rootes-Murdy
Sarah Murray
Joe Myers
Julie Simpson
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Karen Abrams, NOAA
Bill Anderson, MD (AA)
Max Appelman, NOAA
Pat Augustine, Coram, NY
Vincent Balzano
Chris Batsavage, NC DENR
David Behringer, NC DENR
Peter Benoit, Ofc. of Sen. King, ME
Alan Bianchi, NC DENR
Deidre Boelke, NEFMC
Jeff Brust, NJ DEP
Patrick Cassidy
Matt Cieri, ME DMR
Heather Corbett, NJ DEP
Jessica Daher, NJ DEP
Maureen Davidson, NYS DEC
Justin Davis, CT (AA)
Jeff Deem
John DePersenaire, RFA
Russell Dize, MD (GA)
Chris Dollar
Julie Evans
Tony Friedrich, SGA
Pat Geer, VMRC
Shaun Gehan, Gehan Law
Emily Gilbert, NOAA

These minutes are draft and subject to approval by the Atlantic Herring Management Board.
The Board will review the minutes during its next meeting.

Guests (Continued)

Lewis Gillingham, VMRC
Bill Gorham, S. Shores, NC
Kurt Gottschall, CT DMF
Melanie Griffin
Emily Hall
Nathaniel Hancock, NC DENR
Brian Hardman
Jay Hermsen, NOAA
Peter Himchak
Harry Hornick, MD DNR
Asm. Eric Houghtaling, NJ (LA)
Rachel Howland, NC DENR
Bob Humphrey
Pat Keliher, ME (AA)
Rob LaFrance, Quinnipiac Univ
Wilson Laney
Mike Luisi, MD DNR
Chip Lynch, NOAA
Shanna Madsen, VMRC
Nichola Meserve, MA DMF
Roy Miller, DE (GA)
Kennedy Neill
Gerry O'Neill, Cape Seafoods
Derek Orner, NOAA
Patrick Paquette
Nick Popoff, FL FWS
Brandi Salmon, NC DENR
McLean Seward, NC DENR
David Sikorski, CCA
Melissa Smith, ME DMR
Somers Smott, VMRC
Pam Thames, NOAA
Chris Uraneck ME DMF
Beth Versak, MD DNR
Kelly Whitmore, MA DMF
Kate Wilke, TNC
Chris Wright, NOAA
Sarah York, NOAA
Erik Zlokovitz, MD DNR

The Atlantic Herring Management Board of the Atlantic States Marine Fisheries Commission convened via webinar on Tuesday, February 2, 2021, and was called to order at 4:00 p.m. by Chair Cheri Patterson.

CALL TO ORDER

CHAIR CHERI PATTERSON: Good afternoon, Atlantic Herring Management Board members. Welcome to the last part of our day. I'm Cheri Patterson, the Chair person; and I would like to call the meeting to order at this point in time.

APPROVAL OF AGENDA

CHAIR PATTERSON: With the Board's consent, I would like to approve the agenda. Are there any objections or edits to the agenda? If so, please raise your hand.

MS. TONI KERNS: I see no objections.

CHAIR PATTERSON: With no objections, the agenda is approved by consent. Thank you.

APPROVAL OF PROCEEDINGS

CHAIR PATTERSON: Next, I would like, with the Board's approval to seek consent to approve the proceedings from the October, 2020 meeting. Are there any objections or changes to the proceedings? If so, please raise your hand.

MS. KERNS: I see no objection.

CHAIR PATTERSON: Seeing no objections, the proceedings are approved by consent. Thank you. Next on the agenda we will be seeking public comment on items not on this agenda. If any public would like to make any comments, please raise your hand.

MS. KERNS: I see no hands up for comment.

SET THE SUB-ANNUAL CATCH LIMIT FOR THE 2021-2023 FISHING YEARS

CHAIR PATTERSON: Okay, thank you, Toni. The next part of the agenda is Setting the Sub-Annual Catch Limit for the 2021-2023 Fishing Years. In October the Board set seasonal allocations for the 2020 Area 1A fishery, but the Sub-ACL specifications were not available. The New England Fishery Management Council recommended specifications for 2021 through 2023, through Framework 8 to NOAA Fisheries in September of 2020, and those are in your briefing materials.

NOAA is still reviewing Framework 8; therefore, the Proposed Rule specifications have not been published yet. A Final Rule is expected to be published after this Board meeting. I would like to turn over to, I don't know if it's going to be Emilie or Kirby, to go through the Sub-Annual Catch Limit for the next two years.

MR. KIRBY ROOTES-MURDY: Thanks, Cheri, it's Kirby. I'll be giving the presentation.

CHAIR PATTERSON: Thank you.

MR. ROOTES-MURDY: All right. Thanks, Chair Patterson. As you just mentioned, I'm going to go through a brief presentation on herring specifications. As you mentioned, I want to give the Board warning that this presentation is nearly identical to the information presented at the annual meeting, so if you have a feeling of déjà vu that is why.

As mentioned, the Council through Framework 8 in September, 2020, it contains 2021 through 2023 specifications, and proposes a lower catch limit for Area 1A Sub-ACL for 2021, at 1,391 metric tons, and then for 2022 and 2023, it goes a little bit lower to 1,184 metric tons. Just to understand that we are dealing with a low Sub-ACL to begin with, but this is also a reduction from what it was in 2020, approximately a 58 percent reduction.

The 2023 specs may be revised following the 2022 management track assessment. As Chair Patterson

noted, Framework 8 is still under review by NOAA Fisheries. We've been in contact with their staff, and they had indicated that they are working hard to get an interim Final Rule out at some point, but obviously at this point we don't have a Proposed Rule that has been published yet from them.

Just a breakdown on this slide. We have the overfishing limit, acceptable biological catch, management uncertainty, annual catch limit, domestic annual harvest, and border transfers. The SSC initially considered a higher ABC for 2023 when looking at this table, but ended up recommending that the Council maintain the 2022 ABC of 8,767 metric tons as part of the Framework.

The Council agreed to do so for two primary reasons. The lower ABC helps reduce scientific uncertainty, and both the SSC and the Council viewed the 2023 ABC as a place holder, so 2023 specifications will likely be updated as mentioned, based on the 2022 management track assessment results.

You can see here the acceptable biological catch in 2021 is 9,483 metric tons, and then for the next two years it is set slightly lower at 8,767 metric tons. Under that you have the management uncertainty that has held static for both 2021 and then the next two years at 4,669 metric tons. When it comes to the annual catch limit, which again is subdivided by these different areas, for 2021 that is 4,814 metric tons, and then for 2022 and '23 it is 4,098 metric tons.

It's always good to note that that number can change, depending on the New Brunswick weir fishery, and that is dependent on their catch through October 1. That could be adjusted and more landings can be added to the Area 1A Sub-ACL, depending on how that fishery performs. Getting to specifications by area, in particular Area 1A, Sub-ACL is 28.9 percent of that total ACL.

As I've mentioned in the previous slide it's a decrease in 2021, and a further decrease the next two years. This also includes in this breakdown the fixed-gear set aside of 30 metric tons. Also, important to note that there is a research set aside that at least was recommended by the Council back in September, a 3 percent for 2021, but that for 2022 and 2023, that is currently set at 0. That's on the next slide. In terms of how the Sub-ACL is divided up for the fishing season. In October, based off of those specifications that the New England Council set, the Board set the seasonal allocations for this fishing season in 2021, with 72.8 percent of the Sub-ACL available from June through September, and 27.2 percent allocated from October through December.

For Board action for consideration today, the Board can consider approving the Atlantic herring specifications for these three years, as recommended by the Council, contingent on a Final Rule being published by NOAA Fisheries. With that I will take any questions.

CHAIR PATTERSON: Are there any questions for Kirby from the Board?

MS. KERNS: I see no hands raised.

CHAIR PATTERSON: Okay, is there any questions for Kirby from the public?

MS. KERNS: No hands.

CHAIR PATTERSON: Thank you. I would like to ask the Board if there are any members that would like to make a motion to set the 2021 to 2023 Sub-ACL specification, pending release of the Proposed Rule by NOAA Fisheries.

MS. KERNS: You have Megan Ware and Dennis Abbott with their hands up.

CHAIR PATTERSON: Okay, I will go with Megan first.

MS. MEGAN WARE: Madam Chair, I am happy to make that motion, and I think the language that

Kirby had on his second to last slide would be a perfect motion, if that can be put on the screen.

CHAIR PATTERSON: Thank you, Megan. Dennis, was this also going to be your motion?
MR. DENNIS ABBOTT: Yes, I'll second the motion, and I was wondering in the previous slide if that was the last herring.
CHAIR PATTERSON: Say that again, Dennis, if the previous slide what?

MR. ABBOTT: Was it the last herring in the world.

CHAIR PATTERSON: All right, Megan, would you like to read off the motion?

MS. WARE: Sure. Move to approve the following Atlantic herring specifications for 2021-2023 as recommended by the New England Fishery Management Council, contingent on the Final Rule being published by NOAA Fisheries. For 2021 Annual Catch Limit equal to 4,814 metric tons, domestic annual harvest equal to 4,814 metric tons, border transfer equals 0. Area 1A Sub-ACL, 1,391 metric tons, Area 1B Sub-ACL, 207 metric tons, Area 2 Sub-ACL, 1,338 metric tons, Area 3 Sub-ACL, 1,877 metric tons, fixed gear set-aside, 30 metric tons, research set-aside, as a percent of a Sub-ACL 3 percent, and then for 2022 and 2023, annual catch limit 4,098 metric tons, domestic annual harvest, 4,098 metric tons, border transfers 0 metric tons. Area 1A Sub-ACL, 1,184 metric tons, Area 1B Sub-ACL, 176 metric tons, Area 2 Sub-ACL, 1,139 metric tons, Area 3 Sub-ACL, 1,598 metric tons, fixed gear set-aside 30 metric tons, research set-aside as a percent of Sub-ACL, 0 percent.

CHAIR PATTERSON: Thank you, Megan, so the motion as read by Ms. Ware and Mr. Abbott has seconded that motion. Is there any discussion among the Board members?

MS. KERNS: There are no hands raised. Oh, I'm in the wrong spot, there are still no hands raised.

CHAIR PATTERSON: Thank you, is there any comments from the public?

MS. KERNS: I see no hands raised.

CHAIR PATTERSON: Thank you, Toni, so is there any opposition to this motion from the Board members?

MS. KERNS: I see no hands raised.

CHAIR PATTERSON: The motion is passed by consent unanimously.

UPDATE ON AMENDMENT 8, AND CONSIDER IMPACTS TO THE AREA 1A FISHERY

CHAIR PATTERSON: The next agenda item is an update on Amendment 8, and we want to consider the impacts to the Area 1A Fishery. Amendment 8 was initiated by the Council in 2014. It specifies changes to the Atlantic herring management.

Including the establishment of a long term acceptable biological catch control rule, and the prohibition of midwater trawl gear inshore of 12 nautical miles from Canada to Connecticut, and inshore of 20 nautical miles off the east coast of Cape Cod. NOAA Fisheries recently published a Final Rule on the Amendment, with the effective date going on February 10, 2021. Again, this is in your briefing materials. Kirby, if you can give us an update, please.

MR. ROOTES-MURDY: Absolutely, thank you, Chair Patterson. As mentioned, here is a presentation just giving you all a brief update on Amendment 8. To review background, the New England Fishery Management Council initiated Amendment 8 in 2015, with the document's purpose being to establish, first off, the long term acceptable biological catch control rule for Atlantic herring that explicitly accounts for herring's role in the ecosystem.

The second important part of this Amendment is to address the biological and ecological requirements of Atlantic herring. Specific to this second item, the

documents intent was to, as Cheri mentioned, to address potential localized depletion and user group conflict. I will explain this further later on, but the Amendment addresses this through implementing an inshore midwater trawl restricted area.

As mentioned, the final environmental impact statement was approved by the Council in 2018, and NOAA Fisheries published a Final Rule last month with an effective date of February 10, 2021. In terms of the ABC Control Rule. When the biomass is greater than 50 percent of spawning stock biomass over spawning stock biomass MSY, the maximum fishing mortality rate allowed is 80 percent of FMSY, so 20 percent of FMSY is left explicitly for herring predators. Under this policy, as the biomass declines, fishing mortality declines linearly, and its biomass falls below 10 percent of SSB over SSBMSY, then the ABC is set to 0, with no fishery allocation.

The Control Rule sets the ABCs for a three-year period, but it allows the ABC to vary year to year, in response to projected changes in biomass. As mentioned, the goal of the restricted area is to minimize local depletion. The midwater trawl gear was the target of the restriction, because they are more mobile, and capable of fishing in offshore areas, unlike other gear types, such as purse seine or fixed gear.

The main focus was on the associated user group complex between midwater trawl, versus pretty much everyone else, in particular predator fisheries in the Gulf of Maine and southern New England, as well as ecotourism, and the tuna fishery that takes place in Area 1A during the fall. The midwater trawl restricted area is inshore 12 nautical miles from the U.S./Canadian border to the Rhode Island/Connecticut border, and inshore 20 nautical miles off the east coast of Cape Cod.

Vessels are able to transit through this area, but gear must be stowed. Now, there is an exception to this, where permitted vessels fishing under the Research Set-Aside Program with an exempted fishing permit, are allowed to fish in this area. As noted, up to 3 percent was recommended by the Council to be set aside for those types of gears to be able to fish under the RSA, and in turn there could be midwater trawl vessels that fish under that this year potentially.

The only other thing I wanted to remind the Board of is that there is a prohibition of midwater gear in Area 1A from June 1 through September 30. Access starts for this gear type starting October 1. This slide shows the restricted area relative to the management areas. Ahead of this meeting staff reached out to the states of Maine, New Hampshire, Massachusetts and Rhode Island regarding the potential impacts of this rule change on their state-only permitted midwater trawl vessels.

Maine and New Hampshire do not allow midwater trawling in state waters, and Massachusetts, while not having an explicit ban, does not foresee any issues or loopholes with state-only permitted vessels fishing in this area, as it previously had been a rare occurrence. Rhode Island is in the process of implementing a midwater trawl prohibition in state waters for non-federally permitted vessels through their regulatory process. With that, that concludes my presentation and I'll take any questions. Thank you.

CHAIR PATTERSON: Thank you, Kirby, is there any questions from the Board?

MS. KERNS: I do not see any hands raised.

CHAIR PATTERSON: Thank you, are there any questions from the public?

MS. KERNS: No hands are raised

UPDATE ON THE NEW ENGLAND FISHERY MANAGEMENT COUNCIL AND COMMISSION COORDINATION DISCUSSIONS

CHAIR PATTERSON: Okay, well let's move on to the next agenda item on Updating us on the New

England Fishery Management Council and Commission Coordination Discussions. These discussions were initiated, due to concerns raised in recent years that management alternatives considered by the Commission may have been inconsistent with the federal Atlantic herring FMP, and Council comments on specific measures.

They may not have been taken into appropriate consideration by the Commission. A Technical Workgroup of the Commission Plan Review Team, and Council Plan Development Team members that was Co-Chaired by the Commission Herring Board and the Council Herring Committee Chairs, met in 2020 to discuss a proposed list of the shared management responsibilities for review by the leadership. This is an update on those discussions at the leadership level. Bob, would you like to hop on?

EXECUTIVE DIRECTOR ROBERT E. BEAL: Yes, I'll give it a shot, Madam Chair, if that's okay. I pretty much realize this is the last agenda item on a long day, so I'll go very quickly. I think the background that Cheri provided was great. You know just as additional background; the membership of the Leadership Group is the Chair and Vice-Chair and Executive Directors of the New England Council and ASMFC.

As Cheri said, you know the idea is to improve coordination and address some of the jurisdictional concerns that have been coming up, and review the division of labor, is what I call it, document that the Technical Working Group pulled together. The group held a couple calls and ultimately ended up with a number of legal questions about how the Magnuson-Stevens Act and the Atlantic Coastal Act interacted, and the responsibilities and abilities of the state and federal government to work together.

The Leadership Group asked Tom Nies and I, as the two Executive Directors to meet with Chip Lynch and Mitch MacDonald, two of the attorneys from the Regional Office, and talk through the provisions of the Magnuson-Stevens Act and the Atlantic Coastal Act, and how those two laws interact and overlapped, and where there was clear direction, and where there is some room to operate.

A number of areas there are very, sort of what we are calling clear and bright lines between the law that prohibited certain things from occurring in federal waters, if they were mandated through interstate FMP. However, there were, you know for example, you know states cannot implement management measures that undermine the federal FMP. However, the states could implement measures that complemented a federal FMP, even if those measures extended out in the federal waters. There seem to be an ability to work there.

There is a little bit of interpretation there of what complements and what undermines the federal plan. While there is some guidance about undermining federal authorities, there is still some room for discussion between the Leadership Group, or that the Leadership Group still needs to have. The Leadership Group has not met following the call that I had with Tom Nies and the two attorneys. That call took place a couple months ago, we just haven't gotten back together as a Leadership Group. We will get back together, hopefully sooner rather than later, and talk through the division of responsibilities, and really if the Leadership Group working with the membership of the Commission and Council can come up with what they want this bigger herring management program to look like. I think there is ample flexibility in both of the laws to allow the Commission and Council to implement those provisions. We just have to really, what do we want the coordination to look like?

Then kind of go back and see what we can do and what flexibility we do have under the existing laws, because there is some flexibility, but there also is some very clear direction about what the Commission can and can't so in federal waters. The bottom line, Madam Chair, is we need to get the Leadership Group back together, and react to the guidance and input that we got from the attorneys,

and then bring something back to the Council and Commission, hopefully as I said, sooner rather than later.

CHAIR PATTERSON: Thank you, Bob. Does anybody in the Board have further questions for Bob?

MS. KERNS: I don't have any hands raised, Cheri.

CHAIR PATTERSON: Thank you again, Bob. Next, I would like to move on to Other Business. Before I ask the Board members if they have other business, we're going to hear from Kirby on a small presentation of the 2021 New England Fishery Management Council Herring Work Priorities.

MR. ROOTES-MURDY: Thank you, Chair Patterson. Yes, I'll be brief with this. My colleague over at the Council, Deirdre, she shared this presentation with me, so I'll go through this, and if she's got anything else to add, definitely feel free to chime in Deirdre. As outlined on the screen, the four main work priorities are the continued development of Framework 7.

This is an action to help protect spawning of Atlantic herring on Georges Bank. The second is to develop rebuilding plan for Atlantic herring, because it's been declared overfished. The third is to review and potentially adjust herring accountability measures, and that includes potentially adjusting how the Sub-ACL overages are accounted for in the carryover provision.

Then the last one is to coordinate to what Bob was mentioning, more with the Commission and the Mid-Atlantic Council. Obviously, the timing is uncertain on these, but issues may be combined into one large action or several separate actions. Then in terms of the Framework 7, just so the Board has a little bit more understanding of what this is proposing.

There is a number of alternatives under consideration right now, they range from no action, so no closures on Georges Bank, to spawning closures that include a two-area option, a two-season option, 6 and 8 weeks, and then options for which vessels are restricted. It's still under development, so this may include different types of vessels by gear type.

It's reviewing the measures adopted to evaluate their effectiveness. This is an effort to try to determine how effective previous spawning protections have been around these areas. The last is a spawning tolerance, where between 10 to 30 percent allowance of landed herring in spawning condition. This would be similar to the GSI Program that the Commission used in the early 2000s. With that I will take any questions, or if Deirdre has anything else to add.

CHAIR PATTERSON: Deirdre, do you have anything else you would like to add?

MS. DEIRDRE BOELKE: No, all set, great job, Kirby.

CHAIR PATTERSON: Thank you, is there any questions from the Board members for Kirby?

MS. KERNS: I don't see any hand raised, Cheri.

CHAIR PATTERSON: Is there other business that the Board members would like to bring forward?

MS. KERNS: I have Dennis Abbott.

CHAIR PATTERSON: Go ahead, Dennis.

MR. ABBOTT: Thank you, Madam Chairperson. It's kind of early to be thinking about it, but probably a question more directed towards Maine. We're going to have the sum total of about 1,000 tons available in the first segment or trimester, however it's going to be.

Is it too early to start thinking about how we're going to limit the fishery as to days and wind and whatever, or are we going to be having meetings every couple of days, because we're approaching

our limit? It's going to be, I think more difficult this year, as the quota keeps going down, down, down. I don't know if Megan had any thoughts. But I understand it's early.

CHAIR PATTERSON: I agree, Dennis, it is early, go ahead, Megan.

MS. WARE: Hi Dennis, yes. I haven't given it too much thought yet, to be honest. But I agree, it's going to be really challenging this year, because I think you're right. I think we're going to be bumping up against the limits really quickly. I need to think more about what that means both in trip limits and phase-out. But yes, it will be very challenging.

MS. KERNS: Madam Chair, would you want to have some days-out calls earlier, because of this challenge, or is our normal schedule, will that work for you all?

CHAIR PATTERSON: The normal schedule is June, is that correct?

MS. KERNS: We usually have the first one more April, towards the end usually, but sometime in April.

CHAIR PATTERSON: Well, that gets us past the whale concerns that we all have to focus on for a while. Megan, are you opposed to having the meeting in April? Will that give you time?

MS. WARE: I think April is fine. I'm fine with our normal schedule. Unfortunately, I don't think there is any like rabbit tricks, or rabbit out of the hat tricks we're going to pull out on this one. I think it's just a really tough situation. I don't think there are any miracles that I'm foreseeing.

CHAIR PATTERSON: Dan. Did you want to weigh in for Mass?

MR. DANIEL McKIERNAN: I think April is fine.

CHAIR PATTERSON: Okay, we'll start with organizing a meeting in April, Toni.

MS. KERNS: Thank you, will do.

ADJOURNMENT

CHAIR PATTERSON: Is there any other business being brought before the Board?

MR. ABBOTT: Motion to adjourn.

CHAIR PATTERSON: There you go.

MS. KERNS: No new hands were raised.

CHAIR PATTERSON: Thank you, is there a second to the motion?

MS. KERNS: Ray Kane.

CHAIR PATTERSON: Meeting is adjourned, thank you everybody, have a good evening.

(Whereupon the meeting convened at 4:33 p.m. on Tuesday, February 2, 2021.)

2021 Plan Updates

Atlantic Large Whale Take Reduction Plan Changes for Lobster and Jonah Crab Fisheries

The following changes have been made to the Atlantic Large Whale Take Reduction Plan (Plan) as of August 2021. All Plan requirements not listed here remain in place and should continue to be adhered to.

CHANGES TO LOBSTER AND JONAH CRAB TRAP/POT CLOSURE AREAS

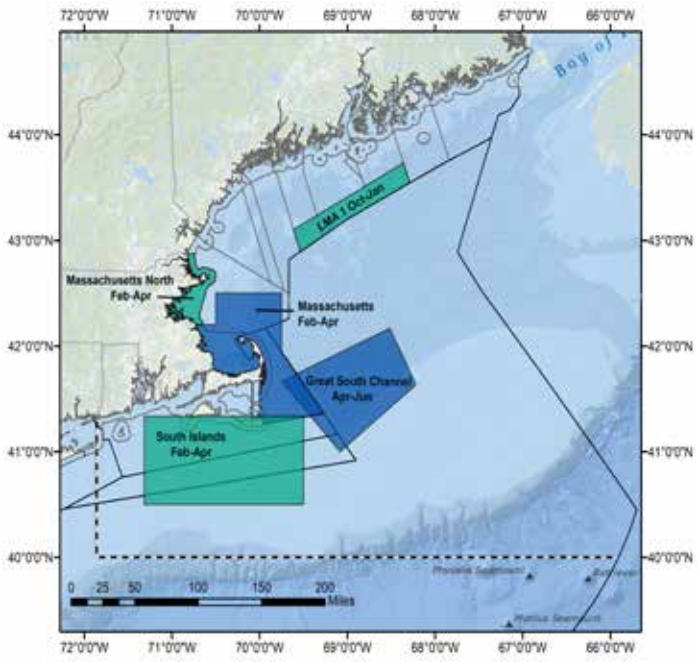
EFFECTIVE OCTOBER 18, 2021

All new and existing closures are modified from restricting all trap/pot fishing to only restricting trap/pot fishing that uses persistent (traditional) buoy lines, except for federal waters in the Outer Cape Lobster Management Area (LMA), which remains closed consistent with the Atlantic States Marine Fisheries Commission (ASMFC) American lobster Interstate Fishery Management Plan. Gear that does not use persistent buoy lines, such as "ropeless" gear that retrieves trap/pot trawls when the vessel is on-site, is now allowed in these areas for research purposes with appropriate state and federal permits (see below).

EXEMPTED FISHING PERMITS

Exempted Fishing Permits (EFPs) are issued for activities in support of fisheries-related research. There are studies underway to develop fishing methods that do not use buoy lines to retrieve gear and alert other fishermen to the presence of gear on the bottom. Results of this work would enable the fishing industry to operate in areas where persistent buoy lines are prohibited. To participate in this research, federally permitted vessels must operate under EFPs.

If you are interested in testing ropeless gear or have another idea for research related to reducing the use of persistent buoy lines, please contact your NOAA Fisheries regional office. You may also need to obtain authorization from the state that issues your fishing permit.



For EFP Questions contact:

- Greater Atlantic Region (Maine to Virginia): (978) 281-9315 or nmfs.gar.researchpermit@noaa.gov.
- Southeast Region (North Carolina to Florida): (727) 824-5305

NEW RESTRICTED AREAS

LMA1 Restricted Area, Offshore Maine LMA1 zones C/D/E:

Closed to buoy lines October-January

Longitude	Latitude
-69° 36.77' W	43° 06.00' N
-68° 21.60' W	43° 44.00' N
-68° 17.27' W	43° 32.68' N
-69° 32.16' W	42° 53.52' N
-69° 36.77' W	43° 06.00' N

South Island Restricted Area:

Closed to buoy lines February-April

Longitude	Latitude
-71° 19.00' W	41° 20.00' N
-69° 30.00' W	41° 20.00' N
-69° 30.00' W	40° 30.00' N
-71° 19.00' W	40° 30.00' N

Massachusetts Restricted Area North:

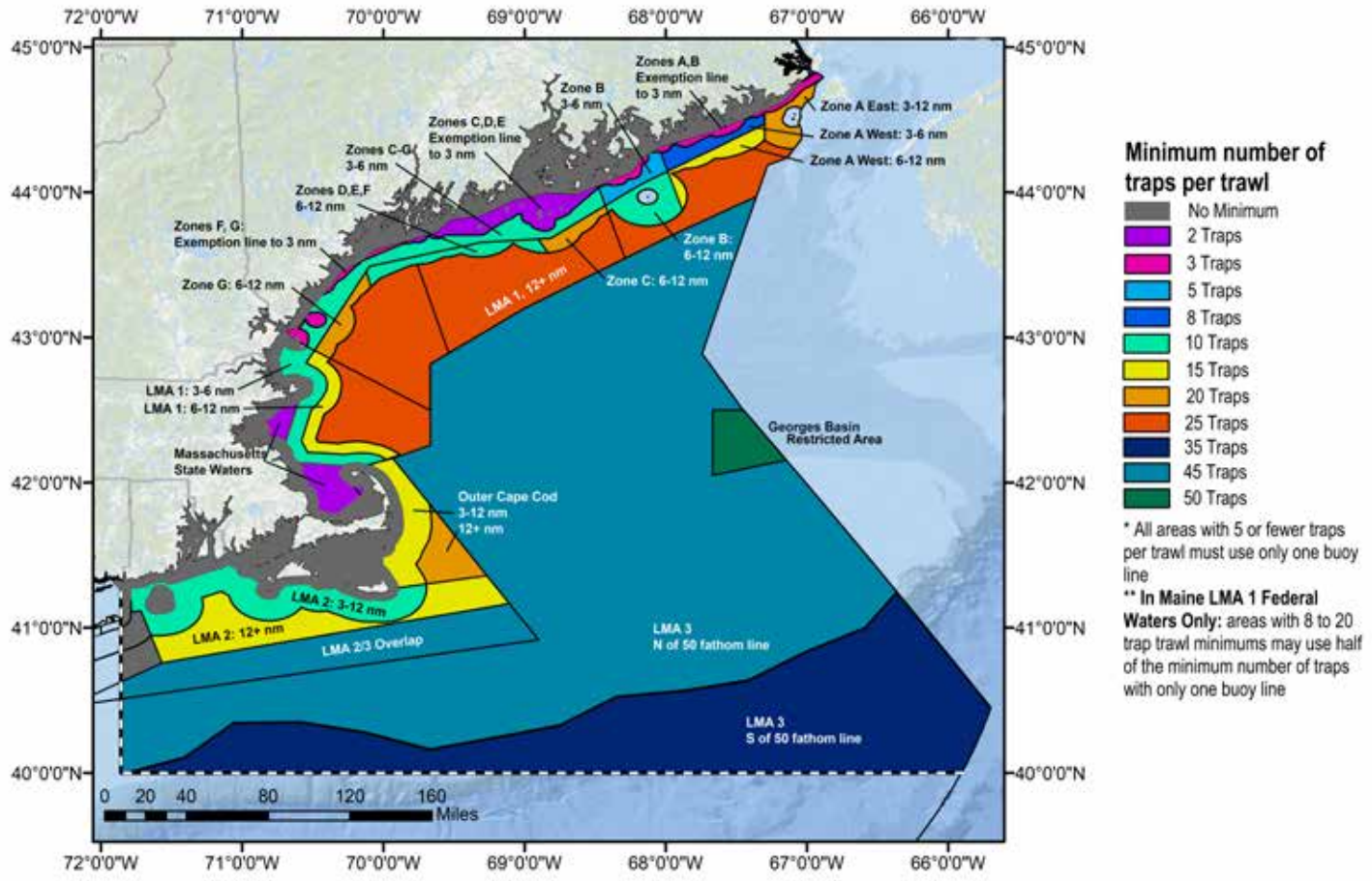
This area expands the previous Massachusetts Restricted Area (MRA). The entire area is closed to buoy lines February-April.

Longitude	Latitude
-70° 48.98' W	42° 52.32' N
-70° 43.94' W	42° 52.58' N
-70° 38.69' W	42° 12.00' N
-70° 30.00' W	42° 12.00' N
-70° 30.00' W	42° 30.00' N
-69° 45.00' W	42° 30.00' N
-69° 45.00' W	41° 56.50' N
-69° 16.00' W	41° 21.50' N
-69° 57.90' W	41° 15.30' N
-70° 00.00' W	41° 20.30' N
-70° 00.00' W	41° 40.2' N

Massachusetts state regulations extend the MRA closure in state waters to May 15, with potential extension until May 31, if whales remain in the area. More information can be found at www.mass.gov/orgs/division-of-marine-fisheries.

CHANGES TO LOBSTER AND JONAH CRAB MINIMUM TRAP PER TRAWL REQUIREMENTS

EFFECTIVE MAY 1, 2022



The tables below only show the management areas where there are new minimum traps per trawl requirements. Requirements for all other areas remain the same. Visit **fisheries.noaa.gov/alwtrp** for complete regulations.

MINIMUM NUMBER OF TRAPS PER BUOY LINE IN MAINE MANAGEMENT ZONES

MAINE ZONE	TRAP/TRAWL REQUIREMENTS WITH TWO BUOY LINES	TRAP/TRAWL REQUIREMENTS WITH ONE BUOY LINE
ME exempt area–3 nm, Zones A, B, F, G	N/A	3
ME exempt area–3 nm, Zones C, D, E	4	2 (status quo)
ME 3–6 nm*, Zone A West	8	4
ME 3–6 nm*, Zone B	N/A	5
ME 3–6 nm*, Zones C, D, E, F, G	10	5
ME 3 –12 nm, Zone A East	20	10
ME 6*–12 nm, Zone A West	15	8
ME 6*–12 nm, Zone B, D, E, F	10 (status quo)	5
ME 6*–12 nm, Zone C, G	20	10
*Note that the 6 nm line refers to an approximation, described in 50 CFR 229.32 (a)(2)(ii).		

MINIMUM TRAPS PER TRAWL IN LOBSTER MANAGEMENT AREAS

LOBSTER MANAGEMENT AREAS (LMA)	MINIMUM TRAPS/ TRAWL
LMA 1, excluding Maine Zones	
MA LMA 1, 6*–12 nm	15
LMA 1 beyond 12 nm	25
Outer Cape Cod	
3- 12 nm	15
LMA 3	
In all LMA3 areas below, maximum trawl length is also increased from 1.5 to 1.75 nautical miles.	
North of 50 fathom line on the south end of Georges Bank	45
South of 50 fathom line on the south end of Georges Bank	35
Georges Basin Restricted Area	50

CHANGES TO LOBSTER AND JONAH CRAB TRAP/POT WEAK INSERTS

EFFECTIVE MAY 1, 2022

The 2021 rule removes the requirement for weak link at buoys* and other surface system flotation devices, and adds requirements for weak rope or insertions within the buoy line.

The following table represents the lobster and Jonah crab trap/pot management areas where changes have been made to weak inserts. Requirements for all other areas, other trap/pot fisheries, and gillnet fisheries remain the same.

Visit **fisheries.noaa.gov/alwtrp** for complete regulations.

*Weak links at the buoy may still be used voluntarily.

AREA	WEAK INSERTION REQUIREMENTS
ME Exempt State Waters	1 weak insert 50% down the line OR top 50% of buoy line weak rope.
ME Exempt Line–3 nm	
NH State Waters	
MA State Waters	Weak inserts every 60 feet OR full weak line in the top 75% of line.
RI State Waters	
LMA 2	
ME Zone A West, B, C, D, E; federal waters 3–12 nm	2 weak inserts at 25% and 50% down the line OR top 50% of buoy line weak rope.
MA and NH LMA 1, OCC; federal waters 3–12 nm	
ME Zone A East, F, and G; federal waters 3–12 nm	1 weak insert 33% down the line.
LMA 1 & OCC beyond 12 nm	
LMA 3	Top 75% of one buoy line is full weak line. Bottom 25% can be higher strength.

EXAMPLES OF WEAK INSERT RIGGING METHODS

USED WITH WEAK ROPE


Butt Splice


4-Tuck Splice


3-Tuck Splice


Eye Loop Splice, 3 Tucks

The red rope in these pictures is weak rope manufactured by Rocky Mount Cord Company. Rocky Mount Candycane is also approved for use.

NO WEAK ROPE USED


South Shore Sleeve

This red sleeve is manufactured by Novabraid.


1,700lb breaking strength link insert/buoy breakaway

Check **fisheries.noaa.gov/alwtrp** for more approved weak insert rigging methods.

CHANGES TO GEAR MARKING REQUIREMENTS
EFFECTIVE DATE

The tables below show the new gear marking requirements for lobster and Jonah crab trap/pot gear in the Northeast. Requirements for all other management areas and other fisheries remain the same. These requirements represent the minimum markings. Additional markings are also allowed. Visit **fisheries.noaa.gov/alwtrp** for complete regulations.

FEDERAL WATERS

NEW REQUIREMENTS FOR FEDERAL WATERS
AREA COLOR IS BASED ON PERMIT'S PRINCIPAL PORT (NON-LMA 3) OR LMA 3 PERMIT.
Maine One 3-foot **PURPLE** color mark within 2 fathoms of buoy; and One 12-inch **PURPLE** mark at the top of the buoy line below the surface system; and One 12-inch **PURPLE** mark in the middle of buoy line; and One 12-inch **PURPLE** mark in the bottom of buoy line; and Four 12-inch **GREEN** marks, each within 6 inches of a **PURPLE** mark.
New Hampshire One 3-foot **YELLOW** color mark within 2 fathoms of buoy; and One 12-inch **YELLOW** mark at the top of the buoy line below the surface system; and One 12-inch **YELLOW** mark in the middle of buoy line; and One 12-inch **YELLOW** mark at the bottom of the buoy line; Four 12-inch **GREEN** marks, each within 6 inches of a **YELLOW** mark.
Massachusetts One 3-foot **RED** color mark within 2 fathoms of buoy with one 12-inch **GREEN** mark no more than 1 foot below the **RED** mark; One 2-foot long mark consisting of one 12-inch **RED** mark and one 12-inch **GREEN** mark at the top of the buoy line below the surface system; and One 2-foot long mark consisting of one 12-inch **RED** mark and one 12-inch **GREEN** mark in the middle of buoy line; and One 2-foot long mark consisting of one 12-inch **RED** mark and one 12-inch **GREEN** mark at the bottom of the buoy line; * If you have line marked at every 60 feet as required by the state, there must be **GREEN** mark next to all **RED** state marks. **If the buoy line is red or red/white striped (candycane), **WHITE** marks can be substituted for **RED** marks above.
Rhode Island One 3-foot **SILVER/GRAY** color mark within 2 fathoms of buoy; and One 12-inch **SILVER/GRAY** mark at the top of the buoy line below the surface system; and One 12-inch **SILVER/GRAY** mark in the middle of buoy line; and One 12-inch **SILVER/GRAY** mark at the bottom of the buoy line; and Four 12-inch **GREEN** marks, each within 6 inches of a **SILVER/GRAY** mark.
LMA 3 One 3-foot long **BLACK** mark within 2 fathoms of the buoy line; and One 12-inch **BLACK** mark at the top of the buoy line below the surface system; and One 12-inch **BLACK** mark in the middle of buoy line; and One 12-inch **BLACK** mark at the bottom of the buoy line; and Four 12-inch **GREEN** marks, each within 6-inches of a **BLACK** mark.

STATE WATERS

NEW REQUIREMENTS FOR STATE WATERS
Maine One 3-foot **PURPLE** mark within 2 fathoms (of the buoy; and One 12-inch **PURPLE** mark in top 50% of buoy line; and One 12-inch **PURPLE** mark in bottom 50% of buoy line. Maine Exempt Waters have different state requirements that are not included here.
New Hampshire One 3-foot **YELLOW** mark within 2 fathoms of buoy; and One 12-inch **YELLOW** mark in top 50% of buoy line; and One 12-inch **YELLOW** mark in bottom 50% of buoy line.
Massachusetts One solid 3-foot **RED** mark in top 12 feet of rope; and Two 2-foot **RED** marks in the top 50% of the buoy line; and Two 2-foot **RED** marks in the bottom 50% of the buoy line. Additional marks may be necessary. **No length of buoy line greater than 60 feet without a state RED mark is allowed.** *If the buoy line is red or red/white (candycane), **WHITE** marks may be substituted for **RED** marks.
Rhode Island One 3-foot **SILVER/GRAY** mark within 2 fathoms of buoy; and One 12-inch **SILVER/GRAY** mark in top 50% of buoy line; and One 12-inch **SILVER/GRAY** mark in bottom 50% of buoy line.

CONTACTS

GREATER ATLANTIC REGIONAL FISHERIES OFFICE

Marisa Trego, Take Reduction Team Coordinator:
(978) 282-8484, marisa.trego@noaa.gov

John Higgins, Northeast Fisheries Liaison:
(207) 610-3282, john.higgins@noaa.gov

Rob Martin, Northeast Gear Specialist:
(617) 710-6322, robert.martin@noaa.gov

Website: FISHERIES.NOAA.GOV/ALWTRP

focus of the work, and collect initial stakeholder input.

DATES: These webinars will be held on Monday, August 30, 2021, at 4 p.m.–5:30 p.m.; Wednesday, September 1, 2021, at 6 p.m.–7:30 p.m.; Thursday, September 2, 2021, at 10 a.m.–11:30 a.m.

ADDRESSES: All meeting participants and interested parties are strongly encouraged to register in advance of any webinar they are interested in attending. Meeting links for each webinar can be located at: *https://www.mafmc.org/climate-change-scenario-planning.*

Meeting addresses: The meetings will be held via webinar (see **SUPPLEMENTARY INFORMATION**).

FOR FURTHER INFORMATION CONTACT: Thomas A. Nies, Executive Director, New England Fishery Management Council; telephone: (978) 465–0492. Contact information and individual staff members working on this initiative can be found here: *https://www.mafmc.org/climate-change-scenario-planning.*

SUPPLEMENTARY INFORMATION:

Background

Climate change is a growing threat to marine fisheries worldwide. On the East coast of the United States, there is evidence of climate-related shifts in distribution, abundance, and/or productivity of fishery resources. It is uncertain what the next couple of decades will bring, and how fishery management programs can best prepare to meet the challenges ahead. Over the next year, this joint effort will bring together researchers, fishery managers, fishery participants and others to discuss these questions and emerge with ideas and recommendations for how fishery management can potentially adapt to climate change.

The management bodies in this region have decided to employ a scenario planning framework to discuss these issues. Scenario planning is a way of exploring how fishery management may need to evolve over the next few decades as climate change becomes a bigger issue. Specifically, scenarios are stories about possible future developments. This approach is designed to help stakeholders and managers think broadly about the future implications of climate change to help define what changes can potentially be made now to be better prepared.

These introductory webinars are the first step of a multi-year scenario planning effort. Staff will explain the overall initiative and share draft objectives, possible outcomes and focus of the work. There will be a presentation introducing the basics of scenario planning and potential benefits of engaging in the process. At the end of the webinar there will be an opportunity for small group discussions for participants to share feedback and suggestions on the information presented and proposed. Additional details about the webinars will be posted to this page once available: *https://www.mafmc.org/climate-change-scenario-planning.*

Special Accommodations

These meetings are physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Thomas A. Nies, Executive Director, at (978) 465–0492, at least 5 days prior to the meeting date.

(Authority: 16 U.S.C. 1801 *et seq.*)

Dated: August 5, 2021.

Tracey L. Thompson,

Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2021–17051 Filed 8–10–21; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID: 0648–XB307]

Environmental Impact Statement on Phase 2 Modifications to the Atlantic Large Whale Take Reduction Plan To Reduce Serious Injury and Mortality of Large Whales in Commercial Trap/Pot and Gillnet Fisheries Along the U.S. East Coast

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of intent to prepare an environmental impact statement, request for comments.

SUMMARY: The National Marine Fisheries Service (NMFS) intends to begin a rulemaking process that will amend the Atlantic Large Whale Take Reduction Plan (Plan) to reduce the risk of mortalities and serious injuries of North Atlantic right whales (*Eubalaena glacialis*) and other large whales caused by entanglement in commercial trap/pot and gillnet fisheries along the U.S. East Coast. An Environmental Impact Statement (EIS) will be prepared in accordance with the National Environmental Policy Act (NEPA) to analyze the impacts to the environment of alternatives to amend the Plan. This notice informs the public of upcoming scoping meetings to solicit public input on Phase 2 of our efforts to reduce the risk of entanglement to right, humpback, and fin whales in U.S. commercial fisheries managed under the Plan. Phase 1, a final rule implementing new modifications to reduce mortalities and serious injuries caused by incidental entanglement in the northeast American lobster and Jonah crab trap/pot fishery, is anticipated shortly, and was analyzed in a Final Environmental Impact Statement released (FEIS) on July 2, 2021. Phase 2 focuses on risk reduction in U.S. East Coast gillnet, Atlantic mixed species trap/pot, and Mid-Atlantic lobster and Jonah crab trap/pot fisheries.

DATES: Written or electronic scoping inputs must be received at the appropriate address, email mailbox, or phone number (see **ADDRESSES**) by October 21, 2021.

Public Hearings: At least seven virtual public meetings will be held during the public comment period. In addition, we will be holding three call-in days for interested parties to call and speak to a NMFS staff member to ask questions or submit information and recommendations.

See **ADDRESSES** to obtain public hearing and call-in day notification details. Scoping will also occur through presentations and discussions at the Atlantic States Marine Fisheries Commission and New England, Mid-Atlantic, and South Atlantic Fishery Management Council meetings during the scoping period.

ADDRESSES: You may submit input on this document via email. Submit all electronic public comments by sending an email to *nmfs.gar.ALWTRT2021@noaa.gov* using the subject line ''Comments on Atlantic Large Whale Take Reduction Plan Scoping.'' Input can also be provided via webinar during scoping meetings or via phone on call-in days. Remote public meeting dates, access, and call-in information is available in the **SUPPLEMENTARY INFORMATION** section. Meeting information will also be posted on the Plan website *fisheries.noaa.gov/ALWTRP,* or you may contact Marisa Trego for information on dates and times.

FOR FURTHER INFORMATION CONTACT: Marisa Trego, Take Reduction Team Coordinator, Greater Atlantic Region. Telephone: 978 282–8484. Address: 55 Great Republic Drive, Gloucester, MA 01930. Email: *marisa.trego@noaa.gov.*

SUPPLEMENTARY INFORMATION:

Purpose and Need for Proposed Action

The proposed action for analysis in the EIS would be NMFS rulemaking to modify the Plan to reduce mortalities and serious injuries from incidental commercial fishing gear entanglements in U.S. East Coast gillnet fisheries as well as trap/pot fisheries, including the Atlantic mixed species and Mid-Atlantic lobster and Jonah crab fisheries. NMFS' purpose for the proposed action is to fulfill the mandates of the MMPA to reduce incidental mortalities and serious injuries of large whales to below each stock's potential biological removal (PBR) level.

North Atlantic right whales are listed as endangered under the Endangered Species Act (ESA) and considered depleted under the Marine Mammal Protection Act (MMPA). After more than two decades of an increasing trend, the right whale population has been declining since 2010, and the most recent estimate of 368 whales in 2019 (Pace 2021) is well below the optimum sustainable population. This estimate represents a minimum population number and reflects new research suggesting that many mortalities occur undetected (Pace *et al.* 2021). The decline was exacerbated by an Unusual Mortality Event (UME) that began in 2017, when a total of 17 confirmed dead right whales were documented. As of July 2021, the UME totals 50 individuals, comprising 34 right whale mortalities and an additional 16 seriously injured right whales. Of these 50 individuals, 18 definitively involved entanglement and another 5 were probable entanglements. During this period (2017–2021), only 40 calves have been born.

One of the primary causes of mortality and serious injury of North Atlantic right whales is entanglement in fishing gear. Climate change and associated changes in prey abundance and distribution are exacerbating the population decline by shifting the overlap between right whales and fisheries and reducing the population's resilience to stressors. With mortalities continuing to outpace births, the population decline continues and further mitigation of entanglements that cause mortality or serious injury is necessary for population recovery.

The MMPA mandates that NMFS develop and implement Take Reduction Plans for preventing the depletion and assisting in the recovery of certain marine mammal stocks that are killed or seriously injured incidental to commercial fisheries. Pursuant to the MMPA, NMFS convenes Take Reduction Teams composed of stakeholders to develop recommendations that achieve a short-term goal of reducing mortalities and serious injuries of marine mammals covered by the plan to a rate below each stock's PBR level. NMFS considers those recommendations when implementing Take Reduction Plans through the rulemaking process.

The Atlantic Large Whale Take Reduction Team (Team) was first convened in 1996 to recommend measures to reduce mortalities and serious injuries of right, humpback, and fin whales incidental to certain commercial fisheries. NMFS implements measures under the Plan. Since 1997, the Plan has been amended several times to reduce the impacts of fishing gear on large whales in the region through measures that include area closures, gear configuration requirements, and gear marking rules. A final rule implementing new modifications to reduce mortalities and serious injuries caused by entanglement in the northeast American lobster and Jonah crab trap/pot fishery is anticipated shortly, and was analyzed in a FEIS released on July 2, 2021 (86 FR 35288).

In 2021, the Team convened to address large whale mortalities and serious injuries caused by entanglements in the U.S. East Coast gillnet, Atlantic mixed species trap/pot, and mid-Atlantic lobster and Jonah crab trap/pot fisheries. Specifically, these fisheries include: (1) Mid-Atlantic gillnet fisheries for monkfish, spiny dogfish, smooth dogfish, bluefish, weakfish, menhaden, spot, croaker, striped bass, large and small coastal sharks, Spanish mackerel, king mackerel, American shad, black drum, skate species, yellow perch, white perch, herring, scup, kingfish, spotted seatrout, and butterfish; (2) Northeast sink gillnet fisheries for Atlantic cod, haddock, pollock, yellowtail flounder, winter flounder, witch flounder, American plaice, windowpane flounder, spiny dogfish, monkfish, silver hake, red hake, white hake, ocean pout, skate spp, mackerel, redfish, and shad; (3) Northeast drift gillnet fisheries for shad, herring, mackerel, and menhaden and any residual large pelagic driftnet effort in New England; (4) Southeast Atlantic gillnet fisheries for finfish, including, but not limited to: King mackerel, Spanish mackerel, whiting, bluefish, pompano, spot, croaker, little tunny, bonita, jack crevalle, cobia, and striped mullet; (5) Southeast Atlantic shark gillnet fisheries for large and small coastal sharks, including but not limited to blacktip, blacknose, finetooth, bonnethead, and sharpnose sharks; (6) Northeast anchored float gillnet fishery for mackerel, herring (particularly for bait), shad, and menhaden; and (7) Atlantic mixed species trap/pot fisheries for hagfish, shrimp, conch/whelk, red crab, Jonah crab, rock crab, black sea bass, scup, tautog, cod, haddock, Pollock, redfish (ocean perch), white hake, spot, skate, catfish, stone crab, and cunner; (8) Mid-Atlantic trap/pot fisheries for lobster and Jonah crab, and (9) Atlantic trap/pot fishery for Atlantic blue crab.

The Team met most recently on June 28 and July 1, 2021, to discuss the types of management actions that should be included in scoping to decrease the risk and severity of right whale and other large whale entanglements in the above-listed fisheries. Further information about the Plan and the 2021 Team meetings where potential management measures were discussed, including recordings of all the meetings, can be found at the Team's website: *https://www.fisheries.noaa.gov/alwtrp.*

Preliminary Description of Proposed Action and Alternatives

NMFS will consider suites of regulatory measures that would modify existing Plan requirements to address ongoing large whale entanglements. The primary purpose of the Plan modifications is to reduce the mortality and serious injury of right whales in U.S. East Coast gillnet, Atlantic mixed species trap/pot, and Mid-Atlantic lobster and Jonah crab trap/pot fisheries. In addition to the proposed action and the no action alternative, potential alternatives that the draft EIS may analyze include measures that would reduce or weaken line in gear associated with these fisheries, to reduce co-occurrence of this gear and right whales, and to improve identification of entangling gear. For gillnet fisheries, possible management options include changing configurations such as increasing the minimum number of net panels per set to reduce endline numbers, gear tending or daytime-only sets for gillnets, installation of weak links at panels and weak rope that breaks at forces of less than 1,700 lb, establishing seasonal restricted areas, and expanding gear marking requirements. For trap/pot fisheries, possible management options include changing configurations such as traps per trawl to reduce endline numbers and installation of weak inserts or ropes that break at forces of less than 1,700 lb, establishment of seasonal restricted areas, and expansion of gear marking requirements.

NEPA (42 U.S.C. 4321 *et al.*) requires that Federal agencies conduct an

environmental analysis of their proposed actions to determine if the actions may significantly affect the human environment. NMFS has determined that an EIS should be prepared under NEPA for the purpose of informing rulemaking to modify the Plan. We will prepare an EIS in accordance with NEPA requirements, as amended (42 U.S.C. 4321 *et al.*); NEPA implementing regulations (40 CFR 1500–1508); and other Federal laws, regulations, and policies. Reasonable alternatives that are identified during the scoping period will be evaluated in the draft EIS.

Summary of Expected Impacts

The draft EIS will identify and describe the potential effects of the proposed action on the human environment that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action. This includes such effects that occur at the same time and place as the proposed action or alternatives and such effects that are later in time or occur in a different place. The proposed action may include, but is not limited to, modifications to configurations of fishing gear, modification to fishing seasons and/or areas, and modifications to gear marking requirements. Expected potential impacts to commercial fishermen in the above-mentioned fisheries may include, but are not limited to, additional costs and labor for modifying gear configurations and gear markings, and reduced profit due to reduced catches, access to fishing grounds, or seasons. Expected potential impacts to Atlantic large whales include, but are not limited to, reduced mortality and serious injury due to a reduction in entanglement in fishing gear or reduced severity of any entanglements that do occur. Other potential impacts may include, but are not limited to, impacts (both beneficial and adverse) to other marine life, cultural resources, demographics, employment, and economics. These expected potential impacts will be analyzed in the draft and final EIS.

Schedule for the Decision-Making Process

After the draft EIS is completed, NMFS will publish a notice of availability (NOA) and request public comments on the draft EIS. NMFS expects to issue the NOA in the Fall of 2022. After the public comment period ends, NMFS will review, consider, and respond to comments received and will develop the final EIS. NMFS expects to make the final EIS available to the public in 2023. A record of decision will be completed no sooner than 30 days after the final EIS is released, in accordance with 40 CFR 1506.11.

Scoping Process: This NOI commences the public scoping process for identifying issues and potential alternatives for consideration. Throughout the scoping process, Federal agencies, state, tribal, local governments, and the general public have the opportunity to help NMFS determine reasonable alternatives and potential measures to be analyzed in the EIS, as well as to provide additional information.

NMFS will hold virtual public scoping meetings at the following dates and times (eastern):

- Thursday, September 9, 2021, 6:30–8:30 p.m., for Maryland, Delaware, Virginia, Northern North Carolina trap/pot fisheries;
- Tuesday, September 14, 2021, 6:30–8:30 p.m., for Rhode Island, Connecticut, New York, and New Jersey trap/pot fisheries;
- Tuesday, September 21, 2021, 6:30–8:30 p.m., for Maine, New Hampshire, Massachusetts, and Rhode Island trap/pot fisheries;
- Thursday, September 23, 2021, 6:30–8:30 p.m., for Rhode Island, Connecticut, New York, and New Jersey gillnet fisheries;
- Tuesday, October 5, 2021, 6:30–8:30 p.m., for Southern North Carolina, South Carolina, Georgia, Florida, all gear;
- Tuesday, October 12, 2021, 6:30–8:30 p.m., for Maryland, Delaware, Virginia, Northern North Carolina gillnet fisheries;
- Thursday, October 14, 2021, 6:30–8:30 p.m., for Maine, New Hampshire, Massachusetts, and Rhode Island gillnet fisheries.

To register, go to our website: *https://www.fisheries.noaa.gov/alwtrp.* NMFS will also hold public call-in days:

- Friday, October 1, 2021, 12 noon to 6 p.m.
- Monday, October 4, 2021, 8 a.m. to 3 p.m.
- Tuesday, October 12, 10 a.m. to 4 p.m.

For more information on how to call, go to our website: *https://www.fisheries.noaa.gov/alwtrp.*

Request for Identification of Potential Alternatives, Information, and Analyses Relevant to the Proposed Action

Everyone potentially impacted by or interested in changes to the Plan, and particularly, management of commercial trap/pot and gillnet fisheries along the East Coast, is invited to participate in the public scoping process by submitting written input, attending public scoping webinar meetings, or calling us during designated call-in days. This scoping process aims to gather input regarding the scope of actions to be proposed for rulemaking, the development of alternatives to analyze in the EIS, and the potential impacts of management actions.

For gillnet fisheries, the Team discussed and NMFS requests input on management options, particularly concerning information about operational challenges, time, and costs required to change configurations such as net panels per set to reduce endline numbers, gear tending or daytime-only sets for gillnets, installation of weak inserts or rope that breaks at forces of less than 1,700 lb, to establish restricted areas, and to expand gear marking requirements. For trap/pot fisheries, the Team discussed and NMFS requests input on management options, particularly including information about operational challenges, time, and costs required to change configurations such as traps per trawl to reduce endline numbers and to install weak inserts or rope that breaks at forces of less than 1,700 lb, to establish restricted areas, and to expand gear marking requirements.

NMFS and the Team particularly request input on latent effort in U.S. East Coast gillnet and trap/pot operations that may affect measures designed to reduce gear that could entangle whales, potential impacts to fishery operations arising from gear modifications likely to be considered, potential risks and benefits to large whales, and information regarding whale distribution or behavior along the U.S. East Coast that should be considered in developing risk reduction measures. In addition to direct costs of replacing new gear, input is requested on indirect cost of gear modification measure alternatives, such as costs and time required to install sleeves, install weak rope, and mark gear, and costs related to fewer vertical lines, seasonal closures, or exempted areas. Information on the value of whale conservation and the economic benefits of whale conservation is also requested.

NMFS and the Team also identified data needs to support future discussions, including data on open access fisheries, gear configurations across the fisheries, whale distribution, whale behavioral information, and gear marking. Data related to fishing gear configurations specific to areas or target species, how gear alterations measures may affect those fisheries, and how existing gear configurations contribute to large whale entanglement risk would

be very welcome. As an example, longer gear marks near the buoy and gear marks distinguishing permitting states, specific Federal and state water markings, and gear identification tape throughout buoy lines were analyzed in the FEIS released on July 2, 2021, for northeast lobster and Jonah crab trap/pot fisheries. One Team member suggested restricting fishing rope diameter to no greater than 0.5 inch (1.27 cm) to distinguish it from offshore Canadian gear.

Information received through this scoping process will inform the development of alternative risk reduction measures for an environmental impact analysis. Only inputs and suggestions that are within the scope of the proposed actions will be considered when developing the alternatives for analysis in the EIS. This includes items related to reducing risk of mortality and serious injury of large whales due to entanglements in commercial U.S. fishing gear and improving gear marking to reduce uncertainty about where entanglements occur. The purpose is to develop measures to fulfill the requirements of Section 118 of the MMPA, which regulates the taking of marine mammals incidental to U.S. commercial fishing operations. NMFS implements additional endangered species conservation and recovery programs under the ESA and also affords marine mammals protections under multiple programs pursuant to the MMPA. Therefore, for the purposes of the scoping period for this proposed action, we are not requesting input related to other stressors, such as vessel strikes, anthropogenic noise, natural mortality, international entanglement risk, offshore wind development, or climate change.

To promote informed decision-making, input should be as specific as possible and should provide as much detail as necessary to allow a commenter's meaningful participation and fully inform NMFS of the commenter's position. Input should explain why the issues raised are important to the consideration of potential environmental impacts and alternatives to the proposed action, as well as economic and other impacts affecting the quality of the human environment.

It is important that reviewers provide their input at such times and in such a manner that they are useful to the agency's preparation of the EIS. Comments should be provided prior to the close of the scoping period and should clearly articulate the reviewer's concerns and contentions. Input received in response to this solicitation, including names and addresses of those who comment, will be part of the public record for this proposed action. Input submitted anonymously will be accepted and considered.

Citations

Pace III, R.M. May 2021. Revisions and Further Evaluations of the Right Whale Abundance Model: Improvements for Hypothesis Testing. NOAA NEFSC Tech Memo 269.

Pace, R.M., R. Williams, S.D. Kraus, A.R. Knowlton, H.M. Pettis. 2021. Cryptic mortality in North Atlantic right whales. Conserv. Sci. Pract. 3:e346.

Authority: This NOI is published pursuant to NEPA, 42 U.S.C. 4321 *et al.,* and MMPA, 31 U.S.C. 1361 *et al.*

Dated: August 6, 2021.

Catherine Marzin,

Acting Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 2021–17126 Filed 8–10–21; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE:

National Oceanic and Atmospheric Administration

[RTID 0648–XB280]

Gulf of Mexico Fishery Management Council; Public Meeting; Correction

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of a correction to a public meeting.

SUMMARY: NMFS, NOAA, published a document in the **Federal Register** of August 3, 2021, regarding a meeting of the Gulf of Mexico Fishery Management Council (Council). The meeting has since changed to a hybrid meeting offering both in-person and virtual options for attending the meeting.

FOR FURTHER INFORMATION CONTACT: Dr. Carrie Simmons, Executive Director, Gulf of Mexico Fishery Management Council; telephone: (813) 348–1630.

SUPPLEMENTARY INFORMATION:

Correction

In the **Federal Register** of August 3, 2021, in FR Doc. 2021–16465, on page 41832, in the first column, correct the third full paragraph to read:

The meeting will be a hybrid meeting. You may register for the webinar to listen-in only by visiting *www.gulfcouncil.org* and click on the Council meeting on the calendar.

On page 41831, under heading *Wednesday, August 25, 2021; 8:30 a.m.–5:30 p.m.,* correct the last paragraph to read:

The Council will hold public testimony from 2:45 p.m. to 5:30 p.m., EDT for Potential Reconsideration of Final Document—Framework Action: Gulf of Mexico *Red Snapper* Recreational Data Calibration and Recreational Catch Limits, and open testimony on other fishery issues or concerns. Public comment may begin earlier than 2:45 p.m. EDT, but will not conclude before that time. Persons wishing to give public testimony in-person must register at the registration kiosk in the meeting room. Persons wishing to give public testimony virtually must sign up on the Council website on the day of public testimony. Registration for virtual testimony closes one hour (1:45 p.m. EDT) before public testimony begins.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: August 3, 2021.

Tracey L. Thompson,

Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2021–16860 Filed 8–10–21; 8:45 am]

BILLING CODE 3510–22–P

BUREAU OF CONSUMER FINANCIAL PROTECTION

[Docket No. CFPB–2021–0014]

Agency Information Collection Activities: Comment Request

AGENCY: Bureau of Consumer Financial Protection.

ACTION: Notice and request for comment.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (PRA), the Bureau of Consumer Financial Protection (Bureau) is publishing this notice seeking comment on a Generic Information Collection titled ''Electronic Disclosure on Mobile Devices'' prior to requesting the Office of Management and Budget's (OMB's) approval of this collection under the Generic Information Collection Plan ''Generic Information Collection Plan for Studies of Consumers using Controlled Trials in Field and Economic Laboratory Settings,'' OMB Control number 3170–0048.

DATES: Written comments are encouraged and must be received on or before September 10, 2021 to be assured of consideration.

ADDRESSES: You may submit comments, identified by the title of the information collection, OMB Control Number (see

Atlantic States Marine Fisheries Commission

Shad and River Herring Management Board

October 19, 2021
9:00 – 10:30 a.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1.	Welcome/Call to Order *(J. Davis)*	9:00 a.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from May 2021	9:00 a.m.
3.	Public Comment	9:05 a.m.
4.	Consider American Shad Habitat Plans/Updates *(B. Neilan)* **Action**	9:15 a.m.
5.	Consider Technical Committee Report on Methods for Evaluating Mixed-stock Catch *(B. Neilan)* **Possible Action**	9:45 a.m.
6.	Progress Report on Prioritizing Systems for Shad Recovery and Developing Inventory of Available Data to Support Development of Fish Passage Criteria *(B. Neilan)*	10:10 a.m.
7.	Elect Vice Chair *(J. Davis)* **Action**	10:25 a.m.
8.	Other Business/Adjourn	10:30 a.m.

This meeting will be held via webinar, click here for details.

MEETING OVERVIEW

Shad and River Herring Management Board
October 19, 2021
9:00 a.m. – 10:30 a.m.
Webinar

Chair: Justin Davis (CT) Assumed Chairmanship: 2/21	Technical Committee Chair: Brian Neilan (NJ)	Law Enforcement Committee Representative: Warner (PA)
Vice Chair: VACANT	Advisory Panel Chair: Pam Lyons Gromen	Previous Board Meeting: May 5, 2021
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, DC, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from May 5, 2021

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Consider American Shad Habitat Plans/Updates (9:15-9:45 a.m.) Action

Background

- Amendment 3 to the Shad and River Herring FMP requires all states and jurisdictions to submit a habitat plan for American shad. A majority of the habitat plans were approved by the Board in February 2014, and it was anticipated that they would be updated every five years.
- The states began the process of reviewing their American shad habitat plans and making updates in 2020, however, many states encountered delays due to COVID-19. The Board has approved the following habitat plan updates: ME, NH, MA, RI, CT, Delaware River, MD, NC, SC, Savannah River, GA and FL.
- The following plans were submitted for TC review and Board consideration at the October 2021 meeting: VA, DC, NY (**Briefing Materials**).
- The Technical Committee reviewed these habitat plan updates via email and recommends Board approval (**Supplemental Materials**). The remaining states will provide their updated plans to the TC for review before the next Board meeting.

Presentations

- Shad Habitat Plan Updates for Board Consideration by B. Neilan

Board actions for consideration at this meeting

- Consider approval of updated shad habitat plans for VA and DC, and new habitat plan for NY

5. Consider Technical Committee Report on Methods for Evaluating Mixed-stock Catch (9:45-10:10 a.m.) Possible Action

Background

- The American Shad 2020 Benchmark Stock Assessment and Peer Review Report was accepted for management use in August 2020. The assessment found that American shad remain depleted on a coastwide basis, likely due to multiple factors, such as fishing mortality, inadequate fish passage at dams, predation, pollution, habitat degradation, and climate change. At the February 2020 meeting, based on the TC recommendation the Board tasked the TC with "developing methods to evaluate bycatch removals in directed mixed-stock fisheries in state waters in order to understand and reduce impacts to stocks outside the area where directed catch occurs."
- The TC formed a work group to address this task. Relevant data were collected from the states to identify possible methods for evaluating the impacts of mixed-stock removals in directed mixed-stock fisheries in state waters in order to understand and reduce impacts to stocks outside the area where directed catch occurs (**Supplemental Materials**).

Presentations

- Technical Committee Report and Recommendations on Methods for Evaluating Mixed-stock Catch by B. Neilan

Board actions for consideration at this meeting

- Consider recommending the TC recommendations be incorporated into the Delaware River Basin Coop Sustainable Fishery Management Plan.

6. Progress Report on Prioritizing Systems for Shad Recovery and Developing Inventory of Available Data to Support Development of Fish Passage Criteria (10:10-10:25 a.m.)

Background

- In light of the 2020 American shad stock assessment results, which showed that barriers to fish migration are significantly limiting access to habitat for American shad, in May 2021 the TC recommended actions to address fish passage impacts on population recovery, including that dam removal and the use of fish passage performance criteria be prioritized by state and federal agencies with fish passage prescription authority. The Board sent letters to the U.S. Fish and Wildlife Service and NOAA Fisheries to support their efforts to review dam passage. Additionally, the Board tasked the TC with prioritizing systems for shad recovery and developing an inventory of available data that would support development of fish passage criteria.
- The TC has made progress on this task by identifying Federal Energy Regulatory Commission (FERC) hydropower projects that are a priority for shad recovery efforts. Additionally the TC is gathering information on the types of data available for developing fish passage criteria for these priority projects. The TC expects to deliver a final report on this task at the next Board meeting.

Presentations

- Progress Report on Prioritizing Systems for Shad Recovery and Developing Inventory of Available Data to Support Development of Fish Passage Criteria by B. Neilan

7. Elect Vice-Chair

8. Other Business/Adjourn

Shad and River Herring 2021 TC Tasks

Activity level: Medium

Committee Overlap Score: Medium (Multi-species committees for this Board)

Committee Task List
• Board task to develop methods to evaluate bycatch removals in directed mixed-stock fisheries in state waters • Board task to prioritize systems for shad recovery and develop an inventory of available data that would support development of fish passage criteria. • Fall 2021: Updates to state Shad Habitat Plans • Annual state compliance reports due July 1
TC Members: Mike Brown (ME), Mike Dionne (NH), Brad Chase (MA), Patrick McGee (RI), Jacque Benway Roberts (CT), Wes Eakin (Vice Chair, NY), Brian Neilan (Chair, NJ), Josh Tryninewski (PA), Johnny Moore (DE), Harry Rickabaugh (MD), Ellen Cosby (PRFC), Joseph Swann (DC), Eric Hilton (VA), Holly White (NC), Jeremy McCargo (NC), Bill Post (SC), Jim Page (GA), Reid Hyle (FL), Ken Sprankle (USFWS), Ruth Hass-Castro (NOAA)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

SHAD AND RIVER HERRING MANAGEMENT BOARD

Webinar
May 5, 2021

These minutes are draft and subject to approval by Shad and River Herring Management Board.
The Board will review the minutes during its next meeting.

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INDEX OF MOTIONS

ATTENDANCE

Board Members

Megan Ware, ME, proxy for P. Keliher (AA)
Cheri Patterson, NH (AA)
Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Mike Armstrong, MA (Chair)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Phil Edwards, RI, proxy for J. McNamee (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Rep. Sosnowski (LA)
Justin Davis, CT (AA)
Bill Hyatt, CT (GA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
Emerson Hasbrouck, NY (GA)
John McMurray, NY, proxy for Sen. Kaminsky (LA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, Legislative proxy (Chair)
Kris Kuhn, PA, proxy for T. Schaeffer (AA)
Loren Lustig, PA (GA)
G. Warren Elliott, PA (LA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Lynn Fegley, MD, proxy for B. Anderson (AA)
Allison Colden, MD, proxy for Del. Stein (LA)
Russell Dize, MD (GA)
Pat Geer, VA, proxy for S. Bowman (AA)
Chris Batsavage, NC, proxy for J. Batherson (AA)
Jerry Mannen, NC (GA)
Bill Gorham, NC, proxy for Sen. Steinburg (LA)
Ross Self, SC, proxy for P. Maier
Malcolm Rhodes, SC (GA)
Doug Haymans, GA (AA)
Spud Woodward, GA (GA)
Hannah Hart, FL, proxy for J. McCawley (AA)
Marty Gary, PRFC
Max Appelman, NOAA
Mike Millard, US FWS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Brian Neilan, Technical Committee Chair

Staff

Bob Beal
Toni Kerns
Maya Drzewicki
Kristen Anstead
Tina Berger
Pat Campfield
Lisa Carty
Emilie Franke
Lisa Havel
Chris Jacobs
Jeff Kipp
Laura Leach
Dustin Colson Leaning
Savannah Lewis
Kirby Rootes-Murdy
Sarah Murray
Mike Rinaldi
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Fred Akers
Pat Augustine, Coram, NY
Joe Ballenger, SC DNR
Alan Bianchi, NC DNR
Dierdre Boelke, NEFMC
Jamie Botinovch
Jason Boucher, NOAA
Delayne Brown, NH F&G
Heather Corbett, NJ DEP
Caitlin Craig, NYS DEC
Jessica Daher, NJ DEP
Lorena de la Garza, NC DENR

Guests (continued)

Greg DiDomenico
John Duane
Wes Eakin, NYS DEC
Julie Evans
James Fletcher, Wanchese Fish Co
Toni Friedrich, SGA
Alexa Galvan, VMRC
Lewis Gillingham, VMRC
Zoe Goozner, Pew Trusts
Zach Greenberg, Pew Trusts
Melanie Griffin, MA DMF
Pam Lyons Gromen, Wild Oceans
Jon Hare, NOAA
Brendan Harrison, NJ DEP
Helen Takade-Heumacher
Carol Hoffman, NYS DEC
Kyle Hoffman, SC DNR
Jesse Hornstein, NYS DEC
Rachel Howland, NC DENR
Asm. Eric Houghtaling, NJ (LA)
Stephen Jackson, FL FWS
Jeff Kaelin, Lund's Fisheries
Desmond Kahn
Greg Kenney, NYS DEC
Wilson Laney
Chip Lynch, NOAA
Steve Meyers
Chris Moore, CBF
Clinton Morgeson, VA DWR
Allison Murphy, NOAA
Derek Orner, NOAA
Paul Piavis, MD DNR
Nicholas Popoff, US FWS
Bill Post, SC DNR
Jill Ramsey, VMRC
Harry Rickabaugh, MD DNR
McLean Seward, NC DENR
David Sikorski, CCA
Andrew Sinchuk, NYS DEC
Melissa Smith, ME DMR
Gregory Sorg, SC DNR
Renee St. Amand, CT DEEP
Michael Stangl, DE DFW
David Stormer, DE DFW
Jason Surma, Woods Hole Group
Chris Uraneck, ME DMR
Mike Waine, ASA
Craig Weedon, MD DNR
Ashley Weston, NOAA
Holly White, NC DENR
Kelly Whitmore, MA DMF
Margaret Whitmore, VA DWR
Chris Wright, NOAA
Renee Zobel, NH F&G

The Shad and River Herring Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Wednesday, May 5, 2021, and was called to order at 10:30 a.m. by Chair Justin Davis.

CALL TO ORDER

CHAIR JUSTIN DAVIS: Good morning everybody. I'm going to call to order this meeting of the Shad and River Herring Management Board. My name is Justin Davis; I'm the Administrative Commissioner from the state of Connecticut, and starting with today's meeting I will be taking over as Chair of this Board.

Quickly, I just want to acknowledge the great leadership of our outgoing Board Chair, Mike Armstrong, from the state of Massachusetts. Thanks, Mike, for all your work and leading this Board over the last couple years. I'm thankful for the opportunity to take over.

APPROVAL OF AGENDA

CHAIR DAVIS: The first item on our agenda today is approval of the agenda. I'll ask if there is any suggested modifications or additions to today's agenda.

MS. TONI KERNS: No hands, Justin.

CHAIR DAVIS: Okay, great, so we'll consider the agenda approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR DAVIS: Moving on, the proceedings from the February, 2021 meeting of this Board were provided in the meeting materials. Are there any suggested corrections or additions to those proceedings from the February meeting?

MS. KERNS: No hands, Mr. Chair.

CHAIR DAVIS: Okay, great, we'll consider the proceedings from the February meeting approved by consent.

PUBLIC COMMENT

CHAIR DAVIS: The next item on our agenda is public comment. Caitlin or Toni, did we have anybody sign up to provide public comment?

MS. CAITLIN STARKS: Not to my knowledge.

MS. KERNS: Des Kahn has his hand up though, Mr. Chair.

CHAIR DAVIS: Okay, sure. Des, go ahead.

MR. DESMOND KAHN: Thank you, Mr. Chair. I made some comments at the last meeting of this Board in February, about evidence that striped bass predation has a negative impact on shad abundance in the Delaware River in particular. For this meeting I arranged with ASMFC staff to distribute a document that portrays this evidence. I trust Board members have received this. If you get a chance to look at it, I don't know if you have it available now. But what you'll see is that the first thing is the index of abundance of American shad in the Delaware River from about 1984 to 2014. That is at the Lewis Haul Seine, that is the Lewis family in New Jersey freshwater area both at the head of tide. It's a very long-term index. It goes way back before '84.

The next chart you'll see is a plot of the catch per trip of striped bass in the waters of the state of Delaware, between 1984 and 2014. This is pretty much very similar to the time series of abundance portrayed by the statistical catch at age model in the striped bass stock assessment, showing a low period in the '80s, and an increase and a peak in about the 2000s, and then some decline.

Then you'll see a plot of the two indices together. As I mentioned last time, you'll have a chance to look at this. When striped bass were low, shad were blooming in the '80s, in particular. As striped bass increased in the '90s, shad declined. When you had the sort of peak of striped bass in the 2000s, shad were at their lowest level.

I don't know if you were involved back then, but in 2005, due to a coastwide decline of shad, the Shad Management Board shut down an intercept gillnet fishery along the coast, with the idea that that might

be the cause of this shad decline. That had no impact whatsoever. If you look at the plot of the Delaware Index of Abundance. There was no response.

What that implies is that the fishery was having, it implied it had little to no impact on stock abundance. In other words, it was a very minimal impact. These two indices are highly significantly statistically negatively correlated. What that is taking in fisheries ecology to mean is that the predator is controlling the prey.

That is known as top-down control, when you have a negative correlation between abundance of these two species like this. What the implication of this is, and I'm going to wrap this up, is that as long as we have this very high abundance of striped bass, with very large individuals that can consume adult shad, we're not going to get a return of shad or blueback herring to the high abundance that they enjoyed in a period like the '80s.

This has also been borne out on the Connecticut River, including by work that you, yourself, Mr. Chairman did as a graduate student there, showing consumption of adult shad by large striped bass in the river. Victor Crecco and Tom Savoy of Connecticut, Bureau of Marine Fisheries documented this in several publications.

Lastly, Victor Crecco told me he had visual evidence when he could see schools of large striped bass herding American shad up against the Holyoke Dam, all the way up in Massachusetts, and preying on them. We've got the mechanism predation for this negative correlation, and I wanted to make the Board aware of this evidence. Thank you very much.

CHAIR DAVIS: Thank you, Des. Appreciate that comment, and also appreciate you making those materials available to the Board ahead of this meeting. Are there any other members of the public who would like to make comment today? Do we have any hands, Toni?

MS. KERNS: Jeff Kaelin has his hand up.

CHAIR DAVIS: Okay, Jeff, go ahead.

MR. JEFF KAELIN: I didn't know we were going to open up comments, but I just wanted to say that I really did appreciate Des' work, I thought it was really interesting, because you know the shorthand version of blueback and shad declines recently has been the offshore fishing fleet. You know obviously it's really a little more complex than that.

I do know, I just was talking to Jason Didden at the Council the other day. A few years ago, when this came up, we did go back and look at the shore-side monitoring data, which several years of 50 percent of the trips in the midwater trawl fishery. Really, that fleet doesn't catch very much shad. There are some data out there, Mr. Chairman.

I think I brought it up as an AP member, so I just wanted to make that point. Certainly, we want to see these stocks rebuild. It is complex, so I wanted to thank Des for his work, and for the Committee to consider this in a very broad way, so thanks for allowing me to make those comments.

CHAIR DAVIS: Okay, thank you, Jeff. Any other members of the public who would like to make comment?

MS. KERNS: I don't see any other hands, Justin.

REVIEW OF TECHNICAL COMMITTEE PROGRESS ON BOARD TASKS

CHAIR DAVIS: Okay great, thanks, Toni. We'll move on to the next item on our agenda, which is to get a review of Technical Committee Progress on Board Tasks. We've got the Chair of our Technical Committee, Brian Neilan here this morning, he is going to be giving us a presentation on three different items, two of which will require some Board action.

I think the way I would like to proceed here is to give the presentation on each item, and then stop and have a period of time for questions and comments, and then potentially taking action on that item. That being said, you know we've got about 35 minutes on

the clock here, to get through these three items, so I will be looking to move things along, to try to keep us on schedule. With that, Brian, I'll go ahead and turn it over to you.

MR. BRIAN NEILAN: All right, thank you, Mr. Chair, and good morning to the Board. My name is Brian Neilan, I'm the TC Chair and Rep from New Jersey. Today we have a couple presentations our staff put together for you. First, we will have this presentation on the TCs progress on a few Board tasks, and then I'll review some shad habitat plan updates as well. Here is a quick overview of what this presentation will cover.

First, at the last Board meeting the Board tasked the TC with developing a guidance document for implementing requirements under Amendment 2 and 3. We'll review the highlights of this document, and then the Board will consider it for approval. Second, I'll go over the progress made so far in regards to the task of evaluating and addressing bycatch in mixed-stock fisheries in state waters, and finally we'll go over a letter with recommendations from the TC on addressing fish passage performance, which we know has been a significant impediment to stock recovery.

CONSIDER TECHNICAL GUIDANCE DOCUMENT FOR IMPLEMENTATION OF AMENDMENTS 2 AND 3 TO THE SHAD AND RIVER HERRING FMP

MR. NEILAN: Okay, so first up is a review of the Technical Guidance Document developed by the TC to help states and jurisdictions better implement Amendments 2 and 3 to the FMP. For some background, back in late 2017, the Board tasked the TC to develop proposed improvements to Amendments 2 and 3, in regards to these five issues here.

Management and monitoring of rivers with low abundance in harvest, standardization of SFMP requirements, incorporation of stock assessment information into SFMPs, and discussion on the timeline for renewing plans, clarification of de minimis requirements, as they pertain to SFMPs, and a review of years of data required for developing an SFMP.

At the previous Board meeting in February, the Board approved the TCs recommendations and subsequently tasked the TC with developing a guidance document. This document is to help states and jurisdictions best implement the measures required by Amendments 2 and 3, and the draft document was included with your meeting materials for this meeting.

Just for the record, the TC does not recommend any changes to the FMP to address commercial fisheries. These will still have an SFMP requirement. An FMP should clarify the management of recreational fisheries specifically, and the recreational fishery should be dependent on the availability of harvest and monitoring information.

The fish chart rubric that staff put together, and the Board approved for allowing recreational harvest, should be used when a state is deciding which type of FMP to develop, either a standard SFMP, or an alternative management plan, as allowed under the amendments. Which type of plan a state can implement is dependent upon the known or suspected presence of shad or river herring in the system, as well as the quantity and quality of the data available to support a given type of plan.

The Board approved this chart back in February, and its use for recreational fisheries. Unless there are any specific questions, to keep it moving I won't go over the entire chart. Not hearing any, we can go to the next slide. In regards to technical guidance on the standardization of FMP requirements, a plan should provide details on management responses to trip triggers, including the type of restrictions that will be considered. That can be a suite of options.

States must notify the Board if the threshold is exceeded, and implement a management response in the following fishing year. Any restriction that is implemented in response to an exceeded threshold, must be in place until the associated target that was tripped is met for five consecutive years. Finally, in the case of interjurisdictional waterbodies. States should cooperatively develop FMPs and implement

identical sustainability targets and management measures on that interjurisdictional waterbody.

For Issue 3, incorporation of stock assessment information into SFMPs. The TC will continue to review information on required and ongoing monitoring efforts, and develop recommendations for improvements. The data used in these plans and assessments, essentially the TC will continue to review data on a case-by-case basis, and make appropriate recommendations on what should be included in a given SFMP, based on the data that we have available. Also, plans will continue to be required to be updated and reviewed every five years. The document makes no changes to the de minimis requirements. To qualify for de minimis status, states must land less than 1 percent of the coastwide commercial total, to be exempted from subsampling commercial and recreational catch for biological data.

This does not exempt states from the requirement to prohibit recreational harvest and possession, with exceptions for systems that have an approved sustainable fishery plan. The TC guidance on minimum number of years of data required to develop and establish a primary sustainability metric, is 10 years of data for American shad, consecutive years of data, and 10 years of data for river herring.

In the case of river herring, the TC may accept a time series of 7 to 9 years, with consideration of additional information to justify this shorter time series, such as exploitation rate, stock size, passage efficiency, really just case by case. The TC also developed some further guidance beyond the initial Board task, as it was reviewing the amendments in regards to the use of alternative management plans.

Going forward, the document requires that states proposing an AMP should now also include a rationale and justification for why a standard fishery management plan cannot be used. Justification that the proposed management program will be conservationally equivalent to catch and release.

Explanation of how the state will determine if or when an AMP is no longer appropriate, including a data source and trigger, such as three years of harvest that is observed through a creel survey, or something similar. A description of management response if the trigger is met. We have an example here, if harvest is documented through a creel survey for three consecutive years, catch and release only regulations will be implemented statewide, or for specified systems.

If a management trigger in an AMP is met the state must notify the Board in the next compliance report, and pursue implementation of a management response for the following calendar year. That is all I have, in regards to the TCs guidance document. I could take any questions anyone might have, before the Board considers the document for approval.

CHAIR DAVIS: All right, thanks, Brian. I'll turn it back to the Board and ask if anybody has questions for Brian on the presentation.

MS. KERNS: Right now, I just see Cheri Patterson with her hand up.

CHAIR DAVIS: Okay, go ahead, Cheri.

MS. CHERI PATTERSON: Would you please go back to Slide 7, I believe, if that is possible? I have a question in regards to B, where you have management restrictions implemented in response to a stock falling below the sustainability target, must stay in place until the target or targets have been met for at least five consecutive years of sufficient data collection. What was the purpose of going up to five consecutive years, as opposed to what is in there currently, where it indicates proposals to reopen closed fisheries may be submitted as part of the annual compliance report, and will be subject to review by the Plan Development Team, TC, and management board? I'm thinking this five consecutive years is a little extreme for some instances, and I would like to know why it went to five consecutive years.

MR. NEILAN: Sure, so the TC felt that they wanted some hard number. Just basically, sometimes we have a lot of gray, and we're looking for a little more "black and white" in the Amendments 2 and 3. Five

consecutive years is considered basically one shad generation. Given the results from the assessment and the general coastwide depleted status, the TC felt that five years was conservative, at a level of conservation that they felt they were comfortable with.

MS. PATTERSON: Okay, follow up, Mr. Chair?

CHAIR DAVIS: Absolutely, go ahead.

MS. PATTERSON: Thank you. This regards both shad and river herring, correct?

MR. NEILAN: Yes, that is correct.

MS. PATTERSON: I don't have a problem with everything else stated within this technical guidance. However, I do with 2B. I think that five consecutive years may be fine for shad, it doesn't have to be that high for river herring, as well as, there are many reasons behind instituting a management restriction, that may not have to do with the stock itself having an issue. An example could be what we've run into in New Hampshire.

We had a dam removal occur, and it's taken us two to three years to figure out how to now account for the fish passing through that former dam sight. We have reduced numbers counted for those reasons, as well as when anybody does a fish passage modification, that could affect passage until the modification is realized or not realized, and more modification needs to occur. It's not saying that the fish, the stock itself is failing. It's the accountability for how various states are counting these targets and thresholds.

I'm a little leery of this one, and I would prefer to have the previous language be put into this particular standardization, where it says that the proposals to reopen closed fisheries, may be submitted as part of the annual compliance report, and still be subject to that review by all three members or portions of the management, being the Plan Development Team, the TC, and the management board, because there are exceptions to this. I would hate to see some standardization interrupt those exceptions.

MS. STARKS: Mr. Chair, if I could follow up. This is Caitlin.

CHAIR DAVIS: Sure, go ahead, Caitlin.

MS. STARKS: I definitely hear Cheri's concerns, and I just wanted to kind of offer how this document would be utilized. Just to clarify. There wouldn't be necessarily a hard requirement, since this wouldn't be written into the FMP for there to be at least five years, where that sustainability target is being met. It would still be subject to TC review, but this is to give the Technical Committee some more structure with how they're looking at these requests. I do believe that indicates that Cheri has described, where there is another reason besides the population itself that is causing a sustainability target to not be met.

The Technical Committee would still have some ability to take that information into account, when they're making a decision or a recommendation to the Board about whether to reopen or remove a management restriction. Then ultimately, it would still be the Board's purview to approve or not approve such a request.

MS. PATTERSON: Follow up, Mr. Chair.

CHAIR DAVIS: Sure, go ahead, Cheri.

MS. PATTERSON: Thank you. I appreciate that, Caitlin, that it allows the TC some guidelines. That being said, you have guidelines here specific to shad, whereas you can have a lower consecutive year data collection for river herring. Why aren't you putting three to five years or three years for river herring and five for consecutive years for shad?

MS. STARKS: I can allow Brian to answer that, but I don't believe, I guess I was under the impression that the five years was applied to both species, not just shad, so Brian if you have any follow up to add.

MR. NEILAN: Sure, yes in this case it was both species, not just shad. Given the state of the river herring and shad stocks, I think the TC wanted to err on the side of

caution, and applies a longer time series to both species. I think Caitlin made a great point there that if a jurisdiction submits some sort of a reason as to why their numbers might be off, and it's not just the fishery. We have these consecutive years of sufficient data collection here, and I think if you could make the case, the TC is going to review it and understand that.

CHAIR DAVIS: Thanks, Brian, and I'll ask at this point, if we maybe hit pause on this particular discussion. I'm just going to ask if any other Board members have questions related to the presentation we were just given, on the Technical Guidance Document.

MS. KERNS: We have one hand, Bill Hyatt.

CHAIR DAVIS: Okay, Bill.

MR. WILLIAM HYATT: Yes, I just wanted to say that I thought this guidance document provides a nice balance between giving states flexibility and requiring consistent, clear standards. That said, I do have one question, and that pertains to the use of alternative management plans for recreational fisheries.

You said that alternative recreational management plans could be used in instances where they have the same conservation value as catch and release for recreational fisheries. I was just wondering if you could expand upon that with an example, to make that a little easier to understand. Thank you.

CHAIR DAVIS: Thanks Bill, Brian, do you want to field that one?

MR. NEILAN: Sure, I guess we could go to the previous slide, is that what we're looking at? Just to get an idea what I'm answering here to better understand how to apply the AMPs to the recreational fisheries?

MR. HYATT: My question had to do specifically with equivalency to catch and release, just sort of an example that would make that a little bit clearer.

MR. NEILAN: Okay, sure. I think in some of the southern states, I think particularly this might have come up specifically for Georgia, where they have exceptionally low presence of these species. The idea here was that the species are so low to begin with, and encountered so infrequently in the fishery, that if somebody does take one home it's so infrequent that it's going to have almost no effect, almost to the point of having a closed fishery or no harvest.

MR. HYATT: It would require some documentation that there was either extremely low abundance or an extremely minimal fishery.

MR. NEILAN: Yes, so the justification, if you're applying for an AMP that justification would be required, and you would also have to have some sort of system to look for a signal that the fishery was increasing, or abundance was increasing. Then go from there once you are starting to see fish, if you see them more frequently.

MS. STARKS: If I could follow up, Mr. Chair.

CHAIR DAVIS: Go ahead, Caitlin.

MS. STARKS: I just wanted to let everyone know that there are three alternative management plans that were approved by the Board already for recreational fisheries. The Technical Committee was kind of following their process with approving those, in developing these recommendations for this Technical Guidance Document. If you're interested in looking at those, they are on our website for South Carolina, Georgia, and Florida already AMPs in place for recreational harvest.

CHAIR DAVIS: Okay, thanks, Caitlin. I think at this point, we do need to take some Board action on this item, and Caitlin, am I correct in assuming that what we were looking for here is a motion from the Board to approve this Technical Guidance Document?

MS. STARKS: Yes, I think we would need a motion to approve it.

MS. KERNS: You have John Clark with his hand up.

CHAIR DAVIS: Okay, go ahead, John.

MR. JOHN CLARK: Thank you, Mr. Chair, if you're ready I have a motion.

CHAIR DAVIS: Go ahead.

MR. CLARK: Move to approve the Technical Guidance Document for implementation of Amendments 2 and 3 to the Shad and River Herring Fishery Management Plan.

CHAIR DAVIS: Okay, thank you, John, do we have a second to the motion?

MS. KERNS: Dr. Malcolm Rhodes.

CHAIR DAVIS: Thank you, Dr. Rhodes. Any discussion on the motion?

MS. KERNS: I don't know if John is, he still has his hand up, I don't know if he wants to speak to it. He put his hand down.

CHAIR DAVIS: John, did you want to speak to the motion?

MR. CLARK: Sorry about that, I just put my hand down. I think the motion is self-explanatory, thanks.

CHAIR DAVIS: I'll ask again if there is any discussion on the motion.

MS. KERNS: I don't have any hands raised, Justin.

CHAIR DAVIS: Okay, given that, I'll ask if there are any objections to the motion.

MS. KERNS: I see no hands raised.

CHAIR DAVIS: Okay, so given that we'll consider the motion approved by unanimous consent.

UPDATE ON METHODS TO EVALUATE BYCATCH IN MIXED-STOCK FISHERIES

CHAIR DAVIS: Moving on, we'll move on to our second item under Review of Technical Committee Progress**,** which would be an update on Methods to Evaluate Bycatch in Mixed-stock Fisheries**.** Brian, go ahead.

MR. NEILAN: As Mr. Chair said, we'll be going over the TCs progress on evaluating bycatch in mixed-stock fisheries in state waters. A bit of background. Back in August of 2020, after receiving the results of the stock assessment, the Board tasked the TC with identifying potential paths forward to improve shad stock along the coast. Some system-specific recommendations were made at the last Board meeting in February, and the TC identified the need to better understand and possibly reduce impacts to external stocks of directed mixed-stock fisheries.

An example that is often used is Hudson and Connecticut River shad being caught in the lower Delaware Bay. At that February meeting, the TC was tasked with developing methods to evaluate bycatch removals in directed mixed-stocked fisheries in state waters in order to understand and reduce impacts to these stocks.

So far, we've developed a roadmap for going forward to accomplish this task, as you see here. Fist we are going to define our goals and expectations, identify where these mixed-stock fisheries are being executed, and collect any and all data available from these areas. This includes past and present DNA studies, tagging data, and commercial and recreational harvest data, to determine where these mixed-stock fisheries occur, and to what degree. Once we know what data we have available, we can determine the feasibility of developing modeling methods to estimate composition of mixed-stock fisheries.

After that we can evaluate any new or existing methods of reducing or eliminating mixed-stock harvest, and finally, the goal here is to develop recommendations from the Board on reducing or eliminating mixed-stock harvest or recommend research priorities going forward to address this task.

Here is where we are as of right now. The TC Task Group has been populated, which sent out a data request and data template to all state representatives, looking for information on mixed-stock fisheries and/or bycatch. States with mixed-stock fisheries

have filled out the template with their available data, and submitted them to the Task Group.

The Task Group will be meeting later this month for the first time, to start evaluating the available data, and plan how to move forward on this task. That is generally where we are currently, in regards to this task. Like I said before, your TC Task Group will be meeting for the first time later this month, and I can take any questions that the Board may have.

CHAIR DAVIS: I'll ask if anyone from the Board has questions for Brian on this item.

MS. KERNS: I don't see any hands raised at this time.

CONSIDER TECHNICAL COMMITTEE RECOMMENDATIONS ON ADDRESSING FISH PASSAGE PERFORMANCE

CHAIR DAVIS: Okay, thanks, Toni. Brian, I guess that means you can go ahead and move on to our last item under Review of Technical Committee Progress, Considering the Technical Committee Recommendations on addressing Fish Passage Performance.

CHAIR DAVIS: All right, recommendations on addressing fish passage. We can go right to the next slide. Starting with a little background. This ties into the original Board task of identifying potential paths forward to improve shad stocks. The TC indicated that further action is needed to improve fish passage, due to passage mortality posing a significant threat to stock recovery.

Analysis done in the recent stock assessment suggests passage barriers reduced coastwide spawner production potential by up to 41 percent. As a result, the TC prepared a memo with recommendations for Board action related to passage. Here we have some key information highlighted in the memo.

The cumulative effect of barriers should be recognized as one of the most impactful obstacles to the recovery of American shad, in part due to a bunch of issues, including migratory delays, injuries and stress, and mortality to upstream and downstream migrants at adult and juvenile life stages.

Assessment modeling of current passage efficiencies showed a less than 10 percent increase in spawner potential, versus no passage at all at a first encountered barrier. Quantitative fish passage performance criteria are needed to test the effectiveness of fish passage facilities, to achieve management goals. Fish passage prescription authority lies with the Fish and Wildlife Service and NMFS under the Federal Power Act, as well as states often having the ability to address fish passage when issuing water quality certificates for operation. In regards to TC recommendations, the TC feels that the following actions are needed to reduce impacts of barriers, and provide for population recovery.

First and foremost, barrier removal is the preferred approach to restored habitat access. Obviously, this is not an option all the time, or in every instance. When dam removal is not an option, the development and use of fish passage performance standards in river systems, based on available data, fish passage modeling tools, and fish passage expertise is recommended. If the required information to develop performance standards is not available, it should be developed.

The TC recommends that the Commission forward letters to agencies with relative authorities to request prioritizations of these here mentioned issues, when considering licensing and permitting of projects that might impede access to spawning grounds and out-migration. Next steps for today, we already addressed the draft Technical Guidance Document, so I can take any questions on the fish passage letter, otherwise hand it over to the Board to consider.

CHAIR DAVIS: Great, thanks, Brian. Before I potentially entertain questions related to this last part of the presentation. I wanted to invite the Board members representing the federal agencies in question here, to potentially provide comment on their sort of perceived value of sending letters to their respective agencies requesting prioritization, according to the TC recommendation. I'll just sort of

put that out there, Max or Mike, if either of you would like to comment on this idea of sending letters.

MS. KERNS: You have Mike Millard and then Max.

CHAIR DAVIS: Okay, go ahead, Mike.

MR. MIKE MILLARD: First of all, I guess I would like to say that the intent of that recommendation is certainly good. The Service agrees that fish passage is a huge issue, and probably the single largest action we can take to restore a system is removal of a dam, and then followed by passage mechanics after that.

I guess I would say, speaking internally for the Service in my region, and probably the southeast region. But a letter such as this may not move the needle too much. We feel like we already prioritize fish passage, at least in the northeast we have full time fish passage engineers that are really busy. We have a fish passage discretionary pot of money every year that we move out, move out to our partners, including states and NGOs.

In the northeast it is about just under 1.5 million dollars a year, and I assume it's similar in the southeast region. Could we do more? Sure. But that would come at the cost of other issues that are priorities, and I know everyone on the Board understands how that works. Having said that, such a letter could be useful when we get into FERC negotiations, right? Everything you prescribe in a FERC settlement needs to be justified pretty tightly. A letter like this and the results that it might produce, could be useful in those FERC negotiations for justifying prescriptive actions to utilities. Thank you.

CHAIR DAVIS: Thanks, Mike. Max.

MR. MAX APPELMAN: Yes, so following on what Mike just said. I think for the Agency we would echo a lot of those sentiments that very important work, and I don't think we would disagree with a lot of those bullet points on the previous slide. We do prioritize this work, and I think there is a lot of great examples in the northeast, and then successes in the past, and ongoing work here with other systems.

We also require, you know testing and minor modifications to fishways during the life of FERC licenses, but of course major changes are really only feasible during relicensing, or when the license is first issued. We do prioritize that work. We exercise our authorities under the Federal Power Act. In regard to FERC relicensing, we reserve those authorities. But that's not to say that a letter of support, like Mike was saying, wouldn't be valuable.

I think having the management authority's perspective, in this case the Commission's voice on why this work is needed to achieve certain management goals or objectives, could help ground truth, as Mike was getting at, some of our requests and proposals for fishways could definitely help tie that in with the Commission's perspective. That could be helpful. I think as part of that, it might be useful to have the Technical Committee help identify those systems that are high priority for shad recovery.

Maybe inventory available data at those sites, or other sites that could support the development of this fish passage criteria. I think that might help provide some guidance or direction to, not just the federal agencies, but also the states, you know where to focus conservation efforts in the future. I'll end there, and see what other Board members had to say on this.

CHAIR DAVIS: Thank you, Max and Mike for those comments. I think those are very helpful to the Boards on how to move forward with this item. I'll ask if there are any other questions and comments from the Board on this topic.

MS. KERNS: The only name I Have is Allison Colden.

CHAIR DAVIS: Okay, go ahead, Allison.

MS. ALLISON COLDEN: This kind of follows along with the question or comment that Max just made. I was curious if there is already available, or could be developed, basically a list or a timeline of existing facilities that will be up for relicensing. It seems like,

you know relicensing or the point of licensing is one of the very few opportunities that states have to enforce or implement these performance standards.

I think it would be helpful if we knew when those facilities were up for relicensing, to plan ahead to prioritize the development of those performance metrics. I was wondering if that was currently available, or could be developed relatively easily.

CHAIR DAVIS: Thanks, Allison. Brian, I'm going to defer to you on that one, although we can also ask for input from Max or Mike if needed.

MR. NEILAN: Sure, Ken Sprankle with the Fish and Wildlife Service has over the past couple years been spearheading an effort to put together a database of different impoundments on a system-by-system or state-by-state basis, just to kind of get full coverage of the Atlantic coast, and where we have impoundments, and possibly using that to prioritize where efforts at removing them will have the most effect. I don't think we have a list, in terms of FERC renewals coming up. But I'm sure that is something that could be put together.

MS. KERNS: Mr. Chair, you have Mike Millard.

CHAIR DAVIS: Okay, go ahead, Mike.

MR. MILLARD: I can speak for the Service, and I'll let Max, I guess weigh in for NOAA, but we have full time FERC coordinators on staff, that I assume have a list like that or could easily get this type data, FERC relicensing schedules coming up. I guess I would add while I have the floor. To Max's recommendation, and I hate to dump more back on the TC. But it is one thing, it's a good thing to have a schedule of FERC relicensing's coming up.

It would be value added to have that schedule with some sort of priority of the bang for the buck, with a cross benefit of those FERC events coming up, in terms of fish passage and benefit to the fishery resources. Every negotiation I think, that the Service has to sort of weigh the cost benefit of how much to invest in that particular negotiation. Knowing that for a fishery resource would help us inform those decisions.

CHAIR DAVIS: Toni, was there another hand up after Mike?

MS. KERNS: Those were all the hands that I have so far.

CHAIR DAVIS: Okay, great, thanks. My takeaway from the discussion here is what we've heard from our federal partners is that there would be some value to sending the letters that the Technical Committee is recommending, particularly when it comes to the FERC relicensing process.

Max Appelman also suggested that there might be some value as part of that correspondence in providing information to the Agencies on prioritization of different projects, that also might be helpful during the FERC relicensing process for these agencies to make, sort of cost benefit decisions. At this point we can take action on this item, and Caitlin, I think we would be looking for a motion from the Board, relative to potentially sending these letters, correct?

MS. STARKS: Yes, it's up to the Board how they would like to proceed. I guess if the Board would like to send a letter, we would need a motion to recommend that to the ISFMP Policy Board. But I guess I wanted to clarify process wise for the Technical Committee. Is it preferable to have the Technical Committee try to gather this information? Look at the list of FERC relicenses, and prioritize those and then include that information in a letter that would go to the agencies, or is it preferable to, I guess send a letter today with less information, and then follow up with that prioritization? I guess that is what I would like to clarify.

CHAIR DAVIS: Brian, do you want to provide some input on that?

MR. NEILAN: Sure. I think anytime you have more data you can put into the letter; it would be more convincing. I think Caitlin brings up a pretty good point here. That might be worth going down that

avenue. I guess just I would be remiss to not get some guidance on the Board. We also have the other task of the mixed-stock fisheries. I guess we would look to the Board for some guidance on prioritization on the tasks as well.

MS. KERNS: Mr. Chair, you have two Board members and a member of the public. Your Board members are Allison Colden and Megan Ware, and just let me know if you want to go to the public.

CHAIR DAVIS: Okay, Megan, go ahead, and then I'll go to you, Allison.

MS. MEGAN WARE: Kind of just listening, because that's a question I had for the TC. I feel like we're starting to talk maybe about like river-specific data or recommendations, so I'm wondering, was the original intent of the letter to be, I don't want to say generic, but kind of like a single letter that everyone gets, or was the thought process that this would be a letter formulated for kind of each agency or state with specific information in it?

MR. NEILAN: Both. I think the original intent here was to kind of send this out to the appropriate agencies, as one letter. If we go the avenue of looking at prioritizations and system-specific evaluations, it's certainly going to delay the sending of this letter, I'm sure by quite a bit. I think that's something to consider as well.

CHAIR DAVIS: Okay thanks, Allison.

MS. COLDEN: I had my hand raised previously, just being willing to offer a motion to this regard. But happy to hold that until we figure out this issue of general versus specific letters.

CHAIR DAVIS: Okay thanks, and Toni, you mentioned there was someone from the public who had their hand up?

MS. KERNS: Wilson Laney.

CHAIR DAVIS: Okay, Wilson, go ahead. I will ask you to try to keep it brief, because we are running up against the end of our allotted time on the agenda.

DR. WILSON LANEY: I will keep it brief, Mr. Chairman, and thank you for recognizing me. To the question about whether or not there is a list of upcoming FERC licenses, the answer is yes. It's on the FERC website, all you have to do is download it. Then with regard to prioritization of passage of barriers within individual states. Some while back, and Caitlin should be able to find this information. Jeff Kipp was the staff person who was coordinating the ASMFC Fish Passage Working Group. That was one thing the Work Group did, was we worked with the Technical Committee and the state representatives on the Fish Passage Working Group, to put together a list of barrier priorities within each jurisdiction. It probably is somewhat dated now, since I think we did that quite a few years ago.

But the Technical Committee would not have to start from scratch, is the point, if you all wanted to charge them with taking a look at both the FERC list and that previous list put together by the Fish Passage Work Group in considering whether or not to include that information in any letter that you might send to the Fish and Wildlife Service, NMFS, and FERC. Thank you.

CHAIR DAVIS: Great, thanks very much for that comment, Wilson. Any other hands up at this point, Toni?

MS. KERNS: I don't have any other hands.

CHAIR DAVIS: Okay, well at this point, I think it's probably time for us to potentially make a motion to take action, and Allison, I'll turn back to you, since you mentioned that you were potentially ready to make a motion. Would you like to do so?

MS. COLDEN: Sure. I don't know if staff has one ready, but I can try and do this on the fly as well, if not.

MS. STARKS: Allison, were you making a motion to send a letter, or to task the TC?

MS. COLDEN: I was going to go ahead and make the motion to send the letter to the agencies.

MS. STARKS: Okay, Maya, can you pull that motion up please that I drafted? The third one.

MS. COLDEN: Okay, move to recommend to the ISFMP Policy Board that the Commission write a letter to NOAA Fisheries and U.S. Fish and Wildlife Service, to prioritize the following actions to provide increased opportunities for population recovery of American shad. First, dam and barrier removals are the preferred approach to restore fish species habitat access for population restoration, and for habitat restoration benefits.

When dam removal is not an option, the development and use of fish passage performance standards in river systems, based on available data, fish passage modeling tools, and fish passage expertise is recommended. If the required information developed performance standards are not available, support their development for such purposes and application.

CHAIR DAVIS: Thank you, Allison, do we have a second to the motion?

MS. KERNS: Cheri Patterson.

CHAIR DAVIS: Thank you, Cheri, any discussion on the motion?

MS. KERNS: Max Appelman.

CHAIR DAVIS: Okay, go ahead, Max.

MR. APPELMAN: Of course, given the intent of this motion, I would be abstaining. But I just wanted to comment on sort of the tone of what this looks like right now. I think what Mike and I were saying earlier is that we already do prioritize this work, so if the intent here is to request prioritization, I don't think that is going to do much. But again, if the tone were more in a supportive nature, I think that is something that we could take to the table at these FERC negotiations. Just making that sort of comment on what the tone of this letter, how this letter could help the agency.

CHAIR DAVIS: Any other discussion on the motion?

MS. KERNS: I don't see any other hands raised, Justin.

CHAIR DAVIS: Okay, process question, Toni. I can ask if there are any objections, and if there aren't any, should I also ask if there are any abstentions, given that we've had one Board member indicating they are going to abstain from the vote.

MS. KERNS: Yes, we can do it that way, ask if there are objections, and then we'll indicate one abstention, unless Mike also abstains, and he has his hand up as an abstention, so we could do those two. Allison Colden does have her hand up now.

CHAIR DAVIS: Allison, go ahead.

MS. COLDEN: In response to Max, I was wondering if slightly modifying this language would help, and I would suggest move to recommend to the ISFMP Policy Board that the Commission write a letter to NOAA Fisheries and U.S. Fish and Wildlife Service, supporting their activities in dam passage review, to provide increased opportunities, et cetera. I would love some feedback, and would be willing, if the seconder was comfortable with that, to make that adjustment.

CHAIR DAVIS: Okay, thanks, Allison. I guess I'll first ask Max to respond if he would view this as an improvement to the motion.

MR. APPELMAN: Sure, yes. I do. I think Allison is on the right track here, you know maybe just finding a way to cut out prioritize and substitute with support actions. Maybe that is a clean way to do it.

CHAIR DAVIS: Okay, thanks, Max. Allison, would you be good with that wording?

MS. COLDEN: Yes, that's fine with me, thank you.

CHAIR DAVIS: Cheri, I'll also ask you as the seconder of the motion if you're good with that.

MS. PATTERSON: Yes, thank you.
CHAIR DAVIS: Okay, any other discussion on the motion?

MS. KERNS: You have no hands raised.

CHAIR DAVIS: Okay, given that I'll ask if there are any objections to this motion.

MS. TINA L. BERGER: I'm sorry, but I'm not sure the motion is in a final language.

MS. STARKS: Yes, I was just going to pick and come back, I wanted to remove prioritize, so maybe it should say supporting their activities in dam passage review, to provide increased opportunities. Is that what you said, Allison?

MS. COLDEN: Yes, I think that is correct.

MR. APPELMAN: If I could just jump in again, Mr. Chair, and just say, as long as we're clear on the record of when staff actually goes and writes this letter, and that it takes a tone, a supporting tone, as opposed to a directive. I think I'm fine with this. Of course, I am abstaining.

CHAIR DAVIS: Okay, thanks, Max, and thank everybody for keeping me honest there, and noting that the motion wasn't in final form yet. Now that I believe we've got it in final form, I'll ask again if there are any objections, noting that there are already two abstentions on the record from U.S. Fish and Wildlife Service and NOAA National Marine Fisheries Service.

MS. KERNS: I see no hands raised in objection.

CHAIR DAVIS: Great, thanks, we'll consider this approved by consent. I think the other matter we have to deal with here is there was some discussion about potential value in taking the Technical Committee with coming up with prioritizations of different barriers for restoration action, potentially using the list of upcoming FERC actions as a guiding tool for that. Also keeping in mind though, that the Technical Committee already currently has one task on their docket ongoing, the evaluation of bycatch in mixed-stock fisheries.

I guess I'll put this back to the Board. Would anyone care to make a motion to task the Technical Committee with an additional task related to prioritization of fish passage projects, keeping in mind that we should then also give some guidance on prioritization of the Technical Committee's tasking.

MS. KERNS: Max Appelman.

CHAIR DAVIS: Go ahead, Max.

MR. APPELMAN: Yes, I'm happy to make that motion. I think this is a valuable exercise, and hearing from Wilson, they don't really need to start from scratch, there might be some documents there to get it started. I do have a motion. I don't know if staff wants to, yes, great.

I would move to task the Technical Committee with prioritizing systems for shad recovery, and developing an inventory of available data that would support development of fish passage criteria. The intent here, given the workload already on the TC, would be to prioritize this below those ongoing TC tasks.

CHAIR DAVIS: Okay, great, thanks, Max. Do we have a second to the motion?

MS. KERNS: Mike Millard.

CHAIR DAVIS: Thanks, Mike, any discussion on the motion?

MS. KERNS: Mike Millard.

CHAIR DAVIS: Go ahead, Mike.

MR. MILLARD: I obviously support the motion, since I seconded it. But I guess I would add that there are, in addition to what Wilson identified, I know there is more than a couple map-based prioritization tools for some sort of Hec-8 level, I think or maybe even finer

than that. We're prioritizing where you get the biggest bang for the buck for fish passage, given the fishery resources in the basin. There are tools available for the TC to go off on.

CHAIR DAVIS: Any other discussion on the motion?

MS. KERNS: No additional hands, Mr. Chair.

CHAIR DAVIS: Given that, I'll ask if there are any objections to the motion.

MS. KERNS: I see no hands.

CHAIR DAVIS: Okay, we'll consider the motion approved by unanimous consent. Thanks everybody.

CONSIDER APPROVAL OF THE SHAD HABITAT PLAN UPDATES

CHAIR DAVIS: All right, and we'll now move on to the last item on our agenda. I apologize, we have run a bit over our allotted time here, so we'll attempt to move through this last item quickly, which is to Consider Approval of the Shad Habitat Plan Updates. Brian, I'll turn it back over to you.

MR. NEILAN: Thank you, Mr. Chair, I'll try to move quickly. I don't want to cut into people's lunches too much. We have some Shad Habitat Plan updates for you. Just a bit of background. Under Amendment 3 all states and jurisdictions are required to submit habitat plans for American shad, which are meant to contain a summary of information current and historical spawning and nursery habitats, threats to those habitats, and any restoration programs that the states are undertaking.

In February, the Board agreed that these plans should be updated every five years or so, similar to SFMPs, and asked that states update existing plans originally approved in 2014, and for the states with missing plans to submit new habitat plans. This is the Merrimack and the Hudson. Six habitat plans were approved by the Board back in February. Today we have another six habitat plans for Board consideration. The TC has reviewed all these plans, and recommends them all for Board approval. Here is our habitat plan updates. For the Massachusetts coastal rivers, new sections were incorporated in regards to shad runs in the Jones, North, South, and Neponset rivers.

They did a whole bunch of updates, new summaries on their Table 1, looking at the different shad runs in the state. Generally, just a general update, nothing too crazy. Rhode Island updated its Habitat Plan with recent dam removals and fishway installations and improvements on the Pawcatuck and Pawtuxet rivers.

Connecticut updated many of its tables and figures, as well as maps in the Habitat Plan, updated threats to the threat's assessment section, updated the habitat assessment, as well as the habitat restoration sections, with any new info that has come up since the previous plan. The Delaware River Basin states updated their plan, so New York, New Jersey, Pennsylvania and Delaware.

More information on salt front location and primary historical spawning grounds in the background section. They also updated main stem and tributary habitat assessment, updated the nursery habitat section, as well as the threat assessment section. For South Carolina there was the acknowledgement of the approved joint Shad Habitat Plan for the Savannah River, between South Carolina and Georgia.

They updated information regarding the Yadkin and Pee Dee River for relicensing issued to Duke Energy some river specific online tools available to the public that include information for a whole bunch of different issues, in regards to licensing in specific rivers, and information regarding the Santee-Cooper FERC license, which has not yet been issued.

They also added some additional fish passage consideration. Finally, Florida updated sections on the St. Johns, the Econlockhatchee River and the Ocklawaha. I think I might have added an extra A in there somewhere. Specifically updated the Basin Management Action Plan for Lake Jesup, which discharges into the historical spawning grounds for

shad, as well as the Basin Management Plans for the first three springs that discharge into the St. Johns River.

Updated, like I said the Econlockhatchee Plan and the Ocklawaha. The St. John's River Management District updated its review of impacts, removing the dam on nutrient dynamics downstream. Today the Board needs to consider approval of the six plans presented. The TC recommends that all six plans that I just went through there should be approved by the Board.

Also, a possible recommendation that the remaining states update habitat plans, and submit new plans in the case of the Hudson and the Merrimack, in time for the TC to review for the next Board meeting. I can take any questions if anybody has any, otherwise I'll turn it over to Mr. Chair.

CHAIR DAVIS: Thank you, Brian, I admire your courage in attempting some of those river names, there were some doozies in there. I'll ask if anyone on the Board has questions for Brian.

MS. KERNS: I do not see any hands, Mr. Chair.

CHAIR DAVIS: Okay, thanks, Toni. Given that, I'll ask if anyone on the Board would care to make a motion.

MS. KERNS: I'm sorry, Mike Armstrong just put his hand up, I apologize.

CHAIR DAVIS: Okay, go ahead, Mike.

DR. MICHAEL ARMSTRONG: I'm sorry, I was anticipating your next words. I assume they were asking for a motion, is that correct, Mr. Chairman?

CHAIR DAVIS: That is correct, Mike.

DR. ARMSTRONG: All right, I have one for you. Move to approve the Shad Habitat Plan Updates for Mass, Rhode Island, Connecticut, Delaware River, South Carolina, and Florida, as presented today.

CHAIR DAVIS: Okay, thank you, Dr. Armstrong, do we have a second to the motion?

MS. STARKS: I saw Lynn Fegley's hand first.

CHAIR DAVIS: Okay Lynn, thank you. Any discussion from the Board? I will make one note. There was a recommendation in there from the Technical Committee which states we have plans still outstanding, submit those in time for review before the next Board meeting. I guess I would ask the maker of the motion if he would be amendable to adding something in there to the motion to address that recommendation.

MS. STARKS: I don't think it's necessary, but if you would like to include it in the motion that is fine.

CHAIR DAVIS: Okay, thanks, Caitlin. Given that, maybe it's not necessary.

MS. KERNS: I don't see any hands wanting to comment on the motion, Mr. Chair.

CHAIR DAVIS: Okay, given that I'll ask if there are any objections to the motion.

MS. KERNS: I see no hands raised.

CHAIR DAVIS: Okay, we'll consider the motion approved by unanimous consent. Thanks everyone.

ADJOURNMENT

CHAIR DAVIS: Moving on to our last item on the agenda, is there any other business to come before this Board today?

MS. KERNS: I don't see any hands raised.

CHAIR DAVIS: All right, then I'll entertain a motion to adjourn.

(Whereupon the meeting convened at 11:45 a.m. on May 5, 2021.)

Commonwealth of Virginia American Shad Habitat Plan

2021 Update

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Introduction

The Virginia American Shad Habitat Plan for the ASMFC is a joint effort between staff of the Virginia Institute of Marine Science, Virginia Department of Wildlife Resources, and the Virginia Marine Resources Commission. This 2021 report includes additional information or progress on existing threats recorded within the 2014 report, but also includes documentation of three additional threats considered to impact American Shad habitat: 1) In-river construction and blockage to migration; 2) Agricultural water intakes; and 3) Industrial water intakes and discharge. The scope of this report is limited to the three primary tributaries of the Chesapeake Bay within Virginia (James, York, and Rappahannock rivers); populations of American Shad exist in the Virginia portions of the Nottaway River and the Potomac River, but these are managed by other jurisdictions (North Carolina and Potomac River Fish Commission, respectively). We thank Emily Hein (VIMS) and Randy Owen and Tiffany Birge (VMRC) for information.

Agencies within the Commonwealth of Virginia with Regulatory Ability Related to American Shad or American Shad Habitat Management

Virginia Marine Resources Commission (VMRC). The VMRC is divided into three divisions: 1) Fisheries Management, which is charged with regulation of fisheries resources in tidal and marine environments, including collection of fisheries statistics, development of management plans, and promotion and development of recreational fishing activities; 2) Habitat Management, which manages and regulates the submerged bottom lands, tidal wetlands, sand dunes, and beaches; and 3) Law Enforcement, which enforces state and federal fisheries laws and regulations.

Virginia Department of Wildlife Resources (VDWR). The Department of Game and Inland Fisheries became the Department of Wildlife Resources on July 1, 2020. The VDWR manages and regulates inland fisheries, wildlife, and recreational boating for the Commonwealth of Virginia, and is responsible for enforcement of laws pertaining to wildlife and inland fisheries management.

Virginia Department of Environmental Quality (VDEQ). The VDEQ is charged with monitoring and regulating the quality of air and water resources in Virginia. VDEQ is organized into many programs, including Air, Water, Land Protection and Revitalization, Renewable Energy, Coastal Zone Management, Enforcement, Environmental Impact Review, Environmental Information, and Pollution Prevention.

In addition to state agencies, the Army Corps also regulates all of these areas from the federal perspective (with input and/or official consultation with other federal agencies such as NOAA-Fisheries and Fish and Wildlife Service).

Habitat Assessment

In Virginia, American Shad is found in the Chesapeake Bay and its major tributaries, including the Potomac, Rappahannock, York, and James rivers, as well as smaller tributaries and other coastal habitats (e.g., along the Delmarva peninsula) (Fig. 1). Additionally, American Shad are found in certain rivers in Virginia that drain to North Carolina (Desfosse et al., 1994). Here we focus on the major western tributaries of the Chesapeake Bay as these are the primary stocks in Virginia waters. Although certain spawning/rearing reaches are known for American Shad for individual rivers (Bilkovic et al. 2002), the amount of habitat used by American Shad for these life history stages at a river-wide scale is unknown for Virginia tributaries of the Chesapeake Bay. Several tidal portions of the three major Virginia tributaries of the Chesapeake Bay have been designated as high priority areas for living resources, and migratory fishes in particular (Figs. 2, 3).

James River

The James River forms at the junction of the Cowpasture and Jackson rivers (rkm 580), and its drainage is the largest watershed in Virginia, totaling 26,164 km^2 (Jenkins and Burkhead, 1994). Average annual spring discharge on the James River is 294.2 m^3/s (Tuckey 2009). Prior to damming, which began in the colonial period, shad and river herring were reported to reach these headwaters and far into the major tributaries of the James River (Loesch and Atran, 1994). The two primary tributaries of the James River below the fall line at Richmond are the Appomattox River, which joins at the city of Hopewell (rkm 112), and the Chickahominy River, which joins at rkm 65. The extent of salt water is variable, but brackish conditions are observed as far up as the mouth of the Chickahominy River on a seasonal basis. Tidal water reaches the City of Richmond at approximately rkm 167 at the lower end of the fall zone. Boshers Dam is at the upper end of the fall zone at rkm 182.

York River System

The York River system includes the Mattaponi and Pamunkey rivers, which merge at West Point, VA, to form the York River (53 rkm). This is the smallest of the three western tributary systems, with a watershed of 6,892 km^2 (Jenkins and Burkhead, 1994); the Pamunkey drainage is larger and has greater average spring discharge than that of the Mattaponi (3,768 km^2 and 47.5 m^3/s vs. 2,274 km^2; 27.2 m^3/s, Bilkovic 2000). Tidal propagation extends to approximately 67 rkm in the Mattaponi and 97 rkm in the Pamunkey (i.e., approximately 120 km and 150 km, respectively, from the mouth of the York River; Lin and Kuo, 2001). The extent of the salt intrusion varies by season, but moderate salinity values (>2 ppt) are often observed in lower portions of these rivers.

Rappahannock River

The Rappahannock River, which is approximately 314 km in length (172 km is tidal; 118 km is salt water), has its headwaters in the Piedmont and is fed by the Rapidan River. The Rappahannock watershed encompasses a total of 7,032 km^2 (Jenkins and Burkhead, 1994), and the average annual discharge at the fall line is 45 m^3/s (O'Connell and Angermeier 1997). An estimated 125 tributaries of the Rappahannock River are potentially used by alosines (O'Connell and Angermeier 1997).

Threats Assessment and Habitat Restoration Programs

Rulifson (1994) identified the following river specific factors potentially involved in the decline of migratory alosines in Virginia, including American Shad:

Rappahannock River: dams, overfishing, turbidity, low oxygen

York River System:
- York River: industrial water intakes, industrial discharge locations, overfishing, chemical pollution, thermal effluents, low oxygen, sewage outfalls
- Mattaponi River: industrial discharge locations, overfishing, thermal effluents
- Pamunkey River: industrial discharge locations, overfishing, thermal effluents

James River System:
- James River: channelization, dredge and fill, dams, industrial water intakes, industrial discharge locations, overfishing, chemical pollution, thermal effluents, turbidity, sewage outfalls
- Nansemond River: dams
- Chickahominy River: dams, industrial discharge locations, overfishing.
- Appomattox River: dams
- Pagan River: turbidity, sewage outfalls

Further Rulifson (1994) identified the potential habitat management practices, or rather their effects, involved in the decline of migratory alosines in Virginia, including American Shad:

Rappahannock River: inadequate fishways, reduced spawning habitat

York River System:
- York River: poor water quality
- Mattaponi River: poor water quality
- Pamunkey River: poor water quality

James River System:
- James River: inadequate fishways, reduced freshwater input to estuaries, reduced spawning habitat, poor water quality, water withdrawal
- Nansemond River: inadequate fishways, reduced freshwater input to estuaries, reduced spawning habitat, water withdrawal
- Chickahominy River: reduced freshwater input to estuaries, reduced spawning habitat, fishing on spawning area, water withdrawal
- Appomattox River: inadequate fishways, water releases from dams, reduced spawning habitat, water withdrawal
- Pagan River: turbidity, poor water quality

From the above threats assessment, several primary classes of threats and their associated repercussions are identified here in relation to American Shad habitat needs and restoration in Virginia. These are discussed below.

Threat: Barrier to Migration (Dams). As an anadromous fish, American Shad are negatively impacted by obstructions to migration from marine and estuarine habitats to the upstream

freshwater spawning and rearing habitats. Here we provide a review of the primary obstructions found on the three Virginia tributaries of the Chesapeake Bay.

Rappahannock River: The main stem of the Rappahannock River was dammed until 2004-2005 when the submerged Crib Dam (built in 1854) and the Embrey Dam (built in 1910) at Fredericksburg (rkm 179) were removed. Removal of the dam reopened 170 km of potential habitat on the Rappahannock and Rapidan rivers for migratory fishes, such as American Shad and river herring (American Shad and Blueback Herring have been collected 45 km upstream of dam). Over 2,200 miles of Upstream Functional Network miles were reopened by the removal of Embrey Dam, which was the last remaining dam on the Rappahannock main stem. Upstream Functional Network miles are all miles accessible on the barrier stream plus all accessible tributary miles above the passage project (Martin, 2019). There are dams in place on tributaries of the Rappahannock (e.g., the Rapidan River) that may impede migration of American Shad (although it is unknown if American Shad used these reaches prior to dam installation). A fish passage was installed on the Orange Dam on the Rapidan River, a tributary of the Rappahannock (http://www.dwr.virginia.gov/fishing/fish-passage/) 16 km upstream of Rapidan Mill Dam, which remains as a migration barrier.

York River System: The Mattaponi, Pamunkey, and York rivers are all completely undammed. There are few dams in place on some tributaries of these rivers (e.g., the Ashland Mill Dam on the South Anna River, a tributary of the Pamunkey, which is known to block American Shad migration).

James River: Numerous dams on the James River and its tributaries have historically blocked migration of fishes. Between 1989 and 1993 three dams in the fall zone in Richmond were breached or notched, extending available habitat to the base of Boshers Dam. A fish passage was installed in Boshers Dam (built in 1823) in 1999, reopening 221 km of the upper James River and 322 km of its tributaries to American Shad and other anadromous fishes; the next dam of the mainstem is at Lynchburg, VA (Weaver et al., 2003). A total of 4,700 upstream functional network miles were reopened by the Boshers fishway (Martin, 2019). Approximately 204 km of the main stem of the Appomattox River is accessible to American Shad. Harvell Dam (rkm 17) in Petersburg, VA had a Denil fishway (1998) and then the dam was removed in 2014. Brasfield Dam (rkm 28) that forms Lake Chesdin near Matoaca, VA has a fish lift that completes passage through the Appomattox fall zone resulting in access to 2,957 upstream functional network miles. The first dam on the Chickahominy is Walkers Dam at rkm 35 that has a functioning double Denil fishway built in 2015 that reopens 48 mainstem river kilometers (508 upstream functional network miles). American Shad are known to use the Walkers fishway (2021 DWR trapping data) and have been found over 40 km upstream (Michael Odom, USFWS personal communication 2020). A number of additional dam removal and fishway construction projects have occurred in the past on several smaller creeks and streams in the James River drainage as well (http://www.dwr.virginia.gov/fishing/fish-passage/).

Recommended Actions: Installation of fish passage systems, breaching and removal of dams as appropriate (see Fig. 4 for recent activities in Virginia and the Chesapeake Bay watershed generally). Continued monitoring of fish passage systems currently in place for effectiveness for American Shad passage.

The remaining significant American Shad habitat that is yet to be reopened in Virginia includes the South Anna River, a tributary of the Pamunkey River, upstream of the Ashland Mill Dam

(this would open 59.5 km of shad habitat on the mainstem plus any suitable tributary miles). American Shad were routinely collected during sampling for several years below Ashland Mill Dam at Rt. 1 and continue to be caught by anglers below the dam. Discussion of removal of this dam was proposed as mitigation for the King William Reservoir and there have been recent discussions of removal being done for mitigation credits, but the dam is still in place. Ashland Mill Dam is a Tier 1 (top 5% priority) barrier in the Chesapeake Bay Fish Passage Prioritization Tool (https://maps.freshwaternetwork.org/chesapeake/#) . In the James River, there remain seven dams spaced over 34 km beginning with Scott's Mill Dam in Lynchburg, VA (removal of these barriers or passageway installation would open a significant amount of habitat). Within the Rappahannock River system, removal or fish passage at the Rapidan Mill Dam (on the Rapidan River, a tributary of the Rappahannock; also a Tier 1 priority) would open 53.1 km of habitat because there is a Denil fishway on a water supply dam (Orange, VA) 16 km upstream of Rapidan Mill Dam. Passage options are currently being explored including removal for mitigation credits.

Agency or Agencies with Regulatory Authority: Licensing and relicensing of dams is regulated by FERC. Within Virginia, VDWR oversees the Fish Passage Program. VMRC, VDWR, and VDEQ all may be involved with the permitting process, regulations and monitoring of aspects of fish passage systems, dam removals, and other environmental factors associated with these activities depending on position of the dam. VDWR consults with fish passage engineers from the USFWS throughout fish passage projects.

Goal: "The importance of migratory fish species was recognized in the 1987 Chesapeake Bay Agreement and re-affirmed in Chesapeake 2000. A commitment was endorsed to **'**provide for fish passage at dams and remove stream blockages whenever necessary to restore natural passage for migratory and resident fish.' The Fish Passage Work Group of the Bay Program's Living Resource Subcommittee developed strategies (1988) and implemented plans (1989) to fulfill this commitment. In 2004, the original Fish Passage Goal of 1,357 miles (established in 1987) was exceeded. Chesapeake 2000 led to the establishment of a new Fish Passage Goal, set in 2004, committing signatory jurisdictions to the completion of 100 fish passage/dam removal projects," to re-open an additional 1,000 miles of high-quality habitat to migratory and resident fishes. This increased the overall goal to 2,807 total miles for which Virginia is responsible for roughly one-third of the miles to be reopened. [from VDWR (https://dwr.virginia.gov/fishing/fish-passage/#background; accessed June 28, 2021)].

Progress: Through 2013 partners reopened a total of 2,690.75 miles based on the original method of counting miles (mainstem miles only on barrier stream). Starting with 2014, the method for counting miles reopened was modified to begin counting all accessible miles above a barrier on the barrier stream and its tributaries. This method calculates what is known as "upstream functional network miles" in order to provide a more realistic picture of habitat restoration and accessibility (Martin, 2019). Using this GIS based method over 12,000 miles have been reopened by dam removal and over 19,000 miles have been reopened by fish passage installation for a grand total of 31,313.4 upstream functional network miles. Because American Shad tend to spawn in larger streams not all of the upstream functional network miles are necessarily available to shad spawning. The current Long-term Target in the Chesapeake Bay Fish Passage Logic and Action Plan is as follows: Continually increase access to habitat to support sustainable migratory fish populations in the Chesapeake Bay watershed's freshwater rivers and streams. By 2025, restore historical fish migration routes by opening an additional 132

miles every two years to fish passage. Restoration success will be indicated by the consistent presence of Alewife, Blueback Herring, **American Shad**, Hickory Shad, American Eel and Brook Trout, to be monitored in accordance with available agency resources and collaboratively developed methods.

Cost: N/A

Timeline: N/A. Other than continuing to contribute to the overall Bay passage goal target dates there is no Virginia specific timeline set for dam removal and fish passage installation in Virginia. While not set for individual species (i.e., specific to American Shad), the next phase in prioritizing will use the prioritization tools and other existing information to create a Virginia plan that could include breaking down habitat total goals and accomplishments per anadromous species, including American Shad.

Threat: Pressures from Land Use Associated with Population Growth

Many of the non-barrier threats identified by Rulifson (1994) can be collectively viewed as the results of changes in land use associated with population growth. The human population surrounding the three primary Virginia rivers is centered in Richmond (James River), with a significant population center in Fredericksburg (Rappahannock River); the remaining areas are rural (Fig. 5). According to the Chesapeake Bay Program, within Virginia land use pressure is highest along the James River at Richmond, with other significantly high vulnerability levels at the James River near the confluence of the Chickahominy River, and the peninsula separating the James River from the York River (Fig. 6). Land use surrounding rivers within the Chesapeake Bay watershed in Virginia likely is associated with contamination (significant levels throughout, principally PCBs, but also metals within the York River system; Fig. 7), sediment load (High in the Rappahannock, Low in the York River system, Chickahominy and Appomattox rivers, and Medium in the Upper James River; Fig. 8), and phosphorus yields (High in the Rappahannock, Medium in the Upper James River, and Low in the other rivers; Fig. 9); nitrogen yields are low in all three river systems (Fig. 10). Low summertime dissolved oxygen levels remains a threat in all portions of three rivers, except the upper Mattaponi and upper Pamunkey rivers (York River System), and the upper James River (Fig. 11).

Recommended Action: No specific actions can be identified related to mitigation against land use in Virginia as it relates to American Shad habitat use. Indeed, it is difficult to identify specific actions to be taken in land use management that will affect American Shad population status (Waldman and Gephard, 2011). However, further study of freshwater habitat use by American Shad in Virginia is needed. Specifically, quantification and analysis of specific reaches of riverine habitats used by American Shad during residency (adults during the spawning run, larvae, and juveniles) is needed to better manage and address habitat concerns of the species. As a first step toward addressing decline of American Shad in Virginia, in part due to habitat alteration, a hatchery stocking program ran from 1994 to 2017 in the James River and 2003 to 2014 in the Rappahannock River.

Agency or Agencies with Regulatory Authority: Land use regulations associated with water quality primarily are under the authority of VDEQ, although both VMRC and VDWR may be involved in the permitting process and other aspects of regulation for certain activities that will affect water quality.

Goal: No specific goals are identified for protecting American Shad from pressures associated with habitat alteration and other land use changes. Enforcement of a moratorium on fisheries of American Shad (VMRC; VDWR) is aimed at curbing further declines.

Progress: The moratorium for American Shad has been in place in Virginia since 1994. Stocking of hatchery fishes (VDWR) ceased on the Rappahannock after the 2014 season and on the James after the 2017 season.

Cost: N/A

Timeline: N/A

Threat: In-River Construction Blocking Migration

In-river construction projects such as bridge and tunnel construction and maintenance, dredging, and others, have the potential for disruption of American Shad migration (as well as that of other anadromous fishes) from both direct (e.g., acoustic interference) and indirect (e.g., habitat alteration) factors.

Recommended Action: Enforcement of time-of-year restrictions (TOYR). Current TOYR for American Shad are between February 15 and June 30 of any year (https://dwr.virginia.gov/wp-content/uploads/media/Time-of-Year-Restrictions.pdf). There may be case-by-case relaxation of this TOYR exceptions based on where the work is proposed. For example, upstream of Boshers Dam on the James River, VDWR recommend the TOYR to be March 15 to June 30 because American Shad do not reach this point in the river until mid-March. Case-by-case consideration of appropriate mitigation measures for individual projects (e.g., bubble curtains, coffer dams, etc.).

Agency or Agencies with Regulatory Authority: VMRC regulates any structures on, over, or under subaqueous bottom, the local wetlands board (or VMRC if a locality has not adopted the Wetlands Ordinance) regulates anything on, under, or over tidal wetlands (between mean low water and mean high water for non-vegetated areas and between mean low water and 1.5 x the tide range above mean high water for vegetated wetlands). VMRC distributes permit applications to other regulating agencies and other agencies (e.g., DWR, VIMS) that do not issue permits themselves to provide input to the permit process during the public interest review.

Goal: No specific goal is set for this threat, as the projects are sporadic and change year to year. However, with each application, measures of how the project will affect habitat are assessed and considered during the application process. Any request for TOY suspension for a specific project is vetted by inter-agency discussions.

Progress: Using the most recent five-year average (2016-2020), approximately 1,789 permit applications are estimated to be submitted per year for projects in Tidewater Virginia that have the potential to impact American Shad habitat. Within the same five-year time window, an estimated average of 346 permit applications per year for the non-tidal reaches of Virginia are received. An unknown number of these projects have the potential to adversely affect this species' habitat. Project scope ranges from small developments with minor impacts, if at all (e.g.,

dock construction and repair) to major infrastructure improvements (e.g., construction of a new tunnel across the mainstem of the James River).

Cost: N/A

Timeline: N/A

Threat: Surface Water Withdrawal and Discharge

Surface water is removed for power generation (nuclear and fossil fuel), manufacturing, and agriculture, and may be categorized as either consumptive (irrigation) or non-consumptive (e.g., power generation). Surface water withdrawals in Virginia include significant removal of water from reservoirs, ponds and other impoundments, springs, rivers, and streams, and in 2019 accounted for 89% of total (=surface + ground) water withdrawals within the Commonwealth (1.1 billion gallons per day); this was 1% lower than the five-year average due to decrease in manufacturing (VDEQ 2020). The surface waters used by American Shad are subject to significant withdrawals, with the largest volumes removed occurring in the waters surrounding Richmond, Hampton Roads, and Washington D.C. (as well as Giles County, which lies outside of the range of American Shad).

In Virginia, the withdrawal of volumes greater than the average of 10,000 gallons per day during a month, or 1 million gallons per month for non-tidal waters (60,000 gpm for tidal waters) for irrigation are required to be reported through the Water Withdrawal Reporting Regulation (VDEQ 2020). The VDWR recently updated its recommendations for design and operation of stream intakes (https://dwr.virginia.gov/wp-content/uploads/media/Surface-Water-Intake-Design-Operation-Standards.pdf), with the following requirements: intake is fitted with a screen with openings no larger than 1 mm, the intake velocity does not exceed 0.25 feet per second, and the intake does not withdraw more than 10% of the instantaneous flow. However, because of the permitting thresholds, the withdrawal of surface water for most agricultural purposes is exempt from permitting requirements, but have the potential to directly impact American Shad through impingement and entrainment.

Recommended Action: Develop a better understanding of the amount of water intakes for agriculture, particularly in tidal streams and rivers that support American Shad spawning and nursery grounds. Further, the effects (e.g., temperature and chemical differences) of discharge in non-consumptive water withdrawals on American Shad (particularly on early life history stages) is unknown.

Agency or Agencies with Regulatory Authority: VDEQ regulates water withdrawals and discharges. The VDEQ reports annually (October) to the VA Governor and General Assembly on the status of Water Resources in the Commonwealth. In-stream work is permitted by VMRC. VDEQ regulates water withdrawals, although water intakes for agricultural use (i.e., irrigation) are exempt (see 9VAC25-210-310; https://www.deq.virginia.gov/permits-regulations/permits/water/water-withdrawal).

Surface water withdrawal permits are applied for through the VDEQ, with input from VMRC and the U.S. Army Corps of Engineers (USACE) with VDEQ determining the potential impact on aquatic life, water quality, recreation, and downstream impacts.

Goal: Although by law the withdrawal of surface water for agricultural purposes is unregulated, (i.e., exempt from permit requirements), these withdrawals, given their position within the watersheds, are undoubtedly a potential source of loss of early life history stages through impingement and entrainment. Data on the prevalence of agricultural intakes within specific river systems would allow for estimation of potential losses of larval American Shad. This is a recognized concern by the VDEQ (2020). VDEQ has "tentatively been approved for federal funding from the USGS Water Use Data Research Program to support a project to improve estimates of agricultural water use." This and other VDEQ studies, including habitat and water quality and ecological modeling, are steps to fill these information gaps.

Progress: Nothing yet to report.

Cost: N/A

Timeline: N/A

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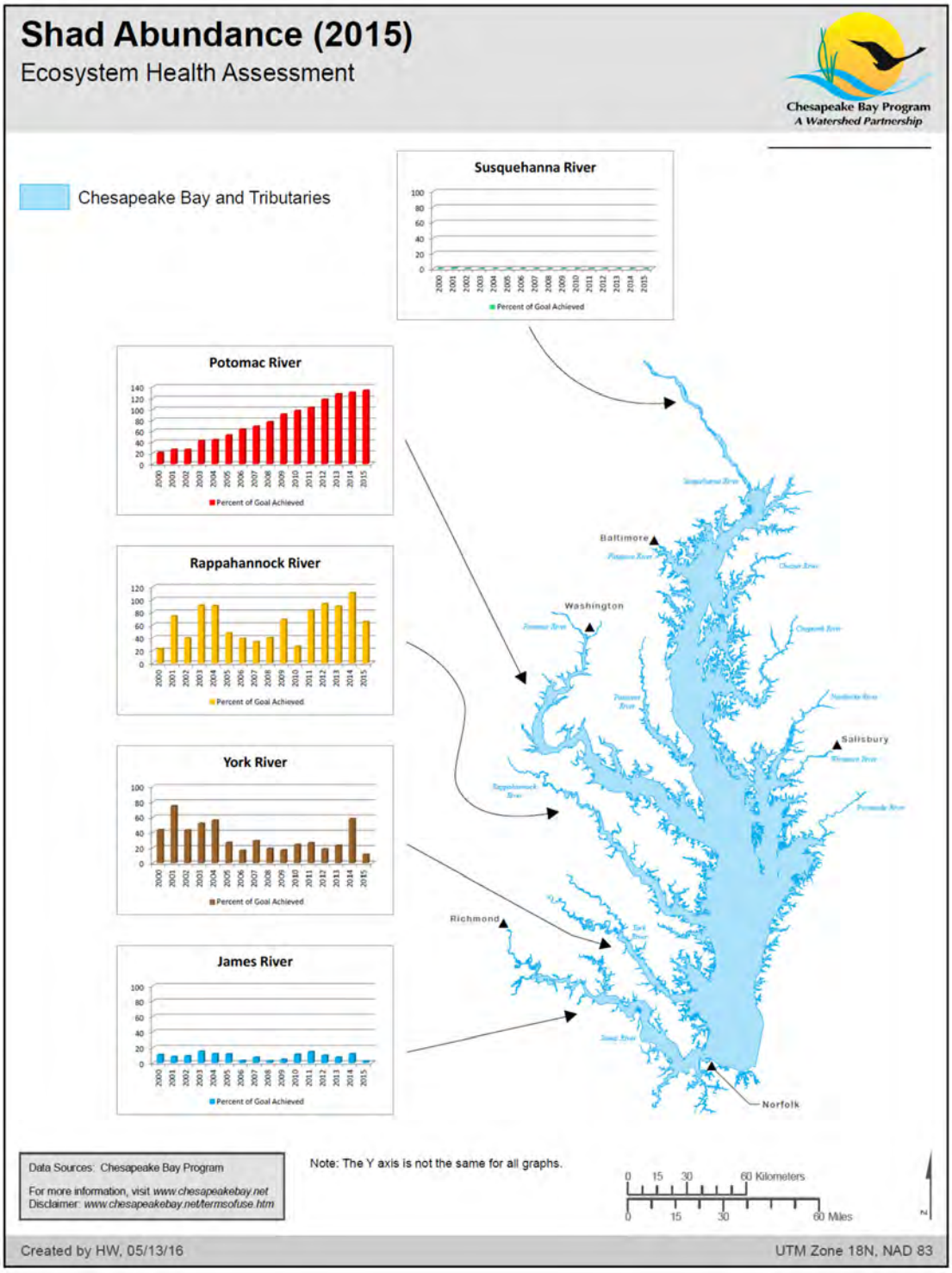


Figure 1. Shad distribution and abundance in the Chesapeake Bay. (Source: Chesapeake Bay Program)

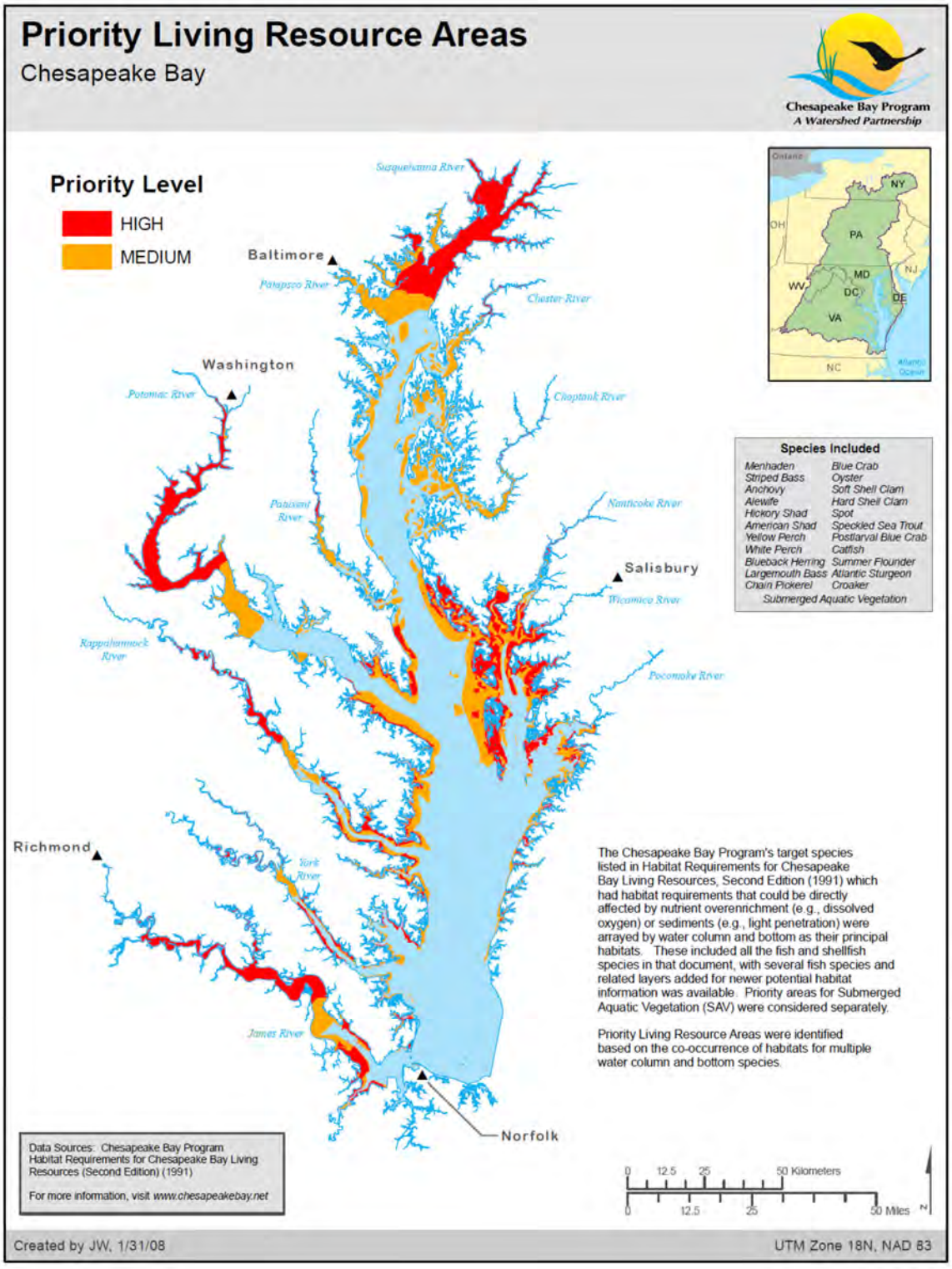


Figure 2. Priority living resource areas of the Chesapeake Bay watershed. (Source: Chesapeake Bay Program)

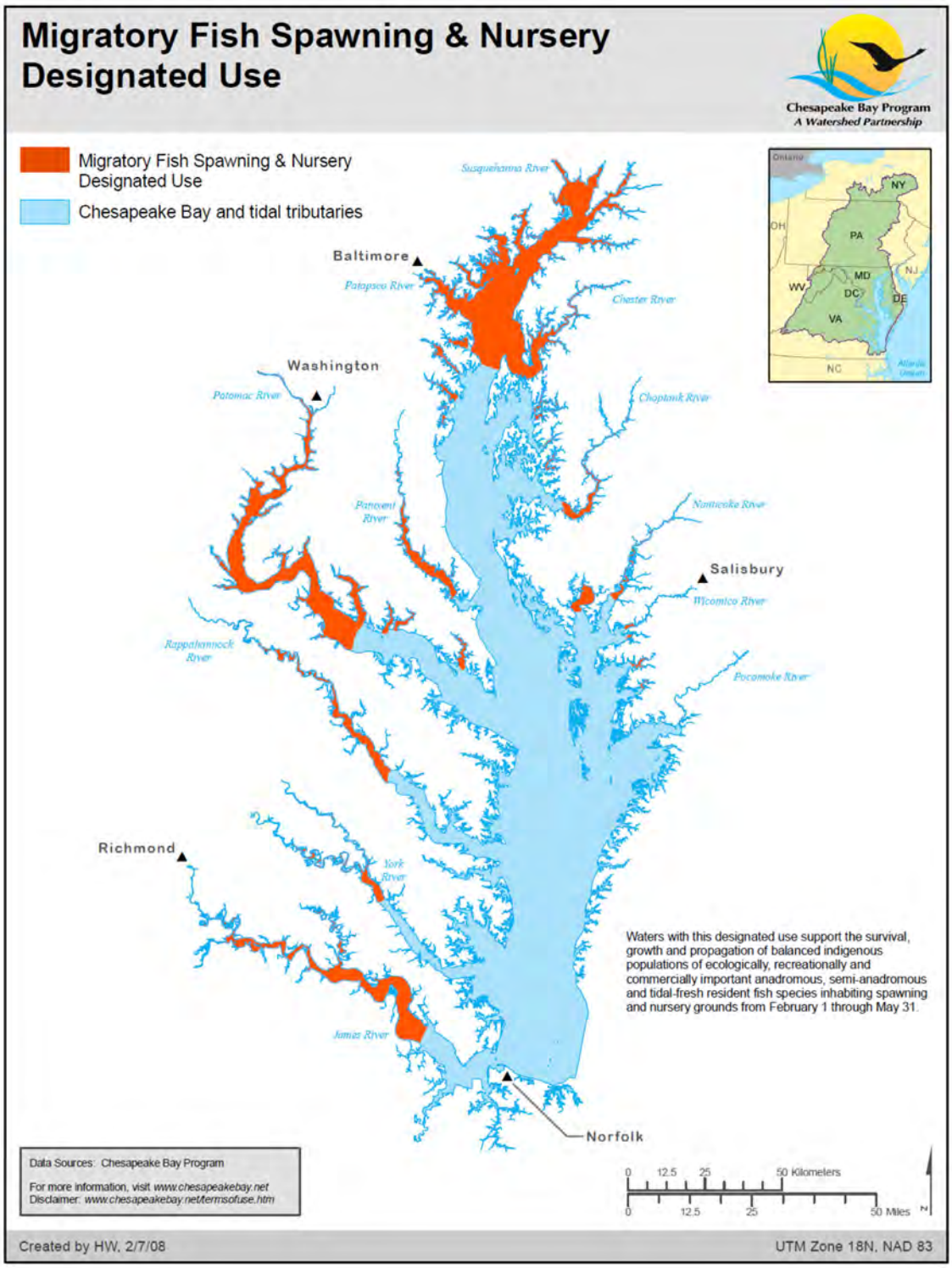


Figure 3. Migratory fish use of the Chesapeake Bay watershed (Source: Chesapeake Bay Program)

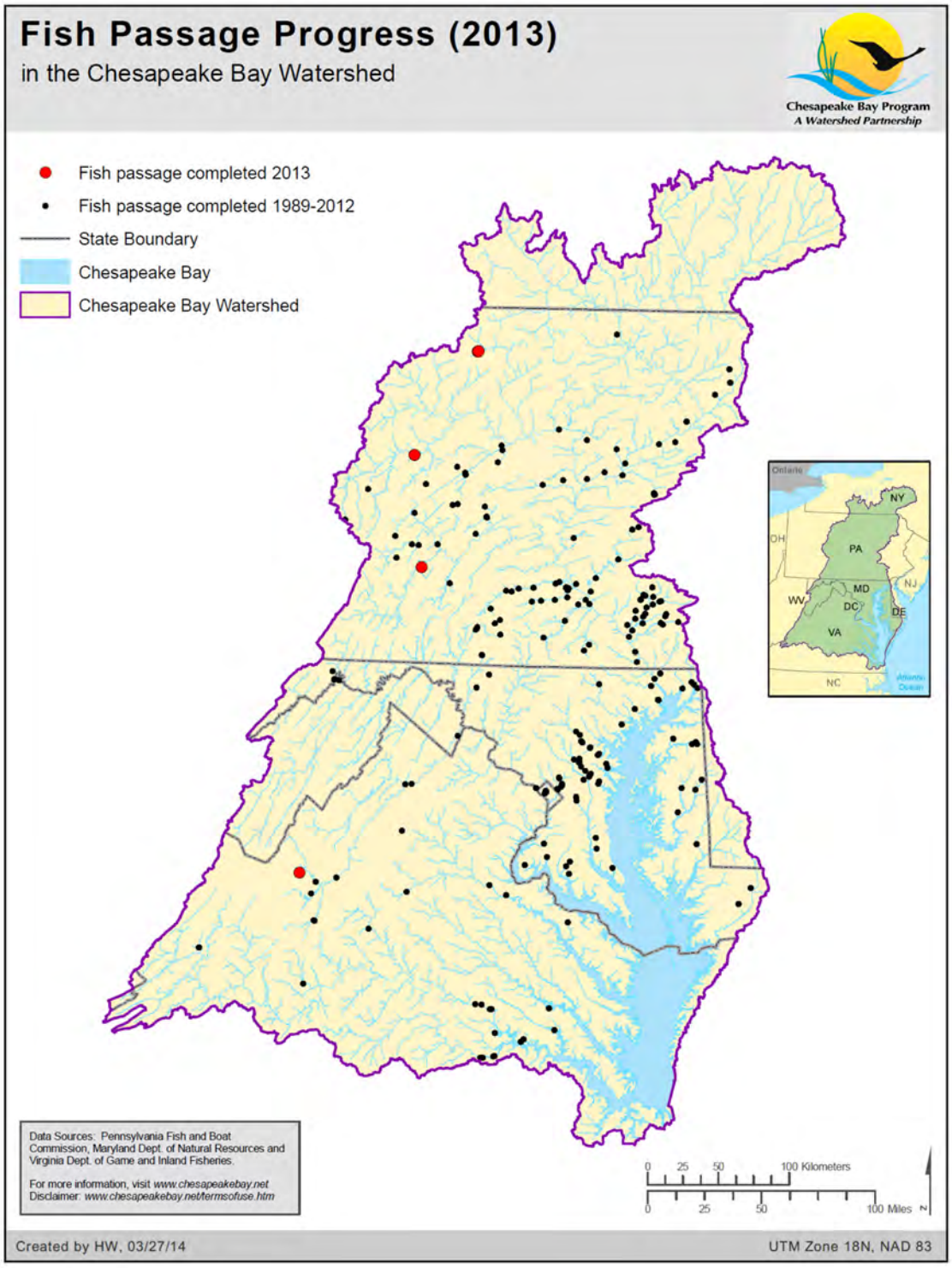


Figure 4. Fish passage projects in the Chesapeake Bay watershed. (Source: Chesapeake Bay Program)

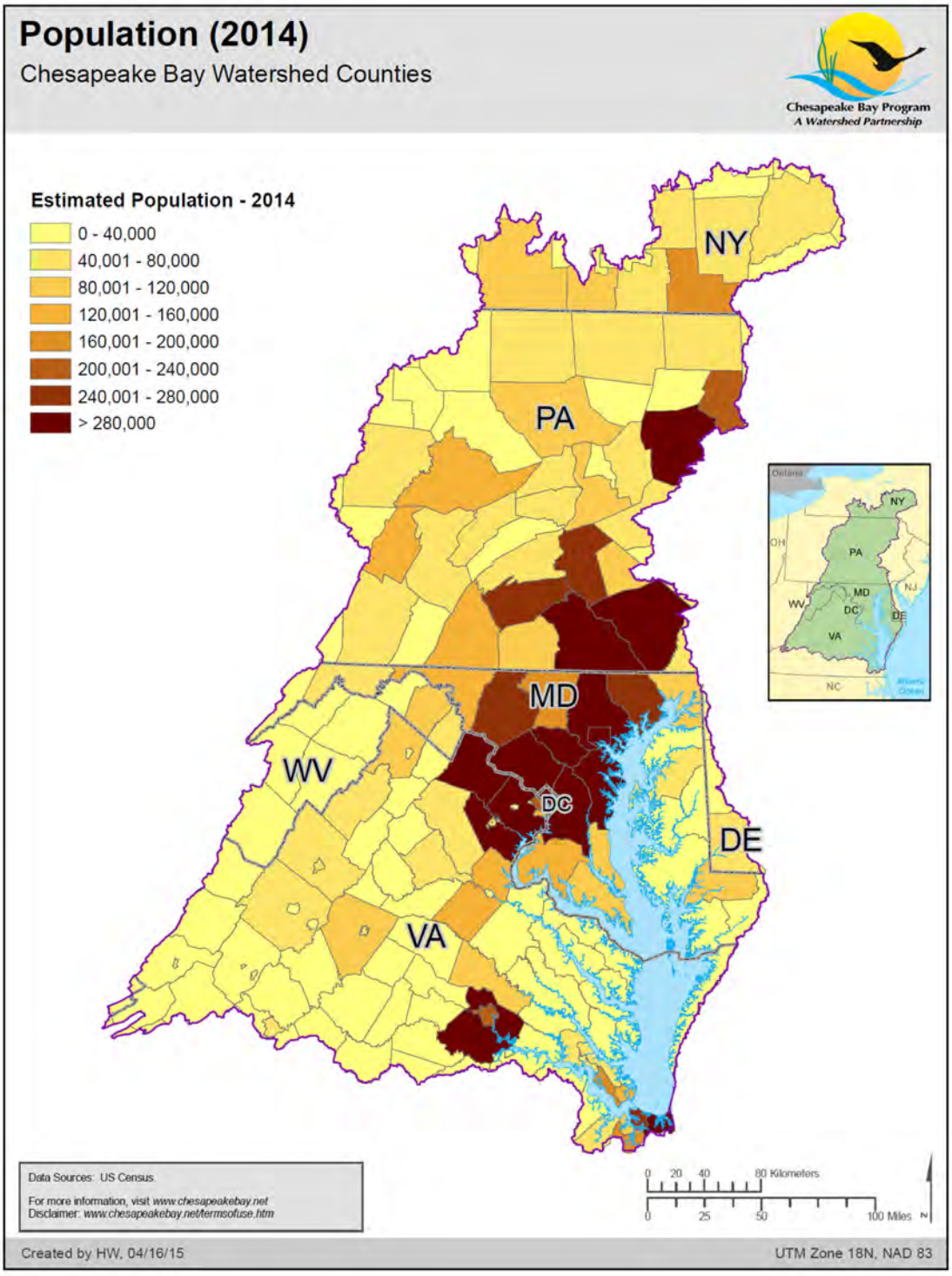


Figure 5. Population levels of the Chesapeake Bay region. (Source: Chesapeake Bay Program)

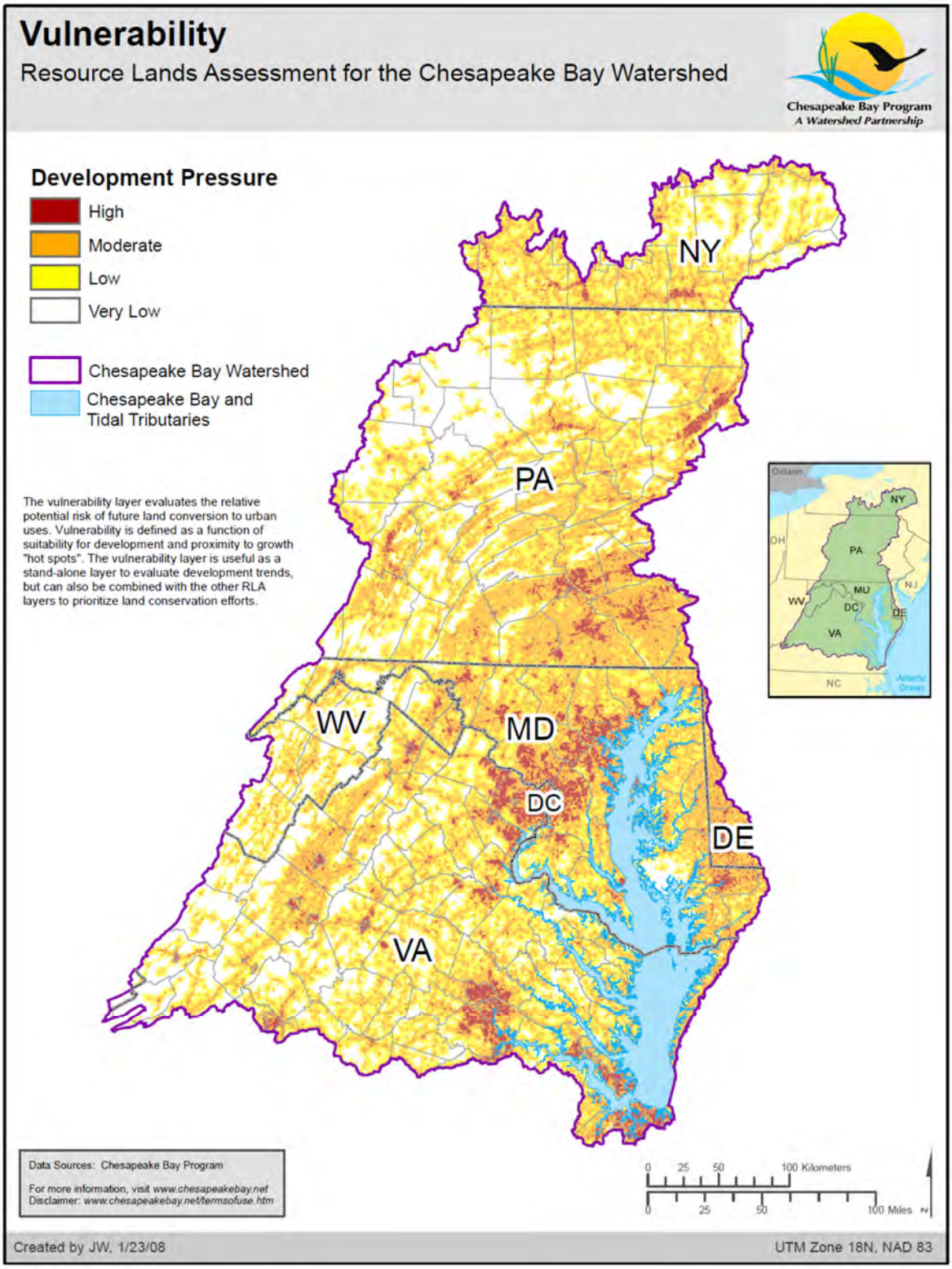


Figure 6. Potential for lands to become urban, representing significant land use changes and impacts. (Source: Chesapeake Bay Program)

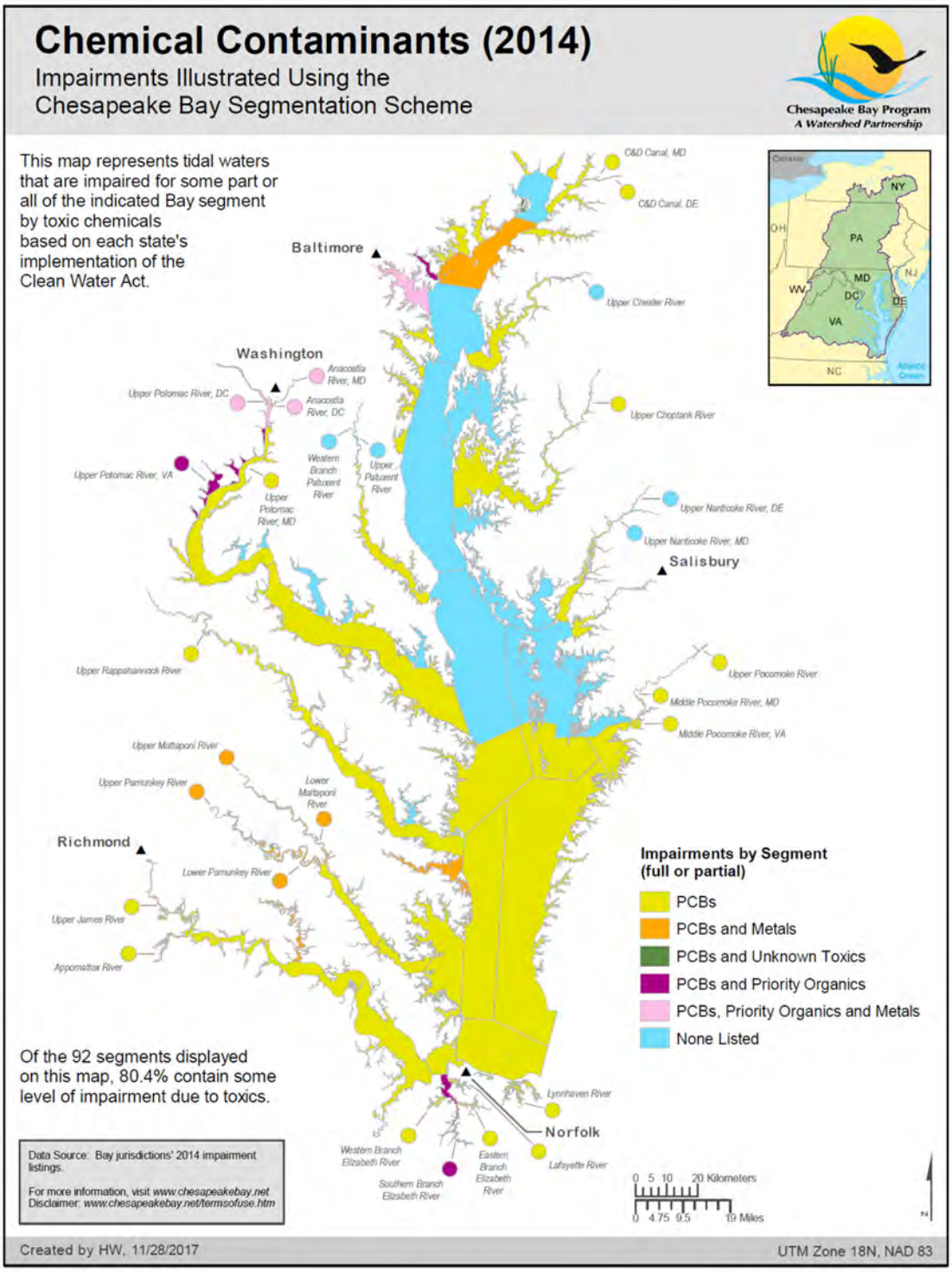


Figure 7. Chemical contaminants in the Chesapeake Bay watershed. (Source: Chesapeake Bay Program)

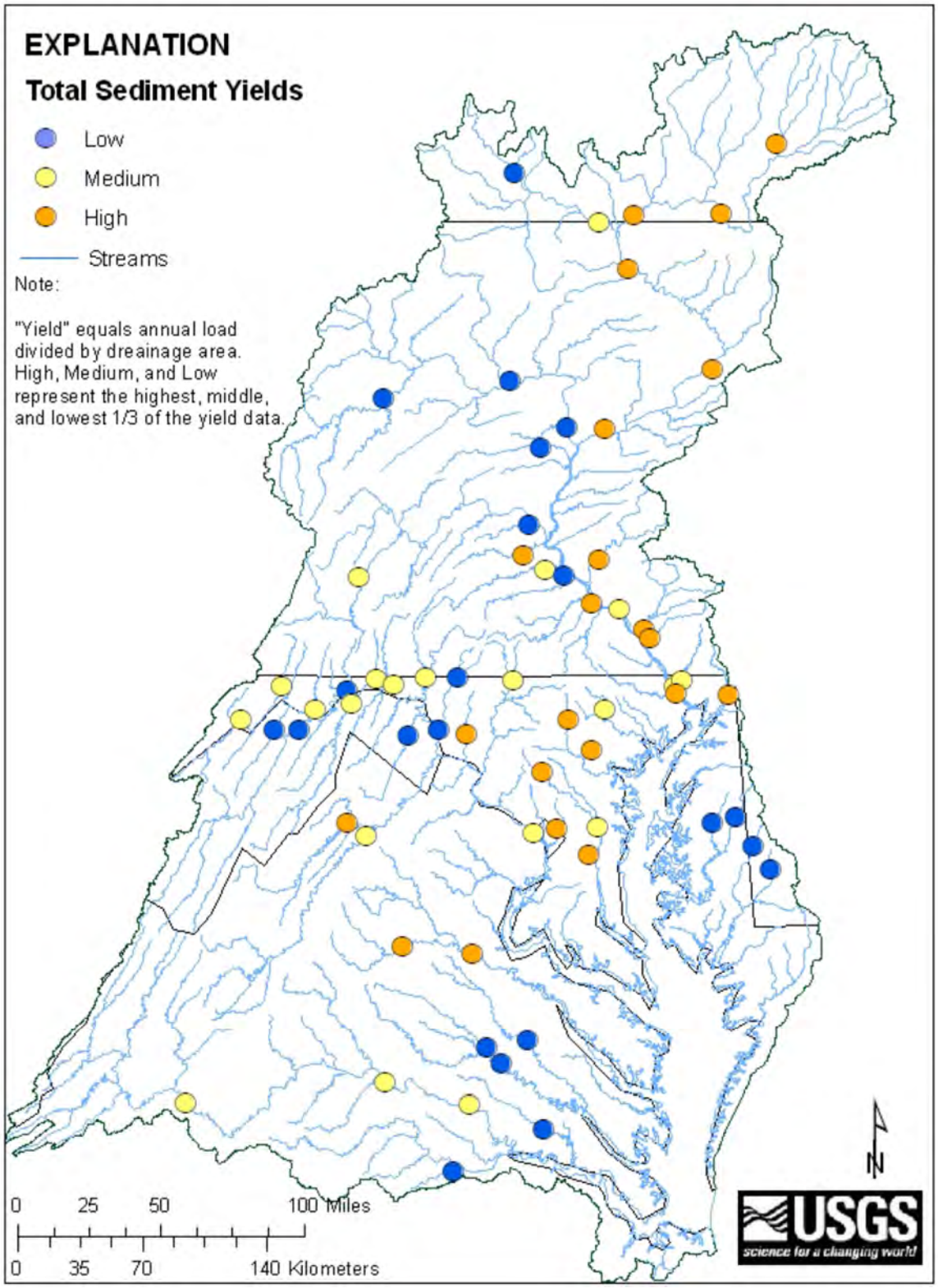


Figure 8. Sedimentation yields in the Chesapeake Bay watershed. (Source: Chesapeake Bay Program)

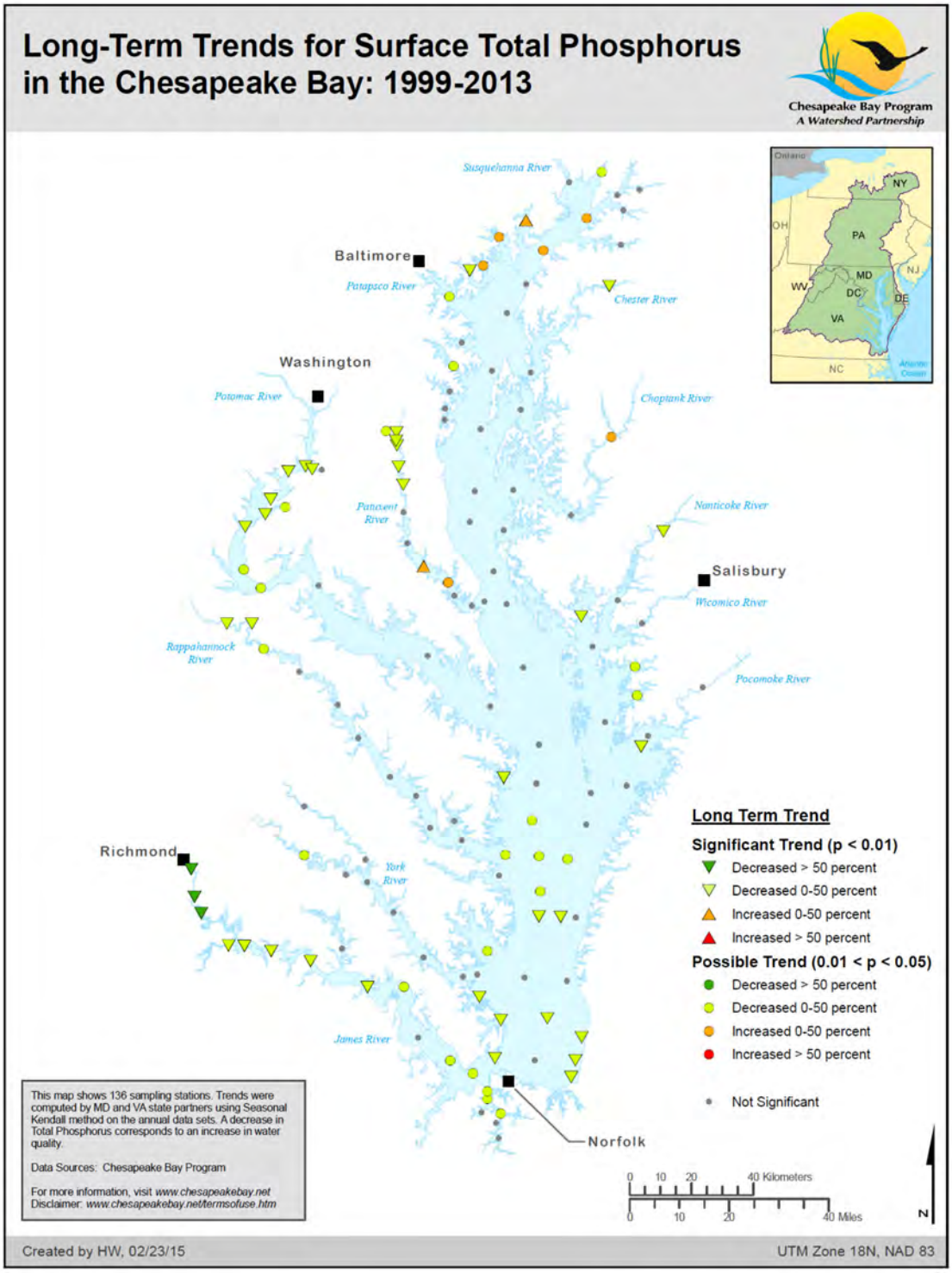


Figure 9. Total phosphorus yields in the Chesapeake Bay watershed. (Source: Chesapeake Bay Program)

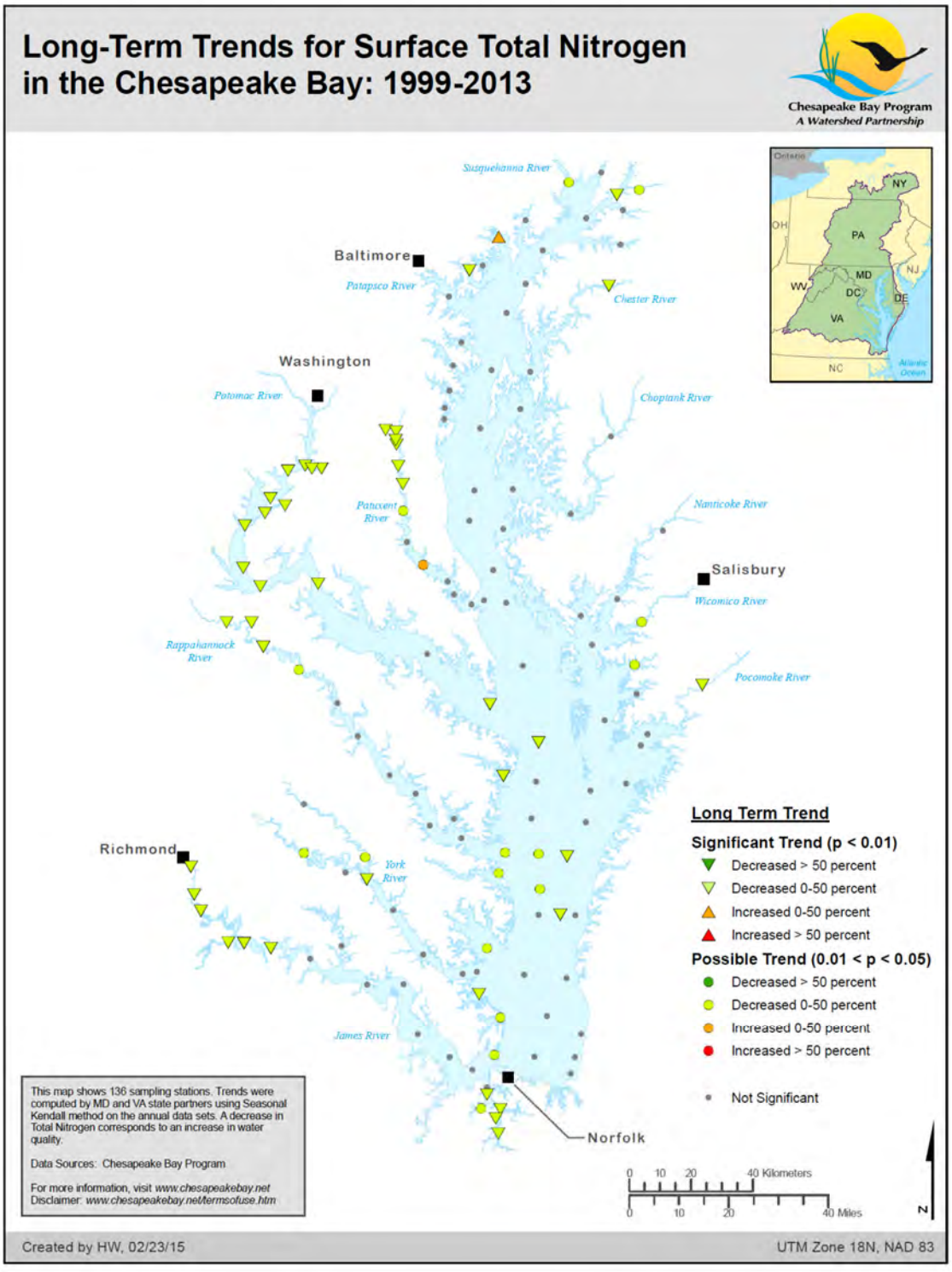


Figure 10. Total nitrogen yields in the Chesapeake Bay watershed (Source: Chesapeake Bay Program)

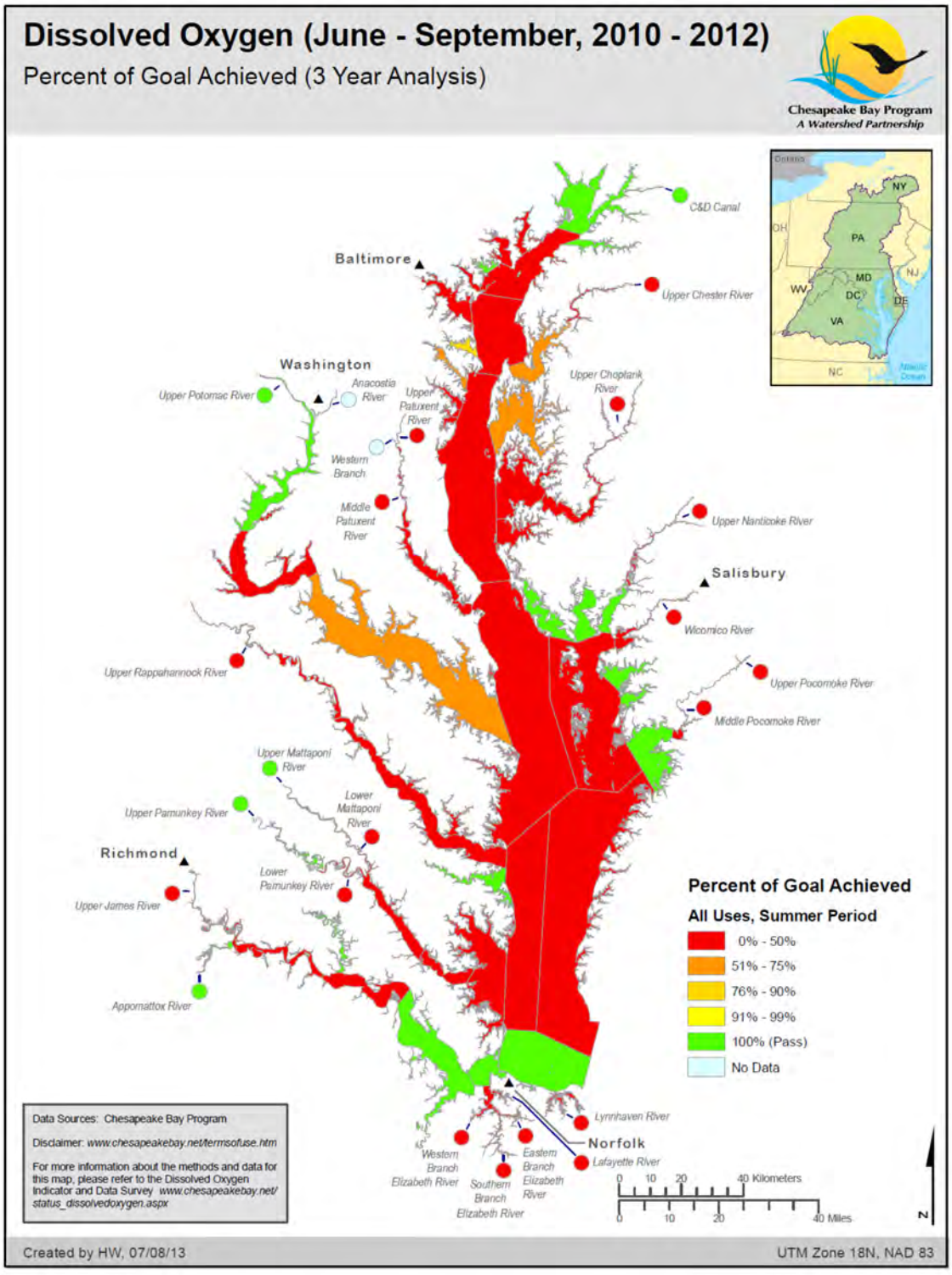


Figure 11. Dissolved oxygen in the Chesapeake Bay watershed. (Source: Chesapeake Bay Program)

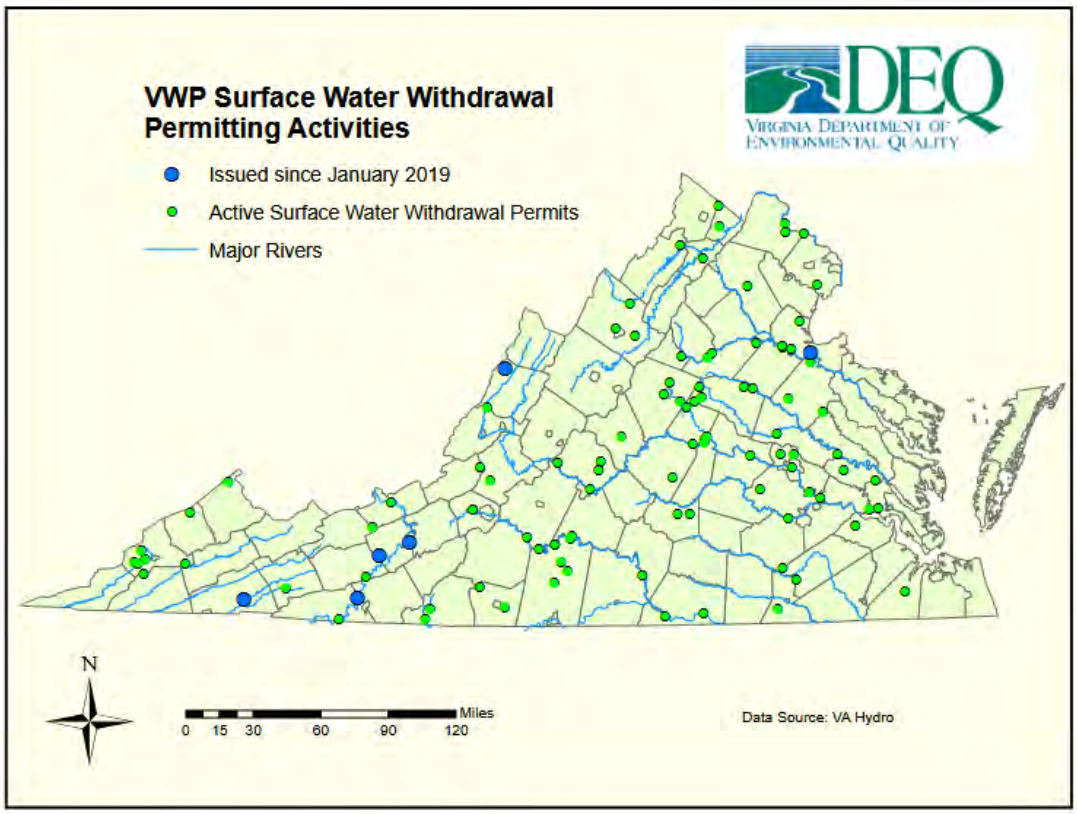


Figure 12. Surface water withdrawal permitting activities. Source: VDEQ (2020: fig. 4).

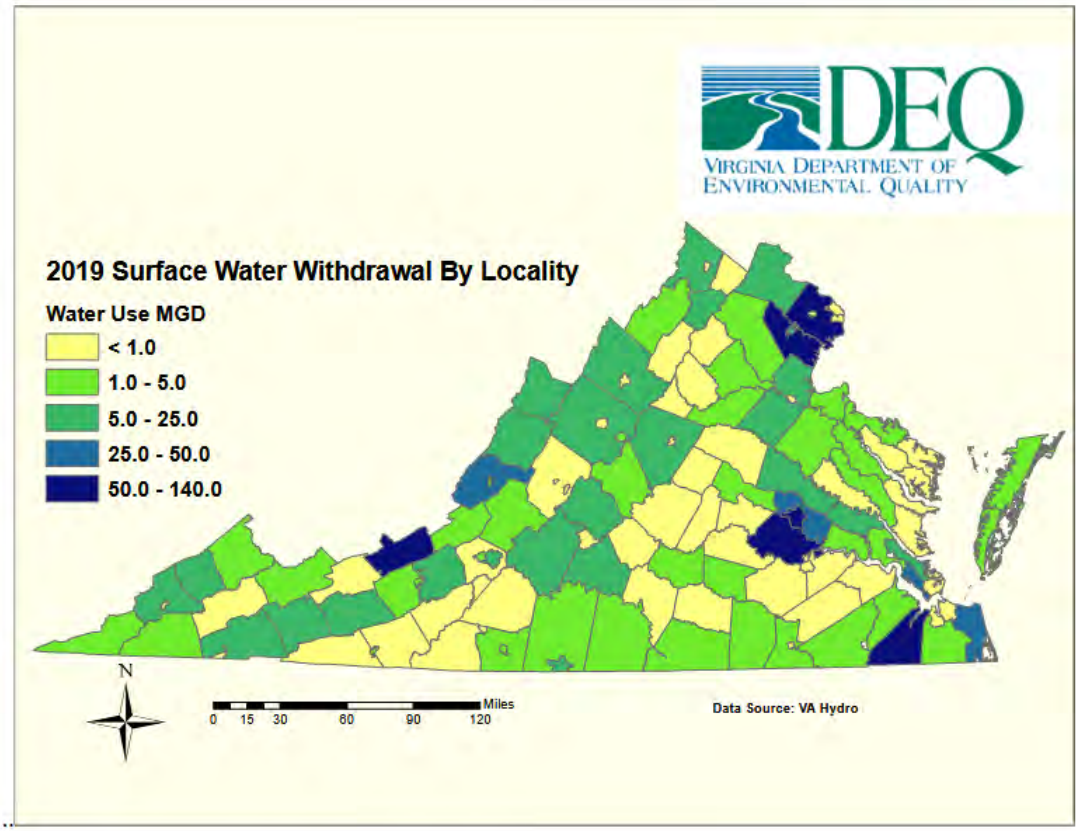


Figure 13. Surface water withdrawals. Source: VDEQ (2020: fig. 8).

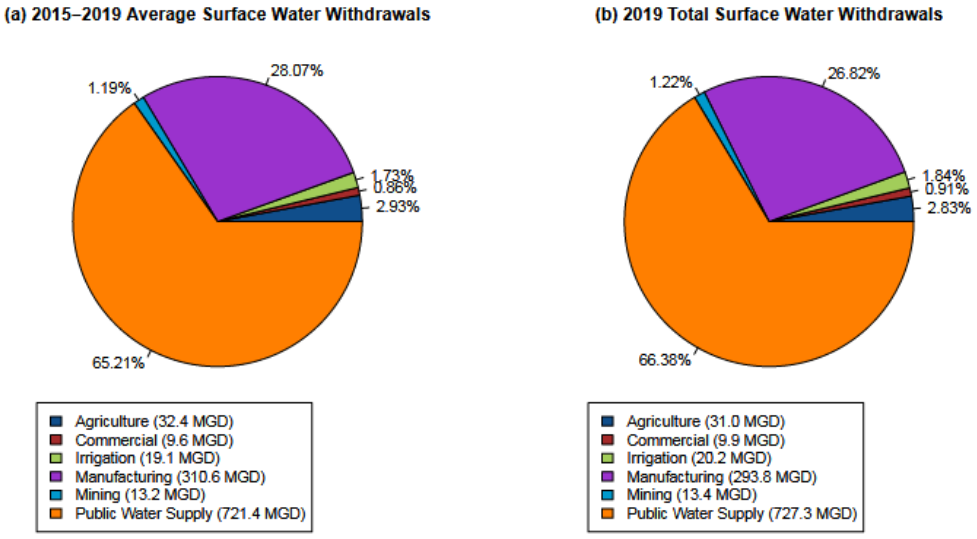
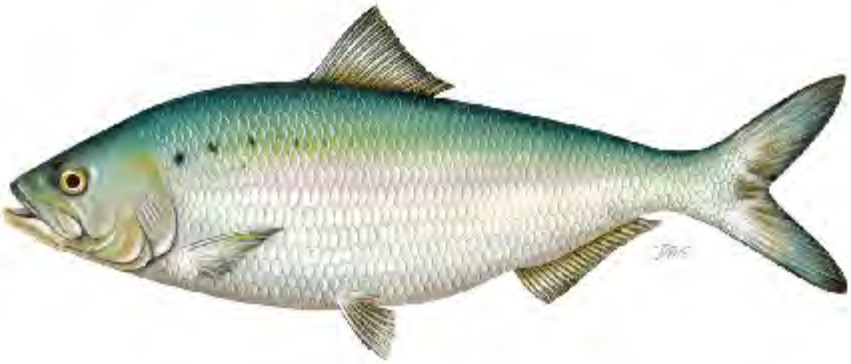


Figure 14. Surface water withdrawals by type. Source: VDEQ (2020: fig. 11).

DEPARTMENT OF ENERGY & ENVIRONMENT

GOVERNMENT OF THE DISTRICT OF COLUMBIA

District of Columbia's American Shad Habitat Plan



Submitted to

Atlantic States Marine Fisheries Commission

Prepared by

Joseph Swann

District Department of Energy and Environment

June 16, 2021

District of Columbia's American Shad Habitat Plan

District Department of Energy and Environment

This habitat plan is being submitted by the District Department of Energy and Environment and covers the portions of the Potomac and Anacostia Rivers which fall within the borders of the District of Columbia. Historically adult and juvenile American shad populations have been present through all portions of the Potomac and Anacostia rivers within the borders of the District of Columbia. This plan will show what habitat is available for spawning and juvenile American shad within the District of Columbia.

Habitat Assessment

Potomac River

A) Spawning Habitat
   Historical and current accessible in river and estuarine spawning habitat extends roughly 18.8 km and covers 1,388 hectares. This habitat represents the entire portion of the Potomac River as it flows though the District of Columbia.
B) Rearing Habitat
   Historic and currently utilized in river and estuarine rearing habitat extends roughly 18.8 km and covers 1,388 hectares. This habitat represents the entire portion of the Potomac River as it flows though the District of Columbia.

Anacostia River

A) Spawning Habitat
   Historical and current in river and estuarine spawning habitat stretches roughly 11 km and covers 378 hectares. This habitat represents the entire portion of the Anacostia River as it flows though the District of Columbia.
B) Rearing Habitat
   Historical and currently utilized rearing habitat stretches roughly 11 km and covers 378 hectares. This habitat represents the entire portion of the Anacostia River as it flows through the District of Columbia.

Threats Assessment

Barriers to Migration

A) Inventory of Dams
   There are no dams on the main stem of the Potomac or Anacostia rivers within the District of Columbia. The only dam of note is the dam at Peirce Mill on Rock Creek, a tributary of the Potomac River. This dam is managed by the National Park Service and serves as a historic and

aesthetic site for the park service. The dam is located 11 km upstream from the mouth of Rock Creek. Although the dam presents a barrier to migration for river herring, there is no evidence that American shad have ever reached the base of the dam. A Denil fish ladder has been constructed to allow passage of fish around the dam. Data is currently not available as to the effectiveness of the ladder for herring. Additional Information regarding the dam at Peirce Mill can be found at www.nps.gov/pimi/index.htm.

B) Inventory of other human induced physical structures
No data available

C) Inventory of altered water quality/quantity
No data available

Water withdrawals

A) Inventory of water withdrawals
No data available

B) Assessment of water withdrawals
No data available

Toxic and Thermal discharge

A) There is one known thermal discharge located within the District of Columbia: Blue Plains Sewage Treatment Facility. This facility is managed by DC Water located at:
5000 Overlook Ave SW
Washington, DC 20032
Current actions:
The Department of Energy and Environment has no evidence that the discharge has any detrimental effects on the migration and utilization of spawning habitat for American Shad. A complete overview of the operations and regulatory oversight of this facility is available at www.dcwater.com

B) Additional discharges within the District of Columbia include combined sewer overflows. This is a system in which high rain events cause storm water runoff to mix with sanitary sewers, and excess loads are discharged into the Potomac and Anacostia rivers as well as Rock Creek. This system of sewer lines are also managed by DC Water located at:
5000 Overlook Ave SW
Washington, DC 20032
Current actions:
The Department of Energy and Environment, Fisheries Research Branch has no regulatory authority regarding these discharges. DC Water has detailed records and reports with oversight from the U. S. Environmental Protection Agency. Currently there are multiple projects in place to help update the city's sewage treatment facilities, ultimately reducing the number of discharges into the rivers and Rock Creek. A complete list of these projects as well as their progress can be found at www.dcwater.com.

Channelization and Dredging

A) There is no known channelization or dredging projects located within the District of Columbia at this time.

Land use

A) Inventory of land use
The District of Columbia is a highly urbanized area, there have been no significant changes to land use.

Atmospheric Deposition

A) Atmospheric deposition assessment
No data available

Climate Change

A) Climate change assessment
No data available

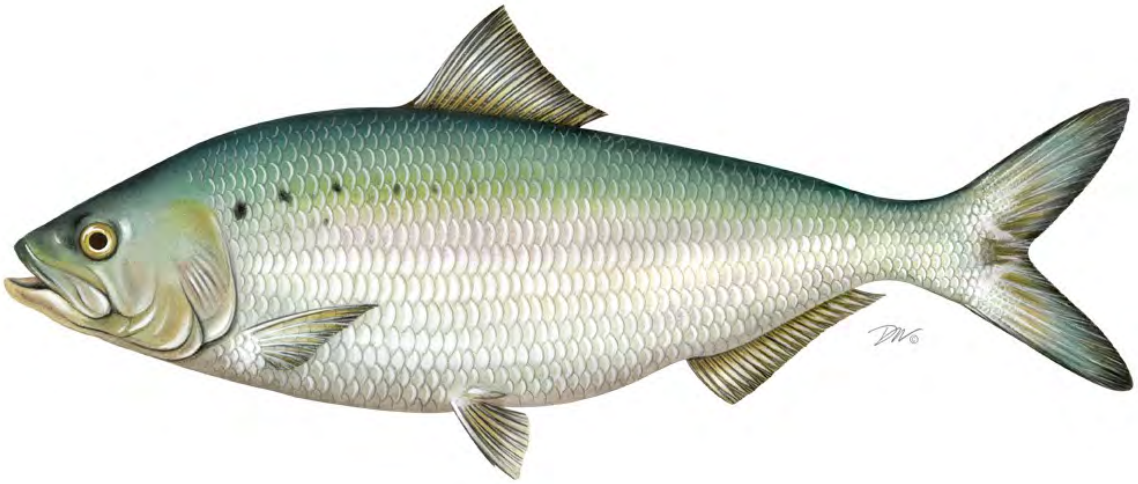
Competition and Predation by Invasive and Managed Species

A) Invasive species assessment
The Department of Energy and Environment has been monitoring the population trends of three invasive species within the District of Columbia. These species include the blue catfish, flathead catfish, and Northern snakehead.
Current Actions:
The Department of Energy and Environment has an ongoing study examining stomach contents of the invasive blue and flathead catfish. To date, more than 1000 blue and flathead catfish digestive tracts have been examined with no American shad observed. The opportunistic nature of these catfish still poses a potential impact to American shad populations within the District of Columbia.
Goals:
The District Department of the Environment has plans to continue this study to further understand the impacts that both the blue and flathead catfish has on the resident and anadromous species within the District of Columbia.
Timeline:
The catfish stomach analysis study will continue until enough data has been gathered to determine the effects of these invasive species on the native and managed species of the District.

New York American Shad Habitat Plan

New York State Department of Environmental Conservation

Division of Marine Resources



June 2021

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Introduction:

Amendment 3 to the Atlantic States Marine Fisheries Commission (ASMFC) Interstate Fishery Management Plan required all states and jurisdictions to develop an Implementation Plan, which consists of two components: 1) a Sustainable Fishery Plan (for jurisdictions wishing to keep fisheries open) and 2) a Habitat Plan for American Shad *(Alosa sapidissima*). The requirement for a Habitat Plan was in recognition of the fact that much of the decline in American shad stocks along the Atlantic coast is related to degradation of spawning and juvenile habitat from anthropogenic impacts caused by barriers to migration; water withdrawals; toxic and thermal wastewater discharge; channelization, dredging and instream construction; inappropriate land uses; atmospheric deposition; climate change; competition and predation by invasive and managed species; fisheries activities; and instream flow regulation. Restoration, protection, and enhancement of American shad habitat is a key component of rebuilding populations of this species to levels that will support their ecological, economic, and cultural roles.

The purpose of the Habitat Plan is to provide detailed recommendations to reduce or mitigate the impact of the following threats on American shad habitats in the Hudson River: dams and other obstructions to migration, water quality and contamination. Additional detailed recommendations are provided for habitat protection and restoration; state permitting programs; and American shad stock restoration and management. While Amendment 3 proposes the development of habitat restoration and protection programs, implementation of these programs is not required. This document serves as New York's American Shad Habitat Plan and as detailed below, draws heavily upon existing documents and efforts.

New York's American Shad habitat is limited to the Delaware and Hudson River and its tributaries (Figure 1). This document focuses on a habitat assessment of New York's American Shad habitat in the Hudson River and its tributaries. The Delaware portion of New York's habitat plan is addressed in the Delaware River American Shad Habitat Plan (Delaware River Fish and Wildlife Management Cooperative, 2020).

Hudson River Habitat Assessment (Spawning and Nursery Habitat):

The Hudson River flows from Lake Tear of the Clouds in the Adirondacks to the Battery in New York City. It is tidal to the Federal Dam in Troy, 246 km from the Battery (Figure 1). The location of the salt front varies, depending on freshwater inputs from Hudson River tributaries and tidal flow, and generally fluctuates from Tappan Zee (km 45) to Newburgh (km 95). The river includes two major estuarine bays: Haverstraw Bay (km 55) and Tappan Zee Bay (km 45). These bays are mainly shallow water less than four meters deep where the river extends up to five and a half kilometers from shore to shore. The river also includes a narrow and deep section, the Hudson Highlands, where the river is less than one kilometer wide and over 60 meters deep (Stanne et al. 2007).

American shad predominantly spawn in the sandy, gravelly shoals and shallow water areas in the main stem of the upper half of the Hudson River Estuary, from Kingston (km 144) to Troy (km 246). The nursery area includes this area and extends south to Newburgh Bay (km 90), encompassing the freshwater portion of the Estuary (Figure 1) (Hattala and Kahnle 2007). American Shad also use some of the larger tributaries of the Hudson River for spawning, although a detailed assessment of all tributaries has not been completed. The tributaries that provide the most significant contribution of American Shad habitat include the Rondout and Stockport Creeks and the upper Hudson. The first barrier on Claverack Creek which is a tributary of Stockport Creek may block a small amount of habitat for shad, but it is not known for sure (Figures 2-4).

The historical upstream limit for anadromous fish in the Hudson River was the natural falls at Fort Edward/Hudson Falls, NY (Zeisel 1988). Natural falls at the confluence of the Mohawk River and the Hudson prevented fish from moving into the Mohawk System. With the rise in commercial shipping at the beginning of the 19th century, there was a desire to connect the ocean-going ships to Midwestern states. The Erie Canal was completed in 1825, linking the Hudson River near Waterford, NY (roughly 5km north of Troy, NY) to the Great Lakes through a series of locks mostly within the Mohawk River system. Today the Erie Canal consists of 34 locks from Waterford to the Niagara River. In addition, six hydropower facilities are now in operation along the Mohawk corridor. During the same period as the Erie Canal construction, there was a push to move timber and other commodities from Canada and northeastern states to New York and then on to Midwestern states. The Champlain Canal was finished in 1823 linking the Hudson River to Lake Champlain, through a man-made canal from Waterford to Fort Edward. The canal was later moved to the upper Hudson River around the 1900's. The canal now runs in mainstem upper Hudson River from Waterford, NY to Fort Edward, NY with the remainder running in a man-made structure to Lake Champlain (Figure 4). The current Champlain Canal consists of eleven locks (including 7 dams) operated from Waterford, NY to Whitehall, NY (Lake Champlain).

Downstream of the Erie and Champlain Canals, a 3-m-high dam was constructed in 1826 at Troy, NY, roughly 56 kilometers from the traditional head of tide at Fort Edward. This dam was made of log cribwork and filled with stone; likely impassable for shad at all but the highest spring floods (Stevenson 1899). In 1915, the US Army Corps of Engineers replaced the old dam with a new concrete structure, which included a lock. In 1921, a hydropower unit was fitted to the dam. Undoubtedly, American shad spawning and nursery habitat was lost after the construction of the Federal Dam at Troy. However, any passage or improved passage of fish above this dam would provide just under nine additional kilometers or 3.5% of habitat before the next lock and dam system on the Champlain Canal (C1) north of Waterford, NY. Movement above the Federal Dam would expose adults and YOY to mortalities associated with both upstream and downstream passage at the hydropower facility, a cost that may outweigh the benefits of a minimal increase in habitat. Furthermore, the huge commercial landings reported in the late 1800s as well as the 1930s and 1940s indicate that spawning and nursery habitats in the 245 river kilometers below the Federal Dam are enough to support large populations of American shad.

Historically shad had access to 65.5 km^2 habitat prior to barriers to migration. Most habitat loss was due to the construction of barriers at the Federal Dam in Troy, NY, and the Champlain Canal (Figure 1). In addition, approximately 9 km of habitat was lost through the construction of barriers on key Hudson River tributaries (Figures 2-4). Currently, American Shad can access approximately 59 km^2 in the mainstem of the Hudson River, a 9% loss from the historic available habitat (Stich et al. 2021, in prep).

Perhaps the greater loss of habitat in the Hudson River Estuary was not due to barriers to migration, but rather conversion of habitat during the dredging and channelization of the upper portion of the estuary. A quantitative assessment of preferred habitat now converted to habitats not preferred by shad has not been conducted. However, as an example, approximately 57% of the intertidal shallow water habitat (1,821 hectares) found north of the City of Hudson (km 190) was lost during the middle of the 19th century due to dredge and fill operations (Miller, 2006).

Hudson River Threats Assessment:

1.Barriers to Migration inventory and assessment:
Tributaries once flowed freely, with unobstructed hydraulics, from the upland valley to the wide estuary. Barriers to migration have changed the hydrology and water quality of the tributaries as well as the mainstem of the Hudson River estuary. During an informal assessment of barriers, it was noted there are 10 dams known or suspected to have an impact on American Shad migration (Table 1). Table 1 includes information about each dam such as height, length, year constructed and location. The associated dams are spread throughout the freshwater portion of the river and include the dam on the mainstem at the head of tide (Federal Dam in Troy, NY) and the dams on the Champlain Canal. Dams on this list will be updated by DEC and partners as needed to reflect any changes in prioritization.

A coastwide assessment on the impacts of dams on the availability of spawning habitat and spawner potential was included in the most recent stock assessment (ASMFC 2020). The installation of dams coastwide, particularly in the northern range, resulted in significant habitat loss. Recent modelling efforts (Stich et al. 2019; Stich et al. 2020) to evaluate the impacts of those dams further demonstrates that dams have significantly reduced shad spawner potential. Removing dams, while sometimes impractical, would restore much of the lost habitat and spawner potential. However, because of the mortality associated with upstream and downstream movement through fish passage devices, the installation of fish passage at these sites would only represent minimal gains for shad stocks.

Fortunately, dams have a relatively small impact on American shad in the Hudson River. While shad are prevented from reaching nearly 40% of their historic habitat coastwide, the Hudson stock has lost access to just 9% of historic habitat (ASMFC, 2020). There are a few dams, if removed, that would undoubtedly benefit shad in the Hudson River (notably, the Federal Dam on the main stem Hudson in Troy, NY and the first barrier on the Rondout Creek in Eddyville, NY), but the lack of access to historic habitat did not cause the stock collapse. Furthermore, Stich et al. 2021 (manuscript in prep) suggests that most passage scenarios, with the exception of 95-100% upstream and downstream adult and juvenile survival, would result in populations lower than scenarios where no passage was allowed, indicating that the amount of available habitat is likely not limiting recovery. While we do not feel access to historical habitat is limiting recovery, we believe that improvements to habitat quality such as water quality, restoration of side channels, tidal wetlands, and submerged aquatic vegetation will result in improved recruitment of juvenile shad, a crucial component needed for stock recovery.

The Troy Dam's owner (Green Island Hydropower) has been required to install fish passage as part of the FERC re-licensing process. It is not yet known what the upstream and downstream mortality will be resulting from the operation of this passage structure. Stich et al. 2021 (manuscript in prep) notes it is unknown to what degree this access is beneficial or detrimental to American shad given the

uncertainty around the mortality rates for adult and juvenile fish moving above the dam and back over the dam. The different model scenarios explain only the highest rates of adult and juvenile downstream survival or low rates of upstream fish passage maintained or increased the population.

2.Water withdrawals:

American shad, and other fish, are negatively impacted by water withdrawals on the Hudson River. Shad are killed both on the impingement screens of these sites and from entrainment in the cooling water of steam electric plants. Steam electric plants alone are permitted to use nearly 5 billion gallons of Hudson River water per day. A river-wide ichthyoplankton survey occurred annually in the Hudson River Estuary through 2016, conducted by consultants under contract with the Hudson River Generating companies. To better define impacts of the once-through cooling systems on fish, estimates of mortality on various ichthyoplankton life stages were calculated using two models, the Empirical Transport Model and the CEMR (Conditional Entrainment Mortality Rate) model. Detailed methodology for both models can be found in CHG&E et al. (1999). Estimates of mortality are expressed as conditional entrainment mortality rates, or the percent reduction in a year-class which would be due to mortality from entrainment through once- through cooling water systems if no other causes of mortality operated. Loss estimates for the Hudson River Estuary include one major office complex air conditioning unit, two nuclear, one waste-fuel, and five fossil-fuel power plants located throughout the Hudson Valley above New York City. CEMR at these facilities combined has ranged from 16% to as high as 52% during the period 1974 to 1997 (CHG&E et al. 1999). An estimated average of 20% was assumed for the period 1952 to 1973 when major power plant once-through cooling systems came online (CHG&E et al. 1999).

3.Anthropogenic Habitat Changes

a. **Dredging/Channelization:** Historic shad habitat was also affected by the continued use and improvement of the commercial navigation channel between New York City and Albany. Through the middle of the 19th century, the northern third of the estuary below the Federal Dam at Troy, NY was a braided river-channel system dominated by vegetated shallows and intertidal wetlands. Side channels and backwaters in this section provided important shallow water and intertidal habitats (potentially vegetated nursery habitat) that were isolated from the higher energy regime of the main channel. Complex river systems with intertidal marshes and braided river channels, including side channels and backwaters, contain refuges for fishes during high velocity events. These habitats were largely altered by the early twentieth century due to the dredge and fill activities associated with improvement and maintenance of the federal navigation channel allowing larger, ocean vessels to reach Albany. Miller et al. (2006) approximates 57% of the intertidal shallow water habitat (1,821 hectares) found north of the City of Hudson (km 190) was lost during the middle of the 19th century. The Hudson River Estuary Habitat Restoration Plan (Miller 2013) identifies four priority habitats for restoration: shorelines, tributaries, intertidal and shallow water habitats which include spawning, nursery, forage, and refuge areas. Restoration of these habitats will involve tradeoffs between lost habitats and those habitats that currently occupy the river. Any restoration will need to consider these tradeoffs as well as property ownership.

b. Land Use: Shad habitat was also altered by the building of infrastructure along the shore of the Hudson River. An alteration not well researched or understood is the potential barriers posed by the railroad causeways built along both the east and west sides of the Hudson River,

cutting off shallow bays, often containing tributary mouths. The causeways have transformed the once contiguous open bays to the Hudson River mainstem by restricting the interaction between the shallow bays and river. While these connections still exist, they are much different today than they were historically. Exchange between shallow bays and the main stem of the Hudson is restricted by bridge and culvert openings under the tracks. The impacts of this funneling effect on water quality, and access from the Hudson into tidal bays and tributary mouths, are not well understood. These structures have also created back waters and highly functioning marshes that are habitat for fishes and other important wildlife species, but there are some areas that could be targeted for restoration for habitat improvement. The railroad tracks support a major commuter and freight railroad and planned restoration will need to be coordinated with and approved by the owners of the structures.

4.Climate Change: Climate change is affecting the Hudson River Estuary on a local level. Sea level is rising, water and air temperatures are increasing, extreme precipitation is occurring more frequently, punctuated by interim periods of drought.

The flooding associated with intense storms like named tropical storms Irene and Lee in 2011 can carry huge volumes of sediment into the Hudson, where it hinders the growth of submerged aquatic vegetation (Hamberg et al. 2017). These storms, in 2011, reduced submerged aquatic vegetation (SAV) abundance in the Hudson River by more than 90% with no appreciable recovery in 2012 or 2013 (Hamberg et al. 2017). Submerged aquatic vegetation is an important habitat for the development of young shad (Ross et al. 1997). If the frequency of SAV damaging storms increases in future years, there will likely be negative impacts on the recruitment of American shad. The historic northern one-third habitat of the Hudson River Estuary was a braided river with shallow water back channels and side channels and with the changes made by dredging and channeling the river may be less resilient to flooding (see Dredging/Channelization above). The acute but shorter-term impacts from flooding that affect fish during the large storms such as Irene and Lee may be reduced. For example, a sonic tagged, and otherwise resident, cohort of striped bass exhibited a novel migration pattern after the storms and left the estuary for the ocean (Bailey and Secor 2016).

In addition to the ecological changes we expect from climate change, the human responses to climate change impacts also threaten to negatively impact American shad. As sea levels rise and storms become more frequent, it would stand to reason that we will take increasingly more aggressive steps to prevent the flooding of cities and infrastructure. The suite of potential options that may be considered include shoreline structures, beach nourishment, levees, floodwalls, seawalls, and storm-surge barriers. A recent study by the Army Corps of Engineers (New York – New Jersey Harbor and Tributaries Study https://www.nan.usace.army.mil/Missions/Civil-Works/Projects-in-New-York/New-York-New-Jersey-Harbor-Tributaries-Focus-Area-Feasibility-Study/) sought to evaluate the impacts of a wide range of climate change mitigations, including a sea wall and storm-surge barrier system that stretched across the entire mouth of the Hudson River from Far Rockaway, NY to Long Branch, NJ. The impacts of such a major in-water infrastructure project to habitat that must be used by American shad is also a threat to their recovery. Important consideration must be given to Shad and their recovery to minimize or eliminate negative impacts of this and other in-water infrastructure projects.

Climate change is already having impacts on fishery resources. As average temperatures rise, mobile marine species are moving toward the poles and/or deeper water to stay cool. Shifts in the distributions and productivity of stocks can cause ecological and economic disruption. In the face of climatic shifts,

change is likely to be the only constant. Accordingly, managers will need to learn how to respond to and manage these changes. Managers will likely need to focus on sustaining ecological functions, rather than historical abundances. As conditions change, current conservation goals and management objectives may no longer be feasible. Successful climate adaptation will depend not only on adjusting management strategies, but also in reevaluating and revising, as necessary, the underlying conservation goals and objectives of fishery management plans (ASMFC 2018).

5.Invasive species:

The Hudson River estuary is vulnerable to the invasion of exotic species through a wide variety of means, typical of major estuaries, including: ballast water and shipping; release from aquaria; ponds and aquaculture; bait-bucket transfers by anglers, and fish stocking. In addition to these threats, the Hudson River is particularly susceptible to threats from aquatic invasive species because of the existence of the Erie and Champlain Canals. These canals were built in the early 1800s, breached the natural watershed divide of the Hudson River Estuary, and allowed for easy movement of aquatic invasive species from the Great Lakes, Lake Champlain, and any connected watershed. The canal system is the likely source of many non-native fish, bivalves, and snails in the Hudson River including the zebra mussel (*Dreissena polymorpha*) (Strayer 2016). There are many other invasive species poised to enter the Hudson River through the canal system including Round Goby (*Neogobius melanostomus*), Silver Carp (*Hypophthalmichthys molitrix*), Bighead Carp (*Hypophthalmichthys nobilis*) and a wide variety of invertebrates (Strayer 2016). The major disruption to the ecology of the Hudson River from these species, as seen first-hand with the invasion of the zebra mussel, will continue to threaten the recovery of American shad as long as invasive aquatic species can easily navigate through the Erie and Champlain Canals and other mechanisms of invasive species spread are not addressed.

The impacts of invasive species on the estuary, and its ecology, have already been significant. Five piscivores are native to the freshwater, tidal Hudson River (Daniels et al. 2011). Beginning in 1830 through present day, at least 10 additional piscivores have been introduced to the Hudson, including voracious predators such as black bass (*Micropterus salmoides* and *Micropterus dolomieu)* (introduced in 1830s), Northern pike (*Esox lucius*) (1840s), walleye (*Sander vitreus*) (1890s), and channel catfish (*Ictalurus punctatus*) (1976) (Daniels et al. 2005). The addition of these piscivores has likely impacted the recruitment of alosines; however, the magnitude and rate of predation by these species on juvenile and adult alosines in the Hudson River has yet to be fully explored.

The impacts of invasive animals have not been limited to fish. The introduction of zebra mussels in the Hudson in 1991, and their subsequent explosive growth in the river, quickly caused pervasive changes in the phytoplankton and plankton communities (Caraco et al. 1997), resulting in a dramatic increase in water clarity (up to 45%). These physical changes coincided with a decrease in growth rates and abundance of open-water species such as alewife and blueback herring (Strayer, et al. 2001).

Invasive plants, like Water chestnut *(Eleocharis dulcis),* have also had impacts on the habitats of the Hudson River that support developing American Shad. This ornamental macrophyte native to Eurasia was introduced to the Hudson River estuary in the 1930s (Strayer 2006). The establishment of these immense water chestnut mats each summer significantly reduces the amount of near-shore nursery habitat available to YOY alosines, cutting off areas that would likely have remained more productive

with native macrophyte beds. This plant outcompetes native macrophytes such as water celery, forming expansive, dense mats in most of the shallow water embayments in the tidal freshwater portions of the river. Sedimentation and turbidity within these mats are greatly increased and the dissolved oxygen levels within the mats is much lower than surrounding waters (Strayer 2006) (Schmidt and Kiviat 1988).

Hudson River Habitat Restoration Program:

The following actions and programs have been developed for restoration, recovery, and management to address the threats listed above.

1. **Restoration of barriers to migration:** As outlined in the threats section, the Hudson River Estuary has relatively few barriers to critical American Shad habitat and most of their historically available spawning and rearing habitats are still available. There are a few exceptions to this, and those barriers are highlighted in table 1. The first barrier on the main stem Hudson is slated for installation of fish passage (Troy Lock and Dam #1). It is unclear if addition of passage at this location will represent a positive change for American shad stocks given the uncertainty around mortality associated with upstream and downstream movement of adult and juvenile fish.

   Action: Removal of Dams/barriers to migration

   Progress: Assessment of dams and barrier culverts to restore fish habitat, and broader ecosystem goals, is a priority of the NYSDEC. Since 2016, 9 dams have been removed in the Hudson River Estuary watershed. Four of those dams were removed with support from the Department to meet conservation goals, with the additional 5 dams being removed for flooding and safety purposes. While the current dam removals have not explicitly restored any historic American Shad spawning habitat, broader ecosystem functions in the system have been improved, which arguably provides enhanced overall habitat for shad while they are in the Hudson system. While the opportunities to remove dams to restore shad habitat are limited in the Hudson, because of the general steep nature of the tributaries a short distance from the Hudson, and lack of dams on the tidal extent of the Hudson's tributaries, there are possibly some opportunities on larger tributaries, such as the Rondout Creek.

   DEC and partners will continue to make dam removal and barrier mitigation a priority through assessing, planning, and implementing restoration projects. DEC awards funding annually for dam removal engineering and construction. Several regional nonprofit partners are also engaged in dam removal, and it continues to gain momentum annually. A recent video was created by partners to raise awareness about dam removal, called Undamming the Hudson River (Undamming the Hudson River - YouTube). To achieve our dam removal goals, DEC will undertake an internal review of policies and procedures to see if there are more streamlined ways of removing dams.

   Timeline: Ongoing

Action: Assess Dams and Passage

Progress: The owner of the Green Island Hydropower facility at the Federal Dam in Troy, NY has been required to install fish passage as part of the FERC re-licensing process. It is not yet known what the upstream and downstream mortality rates will be resulting from the operation of this passage structure. Downstream mortality of adult and juvenile shad passing through turbines at the Federal Dam threaten to make this project an additional source of mortality on the Hudson River shad stock. This re-iterates the crucial need for constant evaluation of upstream and downstream passage efficacy to ensure that fish passage structures scheduled to be in operation within the next few years do not negatively impact shad recovery.

Timeline: Ongoing

2. **Reduce impacts of water withdrawals on American Shad**

Action: Manage water intake facilities

Progress: As part of the Clean Water Act, in New York State, all existing industrial facilities using water from the Hudson River must install and operate technologies on their cooling water intakes that will minimize impingement and entrainment. Of the 17 industrial facilities known to use Hudson River water for cooling, ten are operating technologies to minimize fish mortality, five are currently reviewing options, and two have been designed and are to be installed within the next five years. Several plants (i.e., Bowline, Danskammer, and Roseton) operated at less than 30% of capacity for most of the period from 2010-2016. Athens Generator uses a dry cooling system requiring no water from the Hudson River for cooling. Water withdrawal at Lafarge Cement Plant in Bethlehem is in the area of the river most vulnerable for developing shad larvae. Water withdrawal at this site is 25% of what it was in the late 1990s and impingement and entrainment have been effectively eliminated using wedgewire intake screens. The Albany Steam Electric Plant (now called Bethlehem Energy) was repowered and uses a hybrid closed cycle cooling system with a water intake fitted with wedgewire screens. This has nearly eliminated the impingement and entrainment of fish at this location. Indian Point Energy Center (IPEC) was closed in April, 2021 and will vastly reduce the amount of water required at that site. IPEC is currently permitted to use more than 2 billion gallons of water per day. The Empire Plaza operates a once through cooling system at Albany, withdrawing approximately 90 million gallons per day for air conditioning purposes. A recently issued SPDES permit requires the intake to be fitted with a wedgewire screen system which will eliminate impingement and nearly eliminate entrainment at this site.

Timeline: Ongoing

Future actions:

- Ensure that new and existing water intakes proposed and installed in the Hudson River include provisions that are protective of American Shad.
- Quantify the number of existing water intakes in the Hudson River, particularly those in the vicinity of American Shad spawning habitat, that do not include provisions that are protective of American Shad.

3. Habitat Monitoring and Restoration:

Action: Restore vegetated shallow water and intertidal habitats

Progress: While we do not feel access to historical habitat is limiting recovery, we feel that improvements to habitat quality such as water quality, restoration of side channels and tidal wetlands, and submerged aquatic vegetation will result in improved recruitment of juvenile shad, a crucial component needed for stock recovery. The Hudson River Estuary Habitat Restoration Plan (Miller 2013) identifies several river and tributary restoration activities that will benefit alosines, including barrier mitigation and side channel restoration, the latter of which having the biggest impact for shad. The first of these side channel restoration projects was completed in July 2018 at Gay's Point (km 196), near Coxsackie, NY (NYSDEC-HRNERR 2019). The site originally consisted of an artificially created tidal embayment that was separated from the main river channel by dredge spoils. A channel was excavated through the dredge spoils to reconnect the northern end of the bay to the mainstem Hudson River. Increased tidal flow through the embayment should improve water quality, provide coarser-grained bed materials, and likely improve the quality of nursery habitat for juvenile fishes in this river section.

Post-restoration monitoring has been ongoing since the project was completed and in 2020 sampling occurred in spring, summer and fall between May and October. Monitoring is scheduled to continue through 2022. Data were collected to characterize water quality, sediment characteristics and the fish and benthic macroinvertebrate communities. Current velocities and depth profile data were collected during May and July. Juvenile American Shad were collected during sampling in 2018, but not collected during the 2020 sampling (AKRF 2021). A large diversity of fishes are using the newly created channel and over time the fishes will continue to use the side channel for foraging, nursery habitat and refuge.

Timeline: Ongoing-we will be working with partners to identify additional side channel restoration projects.

Action: Restore and maintain native Submerged Aquatic Vegetation

Progress: The vegetated portions of mud flats and intertidal wetlands provide critical nursery areas for small fishes, contribute significant dissolved oxygen to the entire estuarine system, and store sediments being delivered by both the main stem and tributaries. In total, this habitat type covers approximately 12,000 acres which includes an estimated 6,750 acres of intertidal wetlands, 3,250 acres capable of hosting annually variable submerged aquatic vegetation and 2,000 acres of the floating invasive water chestnut (*Trapa natans*). Research has identified significant challenges to their persistence from changes to water quality, existing and potential invasive species, sea level rise, and incompatible recreational use.

NYSDEC Invasive Species Managers need to understand better the interactions of native submerged aquatic vegetation (*Vallisneria americana*) and water chestnut (*Trapa natans*) in the Hudson River Estuary and Mohawk River by determining if the removal of water chestnut facilitates the return of native species. Outcomes of the research could include recommendations for restoration of native plant ecotypes, strategies for measuring and

addressing impacts of habitat shifts on fisheries, and assessment of recreational and economic benefits of water chestnut removal. Potential future invaders also need to be addressed by identifying which species are most problematic and their most likely invasion routes, and then beginning to develop suitable prevention and management plans.

Following the two large storms in 2010 submerged aquatic vegetation (SAV) disappeared from the historic areas. The flooding associated with intense storms like named tropical storms Irene and Lee in 2011 can carry huge volumes of water and sediment into the Hudson. The storms together reduced submerged aquatic vegetation abundance in the Hudson River by more than 90% and no appreciable recovery in 2012 or 2013 was detected (Hamberg et al. 2017). SAV is an important habitat for the development of young shad (Ross et al. 1997) and if the frequency of SAV damaging storms increases in future years, there will likely be negative impacts on the recruitment of American shad. SAV disappearance maybe be linked to the uprooting and/or removal of plants or from large amounts of sediment burying the plants (linked to Climate Change – see below). As funding becomes available NYSDEC will develop and implement pilot projects to restore native (SAV) beds, tidal wetlands, side channels, shallow water habitats, and native plant communities. The project will include monitoring following the restoration to assess the success of the restoration projects.

Timeline: Ongoing

Action: Habitat mapping and monitoring

Progress: DEC will continue to map key habitats in the Hudson, including the estuary's tidal wetlands, submerged aquatic vegetation beds, deep and shallow water river bottom, and shoreline from the Tappan Zee Bridge to Troy, enabling biologists to develop a better understanding of food webs and habitat use for Atlantic sturgeon, river herring, shad and striped bass. Submerged Aquatic Vegetation will continue to be mapped every five years with the most recent map layer completed for the 2018. Tidal Wetlands will be mapped every ten years to track changes in the wetland composition as well as document response to sea level rise/climate change. (Linked to climate change/habitat restoration). The mapping is completed using LiDAR technology with random ground truthing visits to confirm presence/absence as well as species and size of the patch.

Annual SAV monitoring uses volunteers that visit predetermined areas to note presence or absence of SAV. Since 2012, DEC staff and citizen-science volunteers have documented submerged aquatic vegetation (SAV) in the Hudson River estuary. Current research is contributing important information about SAV populations, prospects for recovery and best approaches for restoration. SAV change analysis is underway as a product of 2018 mapping. The analysis will be evaluated over the next year to identify locations that native SAV has persisted and locations that have been dominated by invasive water chestnut. Priority locations for future restoration and protection will also be identified. In addition, we are constantly working with partners to learn more about replanting of the native SAV (*Vallisneria americana*).

It is important to understand and monitor river habitat trends and threats, especially changes in location, coverage, community composition, and sediment accretion rates of submerged aquatic

vegetation, tidal wetlands, and shore zone habitats, as well as changes in bottom characteristics and habitat quality of river bottom habitats.

Timeline: Ongoing

4. Understand the impacts of climate change:

Action: Monitor distribution, migration patterns and spawning of American Shad

Progress: Changes in climate and weather patterns are affecting the fish and wildlife distribution, migrations patterns, and spawning phenologies. (IPCC 2014, Horton et al. 2014, Nack et al. 2019, Pirani and Boicourt 2018, Reidmiller et al. 2018, Rosenzweig et al. 2011). The onset of spawning for American shad was already 5.3 days earlier in 2012 relative to 1976. By the 2090s, it is predicted that the shad spawning season will be 12 days earlier and that the spawning season will be shortened by 4 days (Nack et al. 2019). It is unknown how these changes will affect the existing American shad ecology, including the availability of plankton to developing shad, changes to predator-prey interactions, and the iteroparity of the stock.

Timeline: Ongoing

Action: Monitor climate change impacts to the Hudson River and American Shad to identify and implement opportunities to adaptively manage and minimize adverse impact

Progress: Management of American Shad takes place locally in NY State as well as cooperatively through Atlantic States Marine Fisheries Commission (ASMFC). A Climate Change working group was established in 2018 to develop a guidance document to provide management strategies to assist the Commission with adapting its management to changes in species abundance and distribution resulting from climate change impacts (ASMFC 2018). A step wise approach is outlined in the document to guide implementation of adaptive management. Representatives from NY will continue to participate in the population assessment and decisions on coastwide management of American Shad.

Timeline: Ongoing

Future actions:

-Explore the implications to migratory fish of differential warming rates between the Atlantic Ocean and the Hudson River Estuary.

-Evaluate impacts of Northwest Atlantic Ocean heatwaves on the ecology of American Shad, including the timing and location of seasonal movements, impacts on prey abundance and availability, and disease and pathogens.

5. Invasive species monitoring and management

Action: Prevent the invasion of new invasive species. As outlined in the threats section above, the restoration of the watershed divide between the Hudson River Estuary and neighboring watersheds that

were eliminated through the creations of the Erie and Champlain canals remains the most beneficial actions that can be taken to prevent the invasion of aquatic invasive species in the Hudson River.

Progress: In May 2019 Governor Cuomo announced a sweeping initiative to examine how the Erie Canal system could be reimagined for the 21st century. One of the primary objectives of this effort is to assess how the Erie Canal can help mitigate impacts from flooding and ice jams to improve resiliency and *restore ecosystems in canal communities*. In January, 2020 the Reimagine the Canal Taskforce released a report that identified combatting the spread of invasive species as a priority for reimaging a 21st century canal system, and recommended studying strategies to counter invasive species to protect and enhance New York's waterways and the businesses that depend on them.

Timeline: Unknown

Future Actions: Provide technical support to efforts to study strategies to counter invasive species that may threaten American shad.

Action: Monitor for new invasive species

Progress: To combat the impacts of invasive species, DEC created and supports the Bureau of Invasive Species and Ecosystem Health (BISEH) within the Division of Lands and Forests. This group works across the state by providing expertise, assistance and action where invasive species are a threat. BISEH collaborates with numerous stakeholders including State and Federal agencies, non-governmental organizations, industry and notably through Partnerships for Regional Invasive Species Management (PRISMs). The Rapid Response for Invasive Species: Framework for Response was created to aid resource managers responsible for responding to newly discovered invasive species infestations. The policy outlines all the necessary components of an effective response, including coordination, communication, public outreach, planning, scientific analysis, information management, compliance with laws and regulations, resources, and logistics.
In addition to this statewide effort, The Hudson River National Estuarine Research Reserve is developing an estuary specific task to prioritize monitoring activities in the Hudson River estuary. This group will identify important pathways of introduction, critical species, and priority locations to develop catalyst ideas that will maximize the impact of early invasive species detection and response.

Timeline: Ongoing

Action: Management of invasive plant species

Progress: The addition of water chestnut to the Hudson Ecosystem has changed the water quality (dissolved oxygen, turbidity, sedimentation) in the vegetated shallows. Sedimentation and turbidity within these mats are greatly increased and the dissolved oxygen levels within the mats is much lower than surrounding waters (Strayer 2006), favoring species with wide tolerances for unfavorable environmental conditions (Schmidt and Kiviat 1988). The establishment of these immense water chestnut mats each summer significantly reduces the

amount of near-shore nursery habitat available to YOY alosines, cutting off areas that would likely have remained more productive with native macrophyte beds. Removal or management of the plants to improve American Shad nursery habitat may help with recovery. Currently, no plans for a project of this nature have been developed.

Timeline: Unknown

Future Actions: Pursue research partnerships to better understand the ecological effects of water chestnut invasion, the experimental removal on water quality and ecosystem services, and to better understand the dynamics that support the return of native SAV following water chestnut removal.

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Tables and Figures:

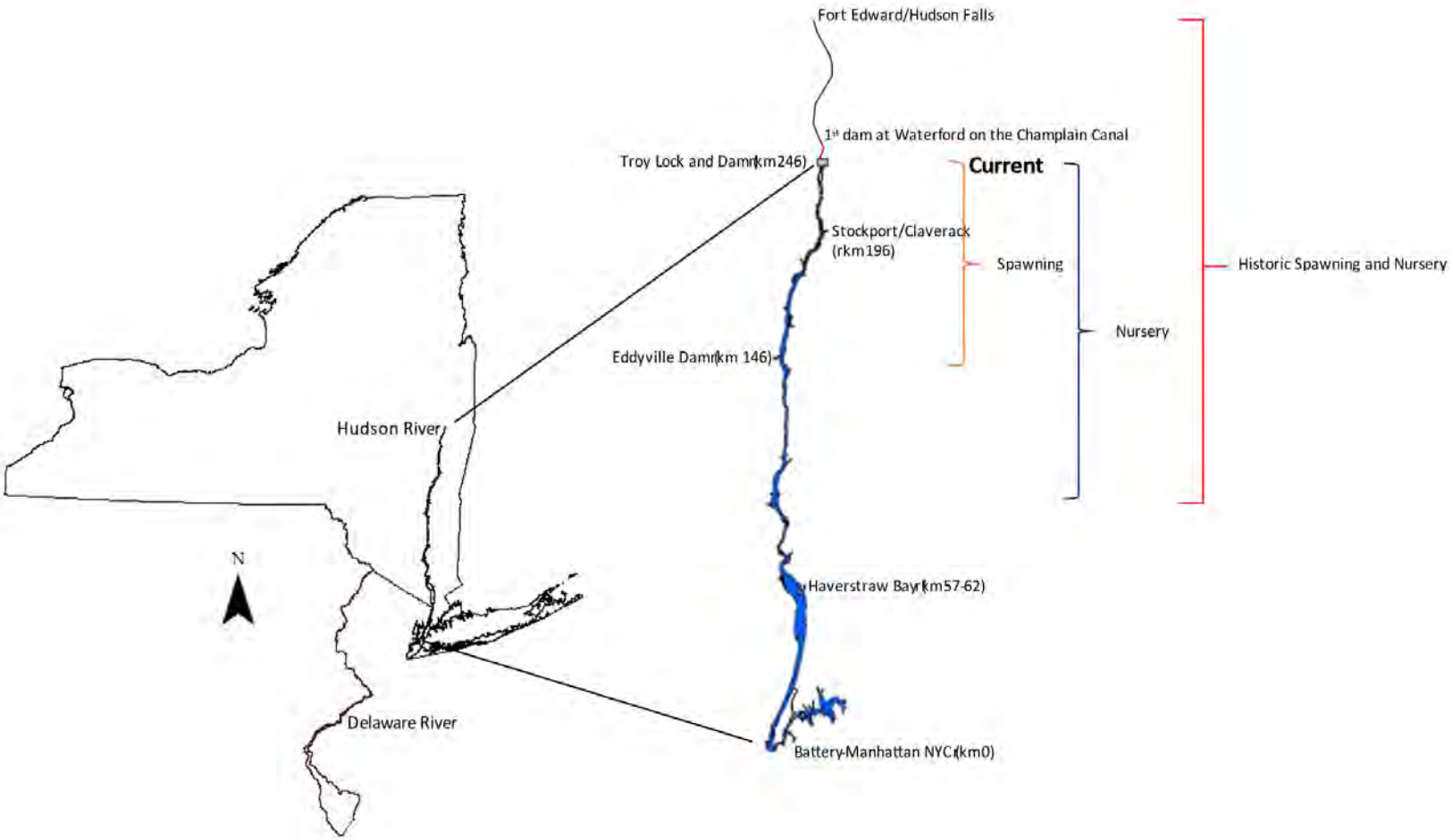

Figure 1: NY-Hudson River and Delaware Rivers. Locations of current and historic spawning and nursery as well as locations of dams.

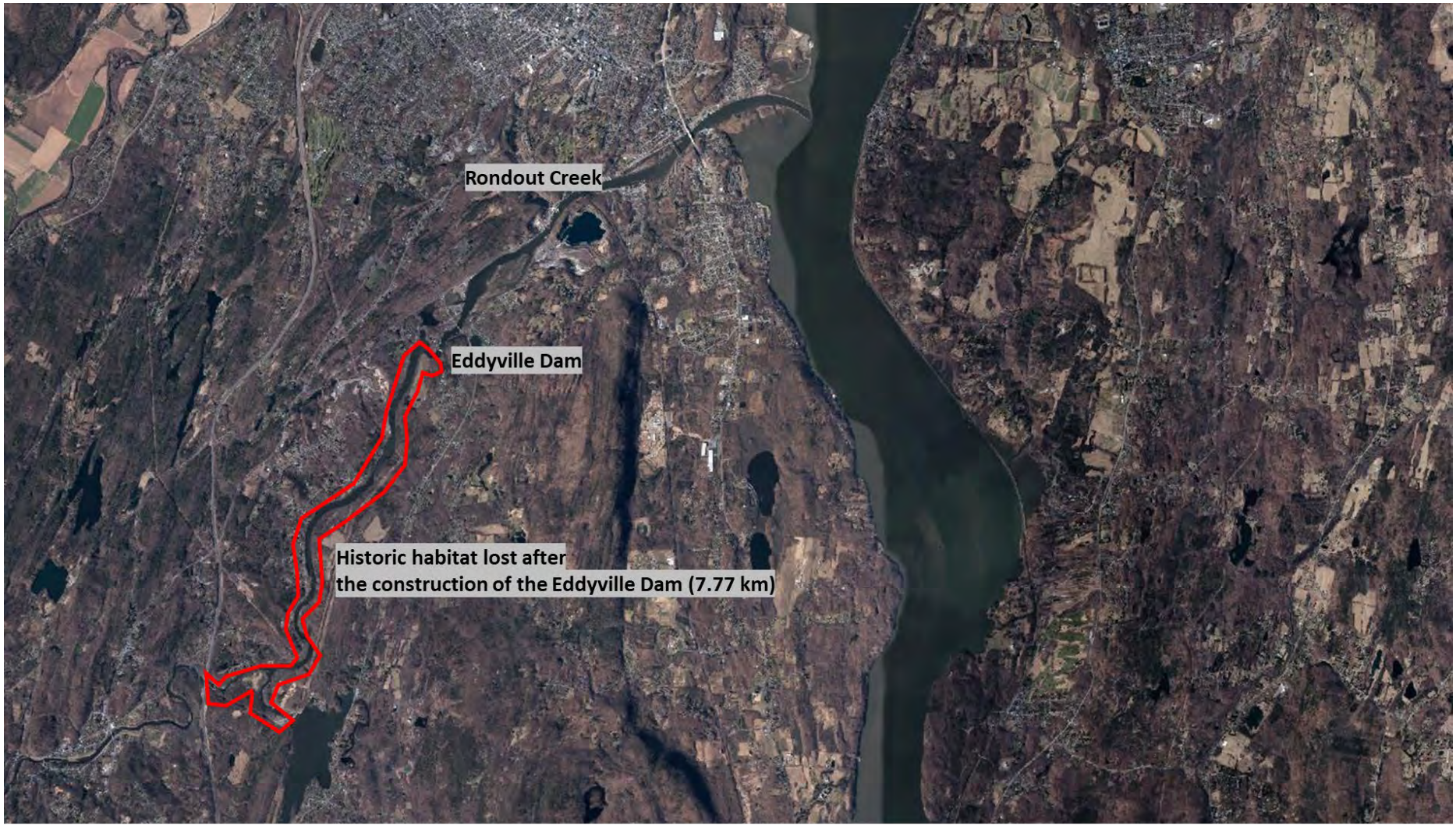

Figure 2: Map of the Rondout Creek with the Eddyville Dam located near Kingston, NY.

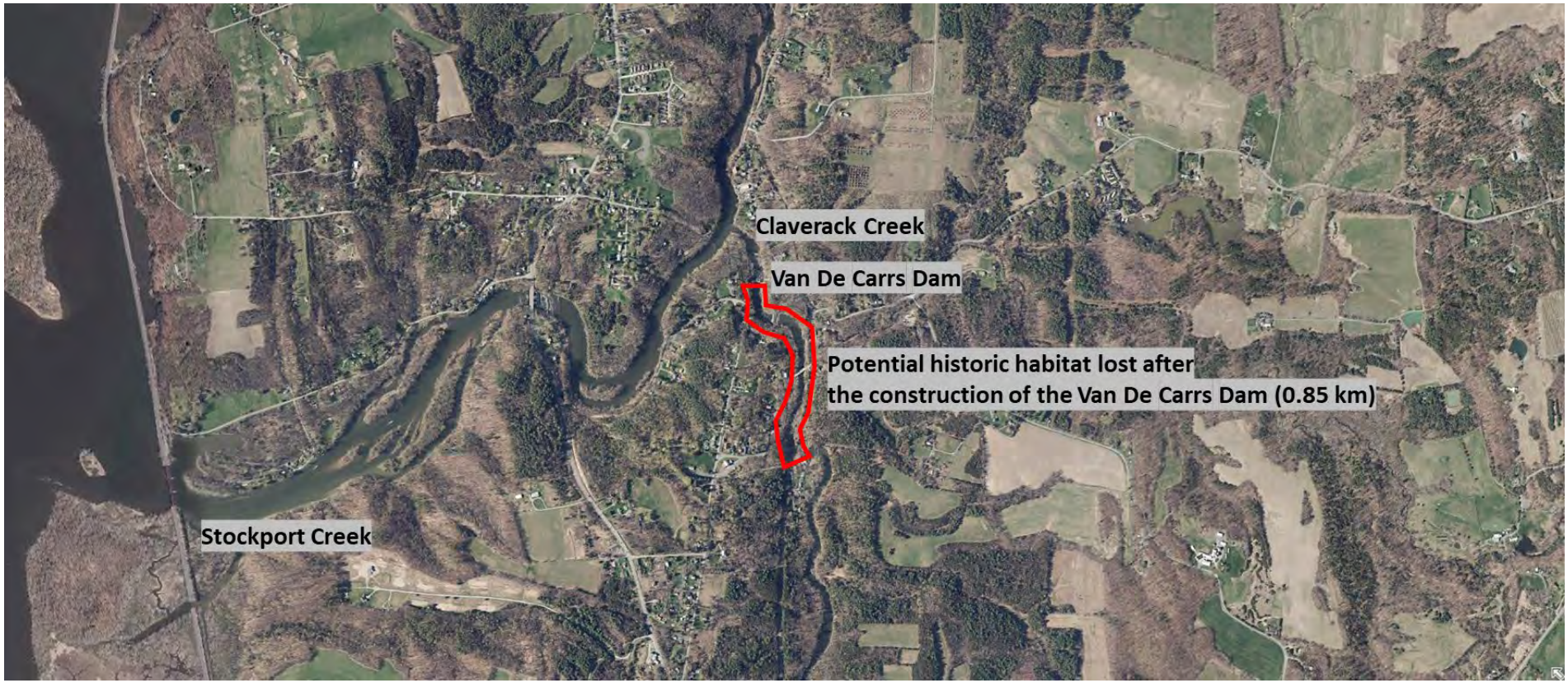

Figure 3: Map of the Stockport Creek and Claverack Creek with the Van De Carrs Dam located near Stockport, NY.

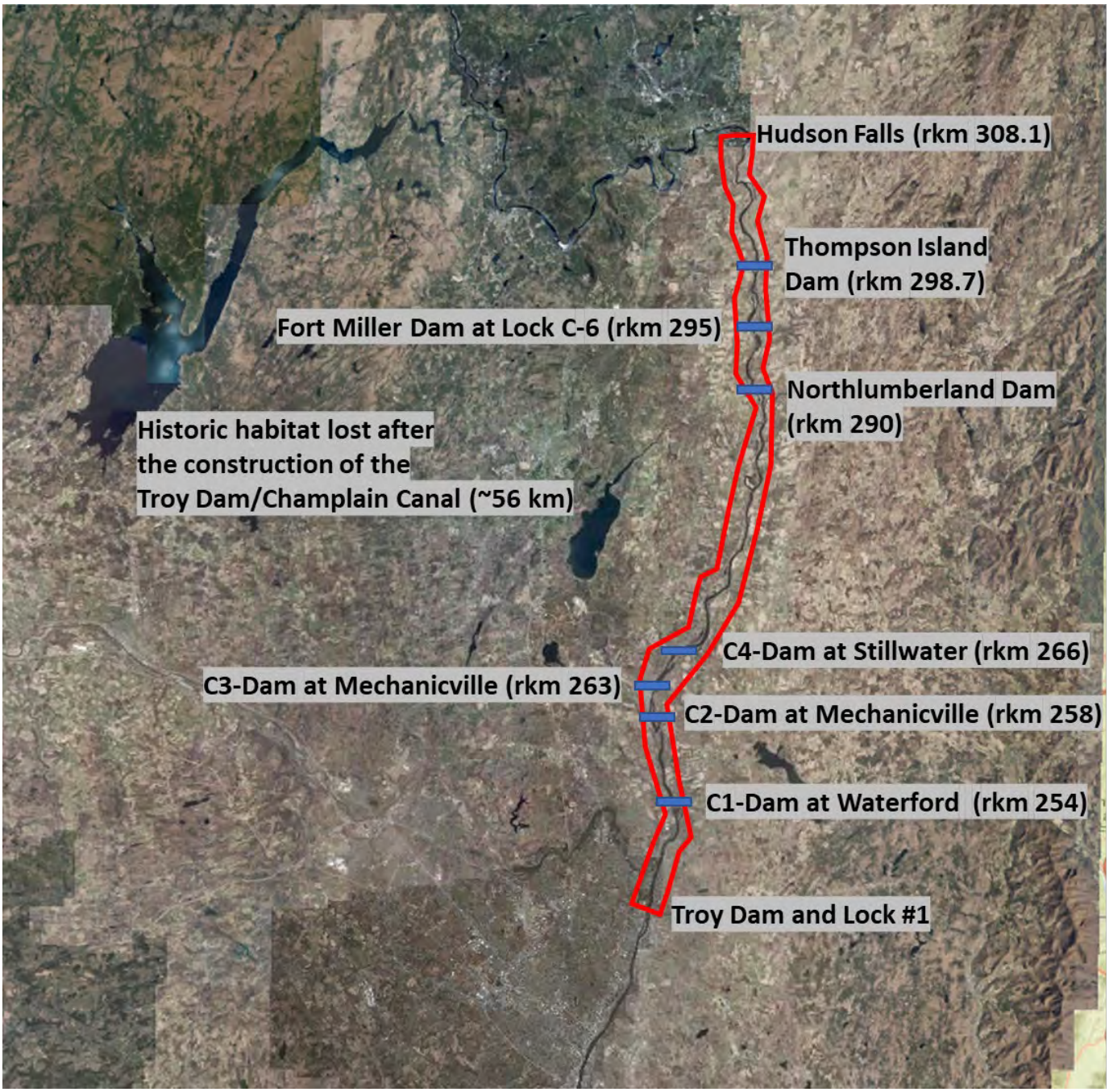

Figure 4: Historic habitat above the Troy Dam located in Troy, NY. This map also includes the dams located on the upper Hudson River (Champlain Canal) from Waterford, NY to Hudson Falls, NY.

Dam Name	Tributary	Year Built	Town	County	Dam Height (feet)	Dam length (feet)	Kilometers of blocked habitat	Hydroelectic facility
193-0166A (Eddyville Dam)	Rondout Creek	1850	Esopus	Ulster	12	220	7.77	No
Van De Carrs Dam	Stockport/Claverack Creek	1904	Stockport	Columbia	18	230	0.85	No
Troy Lock and Dam #1	NA	1914	Troy	Rensselear	20	1000	8	Yes
Lock C1-Dam at Waterford	NA	1912	Halfmoon	Saratoga	24	1050	6	No
Lock C2-Dam at Mechanicville	NA	1899	Halfmoon	Saratoga	23	963	5	Yes
Lock C3-Dam at Mechanicville	NA	1965	Mechanicville	Saratoga	37	1220	3	Yes
Lock C4-Dam at Stillwater	NA	1955	Stillwater	Saratoga	14	1400	24	Yes
Northlumberland Dam	NA	1870	Schuylerville	Washington	16	805	5	No
Fort Miller Dam at Lock C-6	NA	1985	Fort Miller	Saratoga	5	1320	3.7	Yes
Thompson Island Dam	NA	1910	Fort Miller	Washington	15	736	9.6	No

Table 1: List of dams known and suspected to limit American Shad access to historical habitat in the Hudson River and tributaries.

Atlantic States Marine Fisheries Commission

Atlantic Coastal Cooperative Statistics Program Coordinating Council

October 19, 2021
Web Conference
11:00 a.m. – 12:30 p.m.

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Call to Order *(J. Carmichael)*

2. Council Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021

3. Public Comment

4. Consider Recommendations for FY2022 Submitted Proposals *(J. Simpson)* **Action**

5. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE

ATLANTIC COASTAL COOPERATIVE STATISTICS PROGRAM

COORDINATING COUNCIL

Webinar
August 5, 2021

These minutes are draft and subject to approval by the
Atlantic Coastal Cooperative Statistics Program Coordinating Council
The Council will review the minutes during its next meeting.

TABLE OF CONTENTS

INDEX OF MOTIONS

ATTENDANCE

Council Members

Bob Beal, ASMFC
Megan Ware, ME, proxy for P. Keliher
Renee Zobel, NH
Dan McKiernan, MA
Jason McNamee, RI, Vice-Chair
Greg Wojcik, CT, proxy for J. Davis
Maureen Davidson, NY, proxy for J. Gilmore
Joe Cimino, NJ
Kris Kuhn, PA, proxy for T. Schaeffer
John Clark, DE
Lynn Fegley, MD
Lewis Gillingham, VA, proxy for P. Geer
Dee Lupton, NC, proxy for K. Rawls
Mel Bell, SC, proxy for P. Maier
Kathy Knowlton, GA, proxy for D. Haymans
Hannah Hart, FL, proxy for J. McCawley
John Carmichael, SAFMC, Chair
Brandon Muffley, MAFMC, proxy for C. Moore
Mike Millard, USFWS, proxy for L. Whitney
Richard Cody, NOAA

Staff

Toni Kerns
Laura Leach
Lisa Carty
Tina Berger
Pat Campfield
Maya Drzewicki
Kristen Anstead
Alex DiJohnson
Lisa Havel
Chris Jacobs
Jeff Kipp
Savannah Lewis
Kirby Rootes-Murdy
Sarah Murray
Jennifer Ni
Marisa Powell
Mike Rinaldi
Julie Defilippi Simpson
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Shanae Allen, FL FWC
Renee St. Amand, CT DEP
Max Appelman, NOAA
Pat Augustine, Coram, NY
Jeff Brust, NJ DEP
Heather Corbett, NJ DEP
Jessica Daher, NJ Dep
Russell Dize, MD (GA)
Cynthia Ferrio, NOAA
James Fletcher, Wanchese Fish
Tom Fote, NJ (GA)
Doug Haymans, GA (AA)
Jay Hermsen, NOAA
Helen Takade-Heumacher, EDF
Matthew Heyl, NJ DEP
Peter Himchak, Cooke Aqua
Carol Hoffman, NY DEC
Harry Hornick MD DNR
Raymond Kane, MA (GA)
Ben Landry, Omega Protein
Wilson Laney
Mike Luisi, MD DNR
Chip Lynch, NOAA
Jerry Mannen, NC (GA)
Nichola Meserve, MA DMF
Steve Meyers
Roy Miller, DE (GA)
Allison Murphy, NOAA
Brian Neilan, NJ DEP
Gerry O'Neill, Cape Seafoods
Cheri Patterson, NH (AA)
Michael Plaia
Nicholas Popoff, US FWS
Craig Pugh, Leipsic, DE
Kathy Rawls, NC (AA)
Story Reed, MA DMF
Eric Reid, Kingstown, RI
Scott Schaffer, MA DMF
Tom Sminkey, NOAA
Melissa Smith, ME DMR
Somers Smott, VMRC
David Stormer, DE DFW
Ritchie White, NJ (GA)
Chris Wright, NOAA
Erik Zlokovitz, MD DNR

The Atlantic Coastal Cooperative Statistics Program Coordinating Council of the Atlantic States Marine Fisheries Commission convened via webinar; Thursday, August 5, 2021 and was called to order at 10:45 a.m. by Chair John Carmichael.

MR. GEOFF WHITE: Before I turn things over to our Chair, John, I wanted to at least put a couple of notes out. Renee Zobel from New Hampshire is our new member. Last meeting, we had her on as a proxy, so welcome Renee, as the New Hampshire member. Hannah has joined us as proxy as well, so welcome Hannah. The other point I wanted to make here on ACCSP staff, Mike Rinaldi has been a data team member, and data coordinator for several years now. But just in the last few weeks he applied for and was selected as the new data team lead, so congratulations to Mike Rinaldi as our new Data Team Lead. In a side note, congratulations to Julie Simpson for now holding one title, as Deputy Director, instead of trying to maintain two job roles and titles, as she has for the last few years. Congrats to Mike, and a thank you to Julie. With that, I will turn it over to John to get to get us going.

CALL TO ORDER

CHAIR JOHN CARMICHAEL: I appreciate that and getting us started, so welcome everybody, and I'll call this meeting of the ACCSP Coordinating Council to order. We've got another webinar effort, so thanks everyone for being there, and your patience as we get through the webinar world continuing.

APPROVAL OF AGENDA

The first order of business is consent for approval of the agenda. Are there any reflected changes or additions to the agenda? Any hands, Geoff? I don't see any.

MR. WHITE: I do not see any either.

CHAIR CARMICHAEL: All right, I guess I'm just a participant, I wouldn't see any anyway. Okay, so let's consider the agenda approved.

APPROVAL OF PROCEEDINGS

CHAIR CARMICHAEL: Our last meeting was May, 2021, so are there any changes or additions to the minutes? Hearing nothing then, Geoff, the minutes stand approved.

PUBLIC COMMENT

CHAIR CARMICHAEL: I guess the next thing is to open it up for public comment. Geoff, seeing no comments?

MR. WHITE: Correct, no comments.

CHAIR CARMICHAEL: Geoff, on my hard agenda I had, do we need to consent approval for the Program Update?

MR. WHITE: No.

CHAIR CARMICHAEL: Okay, good enough then.

PRESENTATION FOR FUNDING PROJECTIONS AND 2022 PROPOSALS

CHAIR CARMICHAEL: I turn it over to you then to go over the presentation for Funding Projections and 2022 Proposals.

MR. WHITE: All right, thank you so much. I appreciate everybody here, presenting a new view of the process. Historically, during the August meeting, the Coordinating Council has not done a lot with the current proposals, but as we've moved to a little bit more transparency of where things are at, and follow up with some of the extensions, and where the funding looks to be for next year.

I wanted to provide some more information to everybody about what proposals were received, where we are in the process, and also provide some information that I've been working with the Leadership Team about. The next slide does have a summary of all the proposals, but we did end up

with eight maintenance proposals during the May meeting and the funding process.

There was an allowance for maintenance proposals to request a sixth-year extension, and that could have applied to, I believe six proposals, but three partners chose to select that option, and submitted the proposals. We did end up with four new proposals, and the ACCSP Administrative Grant does include a new software team member proposal.

Last year that was proposed and selected to delay, and then of course where we are in the process at the moment. The initial proposals were reviewed. There was an ability for staff workload to be discussed again, a new part of the process. There were three projects that have a significant impact on staff time total, so these estimates are a little bit broad, but across three projects there is the potential for kind of 800 ACCSP staff person hours that was estimated.

I'll touch on those a little bit more on the next slide. This is a summary of the proposals that have been submitted. I realize that it's a little bit small, but the benefit of us all having computers in front of us instead of projections, hopefully you can all see this, of what the three extension year projects are, as well as the proposals that came in as maintenance and new.

The three projects that had some staff workload items, a couple were in the 200 to 400 hours, the South Atlantic Council, North Carolina Citizen Science Project is one of those that is expected, because there is a little bit more of an ACCSP role in coordination and development of the central process there. Another is PRFC Trip Reporting as a new partner in implementing trip reporting and using SAFIS.

That is typical and expected to have a higher staff workload, and then the third is the VMS and eTRIPS integration. That is under new projects Item 1 in the Massachusetts/Rhode Island, and that has to do with new location tracking request and requirements, which trackers, or which devices that would be installed on vessels interact with SAFIS, and the ability for SAFIS to present kind of the consolidated track back to the Agency partners that would have the right confidential allowance to see kind of the viewpoints across vessels.

I know that that relates to the previous workshop on wind energy, as well as lobster fishing locations and those types of activities. The VMS integration has a lot to do with the spatial work that Mike Rinaldi has been doing, and will continue to be doing, and how to summarize that. The overall funding here is a little bit above what we expect. However, it is lower than the projections earlier this year, when the thought process came through about the Year 6 extensions. With that I'm not going to focus too much more on the detail here, but the idea of a projection is our next slide.

Again, a busy slide, so we'll spend a little bit of time here. But I do want to call that Julie was able to help develop this for tracking, and I appreciate her work on this. The green bar in the middle is the average 75 percent maintenance funding level across years, after the Administrative Grant has been taken out. The maintenance projects have been trending pretty well. The differences that you really see were in 2021, so the maintenance projects had a dip there, in large part because Maine chose to wait a year to submit another proposal, and the new projects bumped up, because last year PRFC was a larger new proposal that came through.

Both of those moved to maintenance in the 2022 proposals that have been submitted. The kind of coincidence of the yellow and the blue bar bridging the green line, is simply just an awareness of where the 75/25 point is, when we include the extra year for those three projects that chose to submit.

That's a bit of how things have tracked historically for maintenance and new proposals. On the right

side of the screen, you can see there are two kind of projection bars. Those relate to kind of an Excel forecast of historical maintenance funds in the kind of greater slope reddish brown bar, and then the gray bar is the manual, where the expectations written up at the top of which particular projects are expected to end, or you need a step-down time period.

The nice news there is that the mathematical projection, as well as the manual projection are pretty darn close, in terms of what's going to happen in the future for maintenance proposals. There of course is no future projection on new proposals, as that wouldn't be very valid. We don't know those things at this time.

The next slide is for the Administrative Proposal. Just at this point I want to ask if the Council has any questions or thoughts about where the maintenance and new project proposals are, or questions at this point in the presentation, and I'm looking for hands, so far, I am not seeing any.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Geoff, this is Bob Beal. I guess I'm an organizer, so I can't raise my hand.

MR. WHITE: Please go ahead.

EXECUTIVE DIRECTOR BEAL: Or I guess I should be asking John. But Geoff, on your previous slide, with all the new projects, maintenance projects and Admin Grant, just to be, I guess as simple as possible. Where normal ACCSP funding is around 3.4 million, when you add up everything that has been proposed for 2022, we're at 3.6 and change. We're $225,000.00 or $250,000.00 short. When we get to the October meeting, that is when we're going to need to sort out that difference between, basically what's not funded, or how do we make up that $225,000.00 or $250,000.00. Is that an accurate summary of where we are?

MR. WHITE: That is correct. I do see Richard Cody's hand up, and this information is really for your information. Final proposals aren't due until August 14, so there may be a few pencil sharpening activities occurring, including the Admin Grant. The other thing is, there is potential for at least one of the projects has asked for funding elsewhere.

Yes, there is a about a $250K difference to think about, but at this point the proposals still need to be ranked in September, and brought back to the Coordinating Council for evaluation in October. There is not a need for action right now. With that, Mr. Chair, Richard Cody has his hand up, so I would call on him, if you have no objection.

CHAIR CARMICHAEL: I do not, you go ahead and call on hands, since you can see them.

MR. RICHARD CODY: Geoff, I just had one question. There were three maintenance projects that chose to exercise the extension. How many overall projects were there that didn't, or were there any? I thought there were two.

MR. WHITE: Julie, can you help me out? Yes, thank you. I thought it was three, but I was just checking. There were three other projects that chose not to submit for the extension.

MR. CODY: All right, thank you.

MR. WHITE: I am not seeing other hands, so at this point let's step forward to the Admin Proposal. Again, this is a new part of the process to include this information. While it is available through the Operations Committee, I did want to at least provide some transparency to you about what we're looking at and projecting, and that this will again come back in October.

The big point here is, instead of presenting it as we did last year, kind of an Option 1 was a staff software person, and a different option the Leadership Team has discussed and left us as presenting as one proposal. I will identify that 2021 is there as a comparison point, but it does look like

it's about a $250,000.00 increase from what was actually funded last year.

I did want to point out that there was a lower meeting cost for the 2021, because of the pandemic. There was also a choice in trying to find some funds to delay the hiring of the Data Team Lead, and so that has been accomplished, it provided some cost savings, but the 2021 only included half of the year for that.

The other choice was in the carryover funds from previously, all of the Help Desk was chosen to move to the carryover funds. For the coming year, yes, we included the software staff member as well, and under contract in Other, we include about $90,000.00 for application development, and about $75,000.00 for the Help Desk support.

We recognize that we're learning still about how much the Help Desk costs on a monthly basis. At the moment last year's funding stream is working out, to cover what we think we need to by the end of February. If there is need to seek external support for the Help Desk next year, we'll continue on those efforts. But I recognize the concern of the Council and the balance between the Admin Grant and funds available for projects, and some of those, what are the ACCSP priorities and workload balances, and what is the best coastwide use of the ACCSP, you know funding and approach.

Those things are all on the table, I am working with John and the Leadership Team about some perspectives of where we're headed with those types of things. We'll have more information, we have more meetings scheduled for later in August and September, but we'll have more information at your October meeting.

Just for a little more clarity on what the Admin Proposal includes for the justification for a future software staff member. Right now, we have kind of two and a half positions in software, and we're doing great on the current capability list, that is database storage, record processing, the online APEX just happens to be the name of what that software is, but that is an in-house Oracle tool.

The ACCSP end of the API, the application programming interface. But the way that mobile apps and other folks interact with the database, from a submit data and get your validations and things back. The growth areas in the middle are really about mobile app development, maintenance and deployment, and being able to test the mobile apps across environments and features.

That is kind of a catch all, and I don't want to get too geeky on your guys, but when you deploy an application to mobile platforms, you've got differences between the Windows, the Android, and the IOS applications, which require additional testing. Also, with eTRIPS, and movement towards one-stop reporting, and the way it's working right now.

There is a lot of great flexibility with a partner switchboard of turning questions or options or things on and off. The difficulty with that is, it depends on your log-in, and if a person logs in that has one permit it's really straightforward to test. If they log in with two, three, or more permits associated with their account, it just becomes a little bit more difficult to test.

That is why there is a need to kind of test those things, and that is really a tradeoff point with your Agency staff, in how much ACCSP can test, and how much we rely on you as partner staff to test. That is an important point that has to do with your staff workload balancing. These growth areas in the software team member would decrease in the long term, but not eliminate the need for contract support.

Right now, when there is a bump in work activity that is short term, and we have reliance on their knowledge and development expertise. I think contract support will still be necessary. However, making smaller changes or having the capability to

not be one deep, and having some staff resources there to onboard that part is an important long-term vision.

That is a bit of what we're looking at on the staff justification points. Again, I think this is a good point to pause and ask for questions. The next agenda item Julie is going to cover the accountability subgroup update, but while we're here, I think this is a good point to see if anyone has a desire to raise any questions. At the moment I'm not seeing any hands up.

CHAIR CARMICHAEL: All right, yes thanks, Geoff. I think it is good to pause here, and then you know as Bob mentioned, looking down the road there is a potential funding squeeze we might have to deal with, depending on how projects play out in October. We wanted to highlight the Admin Grant and a few of the points Geoff raised, about 2021 versus 2022 are pretty relevant.

You know 2021 was a special year, and there were a number of adjustments made within the initial Admin Grant, to support as many projects as possible. One of those was including pushing off the software staff. One of the highlights to various things that have changed within that, you know recognizing the difference in the bottom line could cause some attention.

MR. GEOFF: Thank you, John, we have a hand up from John Clark, so Mr. Clark.

MR. JOHN CLARK: Yes, thank you, Geoff. Good explanation of the need to increase the administrative budget. Just curious, it's about what about an 11 percent increase in the administrative budget. Do you know what the, Bob, I know we were over this with NOAA on Monday, but how much is the Federal line increasing for ACCSP?

EXECUTIVE DIRECTOR BEAL: I don't recall, John, let me go back and look. But I think it's staying relatively stable. It's complicated, which is not a great answer, but part of ACCSPs funding is a set amount of the Atlantic Coastal Act, and the other part is the FIN line. The FIN line, I think is increasing a little bit.

But I don't know how much of that line, the FIN budget increase will directly translate to money that goes to the individual programs at the three interstate commission. It's kind of a complicated answer. The line seems to be going up, but I don't know how much that will translate into ACCSP budget increasing. Hopefully some.

MR. CLARK: This is sort of the term, what was the one that Paul Doremus used, funding erosion, where you are level funded, but because of inflation the funding is actually decreasing.

EXECUTIVE DIRECTOR BEAL: Yes, the value of every dollar keeps going down, unfortunately.

MR. WHITE: This is Geoff. I absolutely appreciate those points. The Leadership Team, kind of a new name for the ACCSP Executive Committee, has asked for some of those tradeoff questions, about what does core ACCSP staff bring to the entire coastwide benefit and workload for partner staff, as well as the ability for project funding to go out. You know those are the discussions that are going on with the Leadership Team, and providing some really healthy feedback between them and myself, about what are the priorities moving forward. I'm not seeing other hands.

CHAIR CARMICHAEL: Okay, if no other hands yes, I think we can move on.

ACCOUNTABILITY SUBGROUP REPORT

MR. WHITE: Mr. Chair, if you wanted to hand it over to Julie, we can go to the next slide and get the update on the Accountability Subgroup.

CHAIR CARMICHAEL: All right, take it away, Julie.

MS. JULIE DEFILIPPI SIMPSON: All right, thank you, Mr. Chair. Okay, so the Accountability Subgroup was reported to you before, and last time we

reported we had defined accountability, and we had gotten through inventorying the current practices and procedures that were happening.

What we've been able to work on in the last year is to review that original survey that we did, and figure out what we needed to do to address Items 3 and 4, which is defining the gaps between what is being provided and what is needed for science and management, and then also evaluate all those current practices and procedures, and what works and what works for someone that someone else may not be aware of.

We've actually been able to complete 3 and 4, and we are currently in the process of working on the documentation, and developing best practices and standards. Our hope is to have at least a preliminary draft report ready for this group by their October meeting. Just to give you an idea of what we've been working on in the last year.

The original survey that we did, had 19 respondents. It went to all of the agencies that are partners of ACCSP, and we asked fairly broad questions about what practices were used at the Agency, such as onboard observers, dockside monitors and samplers, do not fish reports, inner-agency report comparisons. Thinks like, does your agency conduct audits.

This kind of gave us an idea of what tools and processes that were being used by everyone. But we realize that we needed to get down into a deeper level, to really address Items 3 and 4 in our objectives. Our second survey, in this one we followed up with our data managers. We essentially went back out to the ACCSP partners, and we expanded the number of people that we sent this forward to.

We got 34 respondents. As you can see from the rainbow pie chart, there is really great representation, both at the state and federal level in the Commission and the Fish and Wildlife. You know there is really as lot of representation in the respondents. We were very pleased with the broad breadth of response, and thankful to everyone who took the time to answer these questions.

The questions in this survey were really for the data managers asking them when you're reconciling the data, what do you see? We looked at things like lack of metadata and caveats. We also asked questions that were geared toward, do you have to do things manually? Why do you have to do them manually?

What causes delays? Where do you feel like you have the resources to do the things that you want to do, and where do you feel like things may or may not get done because of a lack of resources? Then finally, in the last slide, we reached out to our data consumers, and again we broadened the user group here, because it includes a lot of the agencies that we talked to, but it also included other people in those agencies. We also broadened our group to include academic institutions. We also included the regional councils in this as well. You can see, again we have great representation, and we greatly appreciate everyone that responded. We got 47 responses to this one.

Very similar to what we did with the Data Managers. We asked our Data Consumers about their experiences when they are working with the data. This was, do you feel that the fields are clearly defined? How accessible is the data for you? Is the availability of data happening in a time that works for you? Do you see inconsistencies between data sources?

These were the kinds of things that we've asked people, and now we're basically going through all of this information, and attempting to put it together into a report, and figure out what everyone's experiencing, and where is the Delta between what we want to do as managers, what the Data Consumers need, and what is currently being produced, and how we can potentially address

those gaps. That's my last slide, and so Mr. Chair, Richard Cody has his hand up.

CHAIR CARMICHAEL: Okay, sure. I really appreciate the work of this group, and what you've done working with them as well. Thanks to those who took the time to respond to the survey. This type of two-way feedback seems like it's going to be really helpful, and help us keep the program moving forward. It's great to see that broad participation, as you mentioned. With that, I'll go over to Richard for a question.

MR. CODY: Yes, Julie, can you explain who would be included in Other on the pie chart?

MS. SIMPSON: I would actually have to check on the Other, and I can get back to you on that one. But I believe that that might have been, we did try to reach out to some of the folks that are in, we put this out there to a really broad group, I think there was a couple hundred people that we actually asked.

I believe that we got, off the top of my head that group includes, there was a journalist that responded to this. There was someone who is in charge of their fishing cooperative that responded to this. Essentially, anyone who wasn't part of an agency. There were a couple of folks that were retired, that still in some way participate in Council activities, and still use the data. Those are the folks that I can think of off the top of my head.

MR. CODY: Okay, thank you.

MR. WHITE: I also see Lynn Fegley's hand up.

MS. LYNN FEGLEY: Hi, good afternoon, everybody. Question. Julie, you probably said this and I probably just blinked and missed it. Is the list of items, like lack of clearly defined fields, timing of availability? Those are the responses that you got from people, or those are particular things you are looking for in the survey?

MS. SIMPSON: Those were particular things that we asked in the survey. We did allow for sort of free-form additional comments at the end of the survey. But we tried to create it in such a way, where there were categories that we created, and we asked people to rank them on one of those sliders. That way we would have quantifiable data for the majority of everything, and then other comments that we could dig through, to hopefully provide extra clarification.

MS. FEGLEY: Okay, and so my question is about inconsistencies between sources. I'm just wondering, were you thinking about inconsistencies between NOAA, you know like GARFO and ACCSP numbers, and was there any question? What I'm trying to get at is this issue of confidentiality, and I think that confidentiality is handled differently by different folks. I guess I'm just wondering what that inconsistency between sources was trying to get to.

MS. SIMPSON: Yes, there are a couple of components with that. One is the idea of different folks showing data publicly, especially, differently. Some of that at the federal level has been resolved, because ACCSP did work with the federal folks to have our databases align, which was a huge improvement for, I think everyone.

But we were also looking at it from the perspective of, at the confidential level if someone goes in and gets data, maybe from ACCSP, and then up at GARFO gets data from the AA tables, where those have had value added, which means there has been some manipulation between, you might see an inconsistency.

The other thing was merely the idea that you know if you ask one person and then you ask another person, if you're not clear about exactly what you want, your data could get queried differently, just the code that is written is different. That kind of thing can also create inconsistencies that are inadvertent, because you've asked two people the same question, without being uber specific.

MS. FEGLEY: Thanks, if I could just follow up quickly, to say that I really appreciate the work that you guys are doing here, like the Chairman said. This is, I think going to be in the long run, extremely helpful for the rigor of our data and these programs, so thanks!

MS. SIMPSON: Mr. Chair, I don't see any more hands.

CHAIR CARMICHAEL: Okay, thank you. If no others, we can move on.

DISCUSS ATLANTIC RECREATIONAL IMPLEMENTATION PLAN PRIORITIES

CHAIR CARMICHAEL: What was next, so it will be Geoff on the Atlantic Recreational Implementation Plan and Priorities.

MR. WHITE: You as a group discussed this during your last meeting, and this is kind of our quick update standpoint and opportunity to add suggestions down there at the bottom. But about every five years, MRIP asks the Regional Implementation Teams, ACCSP being one of them, to update the priorities, and fill out that document.

As we do that, historical priorities are left on there, is what we're expecting. The ideas of improving precision and comprehensive for-hire data collection and monitoring, are where we've focused our efforts, and I say "our" in the collective, because MRIP has made significant progress in both the data standards, as well as the funding for APAIS, to address PSE, and ACCSP has been working on kind of the for-hire data collection and monitoring piece pretty aggressively. But as the Rec Tech Committee and staff will flesh out this document a bit more, it includes both the sections on background, intended direction, potential costs, et cetera. These Implementation Plan priorities are used by MRIP to set their longer-term funding and responsiveness to coastwide needs.

The request is for all ACCSP partners, agencies, including councils to really weigh in, so that items that are important and coming up are included in the document to the best extent possible. During the May meeting and when Operations Committee discussed about it, adding in Citizen Science, adding in the in-season monitoring, the National Academy of Science Report was released, just maybe two weeks ago.

I want to say the week of the 19th, July, and MRIP has a plan to respond to that externally. Of course, we heard some of Janet Coit's comments at the beginning of this week about that being a priority for them as well. I've heard Dee Lupton happened to speak up during the May meeting as having that in-season recreational monitoring as an important item to address as well.

Then of course the last one is kind of regional coordination for consistent use of MRIP data. This came up from the Rec Tech Committee, it was very briefly discussed at meetings since then. If these are items that the Council would like us to fill in on the next iteration of the Implementation Plan.

I think we're all set to flesh that out and bring it back to the Council when the document has been drafted, because you will have approval of that before it is finalized. But again, an opportunity to have a little discussion. We do have another 15 minutes here, or provide the bullet of an important item that you would like us to add to the list and look into. I see a hand up from Kathy Knowlton, so Kathy, please go ahead.

MS. KATHY KNOWLTON: Good morning. I am super excited with these additional suggestions, both from the point of view of such progress that has already been made since the 2017 list was originally put together, and has been continually chipped away at. Particularly I agree with you with the increase in sample size that came through, through MRIP.

For these additional suggestions, I think I heard you say that the meeting was just in like the spring,

early summer. When you got on that bullet point that the additional suggestions were for the years '22 through '26, it's going to sound like I'm asking a really weird, specific question. When it says 2022, does that mean for inclusion as priorities in FY-22 proposals?

To make that a little bit more specific, so in the funding proposal process, in addition to the two matrices, the July, 2017 funding prioritization for the Rec Tech Committee is a part of the ranking process, and obviously those bullet points 1 through 6, since that was posted July, didn't have the benefit of these additional suggestions. Do these additional suggestions have a part in the ranking process for FY-22 proposals?

MR. WHITE: Kathy, thanks for the question. Right now, they do not, and so the funding decision document and the RFP that went out in June, when it comes to ranking of criteria and proposals that have already been submitted. They are certainly good projects, but I don't believe they are part of the documented ranking that will occur by Ops and Advisors this September.

MS. KNOWLTON: Those are fine, that are listed in that slide.

MR. WHITE: Yes, the 2022 to '26 is the timeline of the Atlantic Recreational Implementation Plan, so about every five years in a maximum, or if there has been a major shift in priorities, the regional plans should be updated. MRIP has provided guidance nationally on that, and we're kind of due, and the Gulf Commission is also in the process of updating theirs this year. That document, I would expect to be referenced in ACCSP RFP next May, you know going forward, the proposals already submitted. No, these things are not part of the process.

MS. KNOWLTON: Okay, thank you very much for that clarification.

MR. WHITE: I do not see other hands. Oops, Richard Cody has his hand up, please go ahead.

MR. CODY: Yes, I just wanted to add to the timeline there the fact that MRIP develops a five-year or so strategic plan. The next one is coming up for development right now. We expect to implement it sometime in 2023. Having the different regional implementation plan priorities identified, will help us too, in terms of planning strategically for over the next few years. I don't know if that helps, Kathy, lend some context to the dates that are provided there.

MS. KNOWLTON: Yes, it does, thank you.

MR. WHITE: For the Council, the MRIP Executive Steering Committee, which Bob is on, has asked me to participate in their strategic planning process in that group, so that will be one thing that I am participating in over the next six months or so. Not seeing any more hands at the moment, I did want to touch on one more slide.

The MRIP Survey/Data Standards, this slide was presented to you back in May, and I simply wanted to call out during the Coordinating Council meeting that Richard will be presenting it during the Policy Board at the next meeting, I believe starting at 12:15. Both the 2020 estimate development, as well as the MRIP Survey and Data Standards presentation.

I invite all of the Coordinating Council members to stick around for that presentation coming up. As I said, there will be opportunities for, not just a presentation, but discussion of that at the Policy Board meeting, in the wider audience. Maya, you can move one slide forward, and I will turn it back to our Chair. We have finished the presentation for today.

CHAIR CARMICHAEL: All right, thank you, Geoff. You know I appreciate the ongoing updates of MRIP, always an important topic in recreational fisheries grow more and more important every day to deal with them and get good data, and you guys

are doing a good job there, and I would like to see continued evolution of the priorities, and what we recognize as being important. I appreciate the effort there, and I'll see, are there any other questions for any other topics here, or other business to bring up before we adjourn? Geoff, no hands?

MR. WHITE: We had no hands, but Kathy got hers up in time, so Kathy.

MS. KNOWLTON: Sorry, I thought that was a legacy hand, sorry to let you down.

MR. WHITE: Not letting us down. Thank you all for your attention and participation today, John, back to you.

ADJOURNMENT

CHAIR CARMICHAEL: All right, yes thank you, the legacy hand, indeed. All right, so I think we stand adjourned, and yield back eight minutes to the Commission. Well done everybody, thank you.

(Whereupon the meeting convened at 11:37 a.m. on Thursday August 5, 2021.)

Atlantic Coastal Cooperative Statistics Program
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FY22 Proposal Recommendations to Coordinating Council

From the Operations and Advisory Committees

- Maintenance Proposals
  - Recommend that the states involved in the *Portside Commercial Catch Sampling and Comparative Bycatch Sampling for Atlantic Herring, Atlantic Mackerel and Atlantic Menhaden fisheries* project participate in a conference call to discuss or brainstorm future sampling to avoid data gaps and the resultant addition of these species to the Biological Matrix.
- New proposals
  - If the *Implementation of Electronic Quota Monitoring Reporting in North Carolina* proposal is funded through the Fisheries Information System (FIS) RFP, then the remaining funds should be distributed to new proposals first and then moved to maintenance.

** all above are consensus decisions*

FY2022 Proposal Rankings (Average)

	Admin Grant	2,294,358	$44,423	2,338,781
3.35M	Maint @ 75%	758,414	New @ 25%	252,805
3.50M	Maint @ 75%	870,914	New @ 25%	290,305

Project Name	Partner	Score	Cost	Cumulative Cost	3.5M Amt Remaining	3.35M Amt Remaining
FY22: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	RI DEM	52.9782609	$ 27,521	$ 27,521	$ 843,393	$ 730,893
FY22: SAFIS Expansion of Customizable Fisheries Citizen Science Data Collection Application	SAFMC/NC DMF	51.2045455	$ 116,182	$ 143,703	$ 727,211	$ 614,711
FY22: Managing Mandatory Dealer Reporting in Maine	ME DMR	51.1521739	$ 61,304	$ 205,007	$ 665,907	$ 553,407
Advancing Fishery Dependent Data Collection for Black Sea Bass (Cetropristis striata) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Vessel Research Fleet Approach	RI DEM	50.0217391	$ 132,005	$ 337,012	$ 533,902	$ 421,402
FY22: Managing 100% Lobster Harvester Reporting in Maine	ME DMR	50	$ 335,662	$ 672,674	$ 198,240	$ 85,740
Portside Commercial Catch Sampling and Comparative Bycatch Sampling for Atlantic Herring, Atlantic Mackerel and Atlantic Menhaden fisheries	ME DMR	47.2608696	$ 26,254	$ 698,928	$ 171,986	$ 59,486
Electronic Trip-Level Reporting for the Potomac River Fisheries Commission Commercial Fisheries Sector	PRFC	39.8695652	$ 215,612	$ 914,540	$ (43,626)	$ (156,126)
Continued development of a mobile application to assist Maritime Law Enforcement Personnel with fisheries enforcement tasks	RIDEM/GADNR USCG	33.7954545	$ 50,000	$ 964,540	$ (93,626)	$ (206,126)

includes carryover from maintenance projects

North Carolina fishery-dependent biological data transmissions to the Atlantic Coastal Cooperative Statistics Program Data Warehouse	NCDMF	55.6956522	$ 79,887	$ 79,887	$ 210,418	$ 172,918
Implementation of Electronic Quota Monitoring Reporting in North Carolina	NCDMF	51.8043478	$ 63,854	$ 143,741	$ 146,564	$ 109,064
Integration of vessel monitoring systems and electronic reporting in SAFIS and SAFIS applications through API development and field testing of multiple hardware options: Phase 2	MADMF/RI DMF	48.3863636	$ 86,244	$ 229,985	$ 60,320	$ 22,820
FY22: DNA and Bycatch Characterization of New Jersey's American Shad Fishery in Delaware Bay	NJDFW	44.0869565	$ 88,886	$ 318,871	$ (28,566)	$ (66,066)

		Partner	Title	Primary Module	Others		Cost	Maximum Funding Year 6		Extension
MAINTENANCE	1	ME DMR	FY22: Managing 100% Lobster Harvester Reporting in Maine	Catch/Effort (100%)		$	335,662			
	2	ME DMR	FY22: Managing Mandatory Dealer Reporting in Maine	Catch/Effort (100%)		$	61,304	$	61,312	x
	3	ME DMR	Portside Commercial Catch Sampling and Comparative Bycatch Sampling for Atlantic Herring, Atlantic Mackerel and Atlantic Menhaden fisheries	Biological (70%)	Bycatch (30%)	$	26,254	$	44,484	x
	4	RI DEM	Advancing Fishery Dependent Data Collection for Black Sea Bass (Cetropristis striata) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Vessel Research Fleet Approach	Biological (50%)	Catch/Effort (25%), Bycatch (25%)	$	132,005			
	5	SAFMC/NCDMF	FY22: SAFIS Expansion of Customizable Fisheries Citizen Science Data Collection Application	Biological (90%)	Catch/Effort (10%)	$	116,182			
	6	RIDEM/GADNR USCG	Continued development of a mobile application to assist Maritime Law Enforcement Personnel with fisheries enforcement tasks	Catch/Effort (100%)		$	50,000			
	7	PRFC	Electronic Trip-Level Reporting for the Potomac River Fisheries Commission Commercial Fisheries Sector	Catch/Effort (100%)		$	215,612			
	8	RI DEM	FY22: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	Catch/Effort (100%)		$	27,521	$	27,521	x
					Total Maintenance	**$**	**964,540**			

		Partner	Title	Primary Module	Others		Cost
New	1	MADMF/RIDMF	Integration of vessel monitoring systems and electronic reporting in SAFIS and SAFIS applications through API development and field testing of multiple hardware options: Phase 2	Catch/Effort (100%)		$	86,244
	2	NCDMF	Implementation of Electronic Quota Monitoring Reporting in North Carolina	Catch/Effort (100%)		$	63,854
	3	NCDMF	North Carolina fishery-dependent biological data transmissions to the Atlantic Coastal Cooperative Statistics Program Data Warehouse	Biological	Bycatch	$	79,887
	4	NJDFW	FY22: DNA and Bycatch Characterization of New Jersey's American Shad Fishery in Delaware Bay	Biological (80%)	Bycatch (20%)	$	88,886
					Total New	**$**	**318,871**
Admin		ACCSP	ACCSP Administrative Budget	Admin		$	2,294,358
					Grand Total Proposed	**$**	**3,577,769**

STATE OF MAINE
DEPARTMENT OF
MARINE RESOURCES
MARINE RESOURCES LABORATORY
P.O. BOX 8, 194 MCKOWN POINT RD
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JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

August 5, 2021

Atlantic Coastal Cooperative Statistics Program
1050 N. Highland St. Ste. 200 A-N
Arlington, VA 22201

Dear ACCSP:

We are pleased to submit the proposal titled "FY22: Managing 100% Lobster Harvester Reporting in Maine" for your consideration. This is a maintenance proposal which has not changed in the scope of work. The continuation of this project will allow the Maine Department of Marine Resources (MEDMR) come into compliance with ASMFC's Addendum 26 requirement that the MEDMR move from 10% lobster reporting (in 2019 the MEDMR moved to an ASMFC required "optimized draw" selection method to choose the lobster harvesters required to report for the following year. The "optimized draw" selects different percentages of license types and active/non-active harvesters based on the makeup of the overall fishery based on a mix of dealer data and harvester reported data) to 100% electronic lobster reporting. The deadline for this Addendum to be fully implemented is currently January 1, 2024; however, new regulations to reduce the risk of entanglement to right whales through the Atlantic Large Whale Take Reduction Plan continue to accelerate the timeline for documenting effort and vertical line use in the lobster fishery. To comply with and track the pending vertical line reductions resulting from these initiatives, MEDMR is aiming for implementation of the 100% reporting requirement as early as 2023. The MEDMR's initial goal was to implement 100% reporting in 2021; however, funding shortfalls prevented this from occurring. Continued funding of this proposal would allow MEDMR to start this implementation.

The MEDMR does not currently have the funds or staff needed to support the program at the 100% reporting level. Overall, MEDMR are proposing to create nine new positions that have been identified as necessary to successfully roll out 100% electronic lobster harvester reporting. Not all these positions are included in our funding request as other one-time funding sources have been identified. Please view all graphs in color. This proposal addresses the following 2022 ranking criteria: catch and effort, data delivery plan, regional impact, funding transition plan, in kind contribution, improvement in data quality and timeliness, impact on stock assessment and properly prepared.

During the initial pre-proposal review process, we were asked four questions. We will address them here and within the proposal where appropriate.

1. Budgeting for 500 logbooks seems low. We just send watermen reporting on paper 1 page and instruct them to make their own copies. RI charges watermen for logbook costs.
    a. *Addendum XXVI requires 100% electronic harvester reporting. While this is probably not possible for any partner, the MEDMR would like to only allow those individuals who are able to demonstrate that electronic reporting is not possible. We currently*

have two fisheries (menhaden and herring) that require 100% electronic harvester reporting and out of the 600 plus harvesters licensed in these fisheries, less than 5 have been offered other means of reporting that are not electronic. Our forms are currently only supplied for other fisheries if a harvester requests them. We have discussed charging for paper logbooks in the past, but currently are not looking at that as an option at this time.

2. In kind contribution is 38% not 62%
    a. *We calculate our in-kind by dividing the total MEDMR contribution ($208,508) by the total requested amount ($335,662.37) to determine our in-kind contribution of 62%. All the positions listed as partner contributions are fully funded by the State of Maine and should be included as in-kind and not a match.*
3. Budgeted for in-person training. We use videos and remote outreach.
    a. *We will also utilize videos and remote outreach; however, there are times when it is most productive to hold a few large in-person meetings to assist those that are not as tech savvy as others and are more comfortable having an in-person meeting. Having to on-board almost 6000 new harvesters will require every tool we have in our toolbox. There are also areas in Maine where internet speeds and or connectivity are lacking so remote meetings are difficult (this is why we developed a reporting application that will work "offline"). We intend to rely heavily on remote meetings and creating video and reporting how-to's (many are already created) to assist those individuals that are comfortable with that format.*
4. Confirm if other partners using VESL will also be able to take advantage of the GARFO compliance.
    a. *The MEDMR has a contract with Bluefin Data LLC that will allow any harvester with a MEDMR license or permit to use the VESL application free of charge. Once approved by GARFO, if those harvesters with a MEDMR license or permit also have reporting obligations to GARFO, they will be able to use VESL to fulfill their GARFO reporting requirements regardless of where they are landing.*

For a summary of the proposal for ranking purposes, please see page 28. Please contact Robert Watts at the MEDMR with any questions. Thank you for your consideration of this proposal.

Sincerely,

Robert B. Watts II
Marine Resources Scientist III
rob.watts@maine.gov
(207) 633-9412

Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street. Suite. 200A-N
Arlington, VA 22201

FY22: Managing 100% Lobster Harvester Reporting in Maine

Total Cost: $335,662.37

Submitted by:

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Applicant Name: Maine Department of Marine Resources (MEDMR)

Principal Investigator: Robert Watts, Marine Resource Scientist

Project Title: FY22: Managing 100% Lobster Harvester Reporting in Maine

Project Type: Maintenance Project

Requested Award Amount (without the NOAA administration fee): $335,662.37

Requested Award Period: One year after receipt of funds

Objectives:

The objective of this proposal is to comply with Addendum XXVI (http://www.asmfc.org/uploads/file/5a9438ccAmLobsterAddXXVI_JonahCrabAddIII_Feb2018.pdf) of ASMFC's (Atlantic States Marine Fisheries Commission) American lobster Fisheries Management Plan (FMP) which requires MEDMR increase the percentage of trip level landings information MEDMR collects from commercial lobster harvesters from the current "optimized draw method" (approximately 380 harvesters) to 100% (approximately 6,000 harvesters). Starting in 2019, ASMFC Addendum XXVI required MEDMR move to an "optimized draw" selection method to choose the lobster harvesters required to report for the following year. The "optimized draw" selects different percentages of license types and active/non-active harvesters based a statistical analysis of the variability of each license class using a of combination of dealer data and harvester reported data. In the past MEDMR would select approximately 700 to 800 harvesters per year, now around 350 to 400 harvesters are selected with the idea that the selected harvesters would provide the same number of trip records (See Figure 3). Addendum XXVI requires 100% reporting (electronic reporting is recommended but not mandatory) by January 2024 in addition to other new required fields that became mandatory in January 2021. MEDMR started collecting total endlines and 10 min square data at the trip level in 2020 even though ASMFC moved these requirements back to 2021. Requiring the MEDMR to implement 100% reporting will cause MEDMR to increase landings and licensing staff by a total of 9 currently non-existent positions to effectively manage, monitor and audit what will be a 500% increase in the number of trip level reports the MEDMR receives on an annual basis.

National Marine Fisheries Service (NMFS) is in the process of finalizing new rules to protect North Atlantic right whales as part of the Atlantic Large Whale Take Reduction Plan (ALWTRP) for the Northeast lobster fishery. The Department of Marine Resources submitted a proposal to NMFS in December 2019. The proposal laid out a plan for regulations to reduce the risk of entanglement to right whales due to the Maine portion of the lobster fishery. Portions of that plan were incorporated into the Draft ALWTRP Rules published in 2020. Additionally, the DMR proposal included a commitment to move lobster harvesters to 100% reporting, the timing of which depends on securing adequate funding. ASMFC is requiring 100% reporting in the lobster fishery by 2024. The AWTRT has recommended on more than one occasion that fisheries move to 100% reporting as soon as possible. MEDMR strongly agrees with this recommendation because our ability to achieve and monitor the consensus goals of the AWTRT is tied to the availability of these data in the short term. MEDMR believes that the January 2023 date is necessary to meet the data guidelines outlined in Addendum 26, the needs of the AWTRT, and work out any data collection and data management issues well before the 2024 deadline. Additionally, MEDMR is interested in moving the timeframe for 100% electronic lobster harvester reporting up to as early as 2023 to track effort and vertical line use in support of pending new regulations. The FY20 proposal intended MEDMR to require 100% reporting starting in January 2021; however, lack of funding has required this timeframe be pushed back to 2023. Similarly, in the 2023 timeframe the MEDMR does not

have the funding to continuously fund all the positions necessary to effectively administer, collect, audit and distribute the data required in Addendum XXVI**.** If the MEDMR is not able to secure adequate funding, the January 2023 start date might need to be pushed back to January 2024. **The MEDMR has self-funded the creation of a new offline mobile application for both iOS® and Android® platforms through dedicated technology funds. This program is being built to accept reports from all fisheries and meet NMFS electronic reporting requirements. This new program has dynamic entry pages and be completely table driven allowing the entry pages to display more concise field descriptions based on species and gears fished. There will be built in data validations, favorites and basic end user analytics.** The MEDMR anticipates putting this new offline reporting application out a group of test harvesters around the time this proposal is submitted and be in full production by the end of the fall. **The primary tasks will be electronic reporting software training, regulation compliance, data audits, data entry and general outreach. Staff will also focus on harvester outreach to help industry understand the importance of the accurate and timely reporting. Electronic reporting will be required for commercial lobster harvesters and heavily pushed for those that still report other fisheries on paper. The focus on expansion of electronic reporting will require the MEDMR to spend a significant amount of time on outreach, explaining the reporting system to harvesters and troubleshooting any issues that might arise.** Currently, MEDMR only required electronic reporting in our Atlantic herring and Atlantic menhaden fisheries. There are currently no plans to mandate electronic reporting for other fisheries, as this is not an ACCSP requirement.

Need:

Maine currently requires harvesters from 12 fisheries to report trip level landings on a monthly basis. Two other quota monitored fisheries (Atlantic herring and Atlantic menhaden) have daily reporting requirements during their "open quota monitored seasons (i.e. directed and episodic fishing season for menhaden). The 2020 seasons are the first year the MEDMR has required electronic reporting for these two fisheries. **When the MEDMR implements 100% lobster reporting, the number of new harvesters (see Table 1) will require significant resources tracking compliance, entering and auditing a ~500% increase in the number of reports received from approximately 60K to ~300K. In 2020, approximately 5,750 lobster harvesters were licensed to fish in Maine.** Of those 5,750 harvesters, MEDMR dealer reports indicate 4,052 harvesters sold at least once to a licensed dealer. All 5,750 license holders regardless of activity will be required to report for each month they hold a current license. **During the 2019 season the MEDMR move to an "optimized draw" selection method to choose the lobster harvesters required to report for the following year. The "optimized draw" selects different percentages of license types and active/non-active harvesters based a statistical analysis of the variability of each license class using a of combination of dealer data and harvester reported data. In the past MEDMR would select approximately 700 to 800 harvesters per year, now around 350 to 400 (280 active in 2020) are selected with the idea that the selected harvesters would provide the same number of trip records (See Figure 3)**. Overall in 2020, MEDMR required 382 lobster harvesters to report trip level information. The number of individual lobster harvesters required to report will increase to just under 5,800 when 100% lobster harvester reporting becomes mandatory.

Of those 5,750 licensed harvesters, ~1,300 (23%) of them will eventually be required to report to National Marine Fisheries Service (NMFS) since they possess a federal lobster permit. **Regardless of their federal permit status, MEDMR will work with all harvesters to ensure all landings are reported either to MEDMR or NMFS since the collected data will benefit all partners. MEDMR staff will also audit all records with a state landed of Maine but defer any federal data changes to NMFS.**

Table 1: Increase in Individual Harvester Reporting Expected in Maine

Moving from 10% to 100% Lobster Reporting							
Year	Total Trips Entered	Lobster Only Entered	10% Active Lobster Harvesters	100% Active Lobster Harvesters	100% Lobster Harvesters	Lobster Trips From Dealer Reoprts	Lobster Harvester Reports Expected if 100% Required
2015	54,368	29,551	532	4,406	5,898	270,324	295,510
2016	57,864	30,927	566	4,504	6,012	293,919	309,270
2017	58,702	29,877	535	4,485	6,021	276,754	298,770
2018	58,974	26,870	541	4,389	5,950	264,046	268,700
2019	45,672	17,400	275	4,330	5,850	256,338	232,319
2020*	41,704	17,176	280	4,052	5,766	218,962	232,241
*2020 data are preliminary and subject to change without notice.							
100% active license based on dealer reported data from 2015 - 2020							
Harvester counts are individual harvesters. Many harvesters have multiple licenses that are tracked seperately.							
Expected reports are calculated from reports received by harvesters and extraoplated based on reports received by dealers.							

*Increase in the number of harvesters and reports expected when MEDMR implements 100% lobster harvester reporting.

In 2016 MEDMR converted to a new online licensing and landings system, called Maine LEEDS (**L**icensing **E**nforcement and **E**nvironmental **D**ata **S**ystem). Using this system, harvesters and dealers are able to:

- Renew a license you previously held
- Apply for a new license you've never held before
- Order tags (for certain licenses)
- Reprint your license
- Upgrade a license (if applicable)
- Pay administrative fees
- Report landings
- Check reporting compliance status
- Upload documents to the department
- Change your password to the system

This web application has been an extremely useful tool that will allow for more "self-service" for harvesters and dealers, will improve customer satisfaction and increase MEDMR staff efficiency. **In late spring 2018, MEDMR started allowing harvesters to enter their data through the LEEDS system. Since the first record entered directly by a harvester occurred on 5/28/2018, 308 harvesters have entered 15,946 (9.8%) records that in the past MEDMR data entry staff would have had to enter. The breakdown by year is 1,004 (from 83 harvesters) in 2018, 2,782 records (from 232 harvesters) in 2019, 10,798 records (from 569 harvesters) in 2020 and to date have 1,311 records from 146 harvesters in 2021.** Having industry enter their own information also saves staff time because paper reports do not need to be opened or processed through the mail, scanned into our LEEDS system or entered by hand. Staff have spent significant time training and creating outreach material (videos, electronic user guides, etc.) and communicating directly with industry.

MEDMR intends on requiring (with some potential exemptions based on to be determined criteria) 100% electronic harvester reporting for lobster, herring and menhaden. Reliable high-speed internet access is not available in certain parts of the state which prohibits full 100% electronic reporting. The goal is to get as close to that as possible. The addendum allows until January 1, 2024. Many other states are also not yet 100% electronic in the lobster fishery at this point. **Halibut, herring and menhaden are quota monitored species that MEDMR has identified as benefiting from requiring state only harvesters to report electronically. Starting in 2020 all herring and menhaden harvesters were required to report electronically through either Maine LEEDS or some federally accepted reporting application during the active harvest season. This**

new requirement replaced the email system MEDMR relied upon the past few seasons to monitor quota. Requiring daily electronic reporting will save the harvesters from emailing and then filling out complete harvester reports at the end of the week/month. The offline mobile application MEDMR is building through its own funds will allow harvesters with multiple reporting fisheries the ability to use one program to fulfill all their requirements whether they are state only or federal. **Of the 1.13 million trips entered for 2020 in the data warehouse, 31% of them were landed in Maine which exceeds any other state (Figure 1 – view in color). This figure includes both dealer and harvester records. If MEDMR had required 100% harvester reporting in 2020, the number of warehouse records for 2020 would have been 1.35 million (when extrapolating current lobster reporting levels to 100% lobster) and MEDMR would have accounted for 42% of all records (dealer and harvester) landed in ACCSP's Warehouse.** These records were submitted by both "state-only" harvesters (those that only report to MEDMR) as well as federal harvesters (those that report to fulfill both NMFS and MEDMR reporting requirements). **Because all state licensed harvesters are required to report to the MEDMR regardless if they have federal reporting requirements or not, MEDMR works with NMFS to collect data from federally permitted harvesters so they do not need to double report. MEDMR staff devotes time and resources to help all harvesters that submit data to NMFS and MEDMR.**

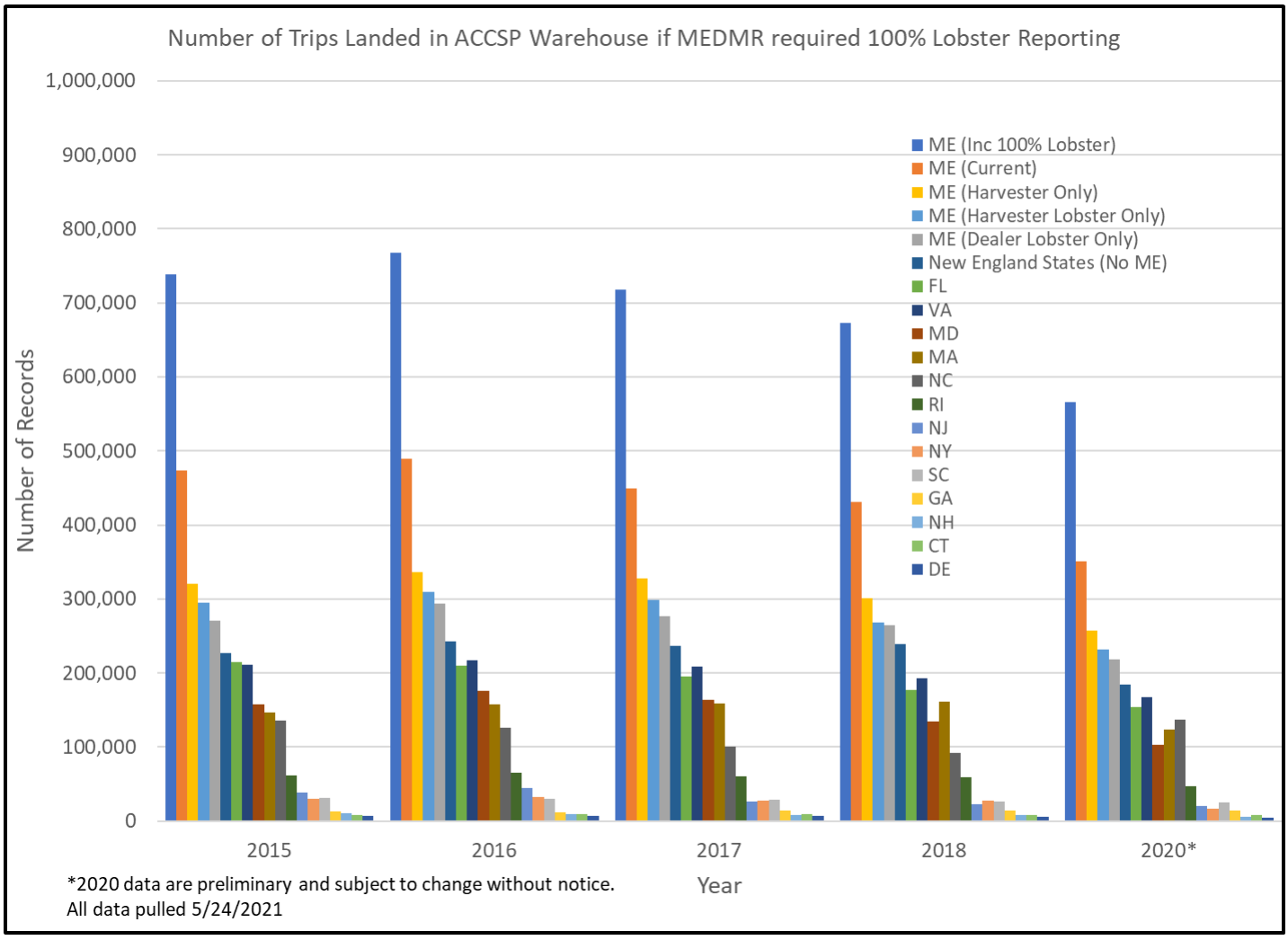


Figure 1: Number of Reported Trip Records by <u>State Landed</u> in ACCSP Data Warehouse

Once MEDMR requires 100% lobster harvester reporting the volume of phone calls and data requests will increase. Throughout the year, approximately 40% to 60% of all harvesters are out of compliance for at least one

month of reporting. In 2020 there were 3,570 harvesters with 5,199 individual licenses from all 12 fisheries that required harvester reporting and MEDMR sent out approximately 2,800 compliance letters (and emails) and fielded thousands of calls a month relating to reporting questions and compliance/license renewal status. Doubling the total number of harvesters required to report (many lobster harvesters are required to report other fisheries) will increase these figures and require more staff and staff time to provide industry with an acceptable level of customer service.

More staff will be needed to assist with audits and the increase in data that will require auditing. The increase in data will increase the time it takes to complete audits. The implementation of 100% lobster harvester reporting will allow the MEDMR to audit and compare 100% of our lobster dealer and harvester data. These two datasets alone account for over 500,000 records annually and will take significant staff resources to complete. MEDMR currently matches up what the 10% harvester reports indicate against what dealers reported for the same individuals. Any discrepancies over 2,000 pounds for the year are flagged and further research is conducted. While the data submitted through an electronic means will certainly help reduce the amount of data that MEDMR staff will need to audit through built in data validations, there are audits that will still need run (such as dealer vs harvester) that will take up significant staff time the first few years of 100% reporting.

The first few years will require significant outreach with industry. **Communicating with industry and fielding electronic reporting questions will be the biggest time burden the landings program will face. Almost 75% of all harvester records submitted to MEDMR are key entered by MEDMR staff. Electronic reporting will be a cultural shift for the lobster fishery, which will require diligent customer service and an intuitive reporting application.** MEDMR is funding the development of a new harvester reporting application that will be user friendly and meet the reporting needs of all MEDMR reporting fisheries, as well as meet NMFS eVTR reporting requirements. MEDMR spent significant time testing ACCSP's eTRIPs V2, which was greatly improved over the previous versions. However, there are still significant concerns about the number of reporting pages it took to complete, the agility of a program that is not fully table driven, and the ease of use for different fisheries. The program MEDMR contracted with Bluefin Data LLC to build will work on both Android® and iOS® and meet all federal requirements (including NERO, SERO and HMS) so federal harvesters will be able to utilize this system. The MEDMR has a contract with Bluefin Data LLC that will allow any harvester with a MEDMR license or permit to use the VESL application free of charge. Once approved by GARFO, if those harvesters with a MEDMR license or permit also have reporting obligations to GARFO, they will be able to use VESL to fulfill their GARFO reporting requirements regardless of where they are landing. **All data collected through the new MEDMR funded harvester applications will be submitted directly to ACCSP through the newly developed API (requirements are listed here https://accsp-software.github.io/spec-unified-api-prod/).** The funding source for the new mobile applications are through dedicated technology funding within MEDMR's budget. These funds must be used for advancing technologies and cannot be used for personnel.

The number of trip records that MEDMR staff entered into MARVIN (MEDMR's database that contains all sampling, biological and landings data that MEDMR collects) has increased 490% since 2007 (Figure 2 – view in color), which was the last year the MEDMR did not require 10% lobster harvester reporting. When harvesters submit paper reports, they are entered into the MARVIN database. MARVIN is used for reports submitted on paper because it is a faster method of data entry and MEDMR uses this tool to audit the data before sending a copy of it to ACCSP. Routines are configured to convert the MARVIN data to ACCSP codes before they are uploaded to the ACCSP warehouse.

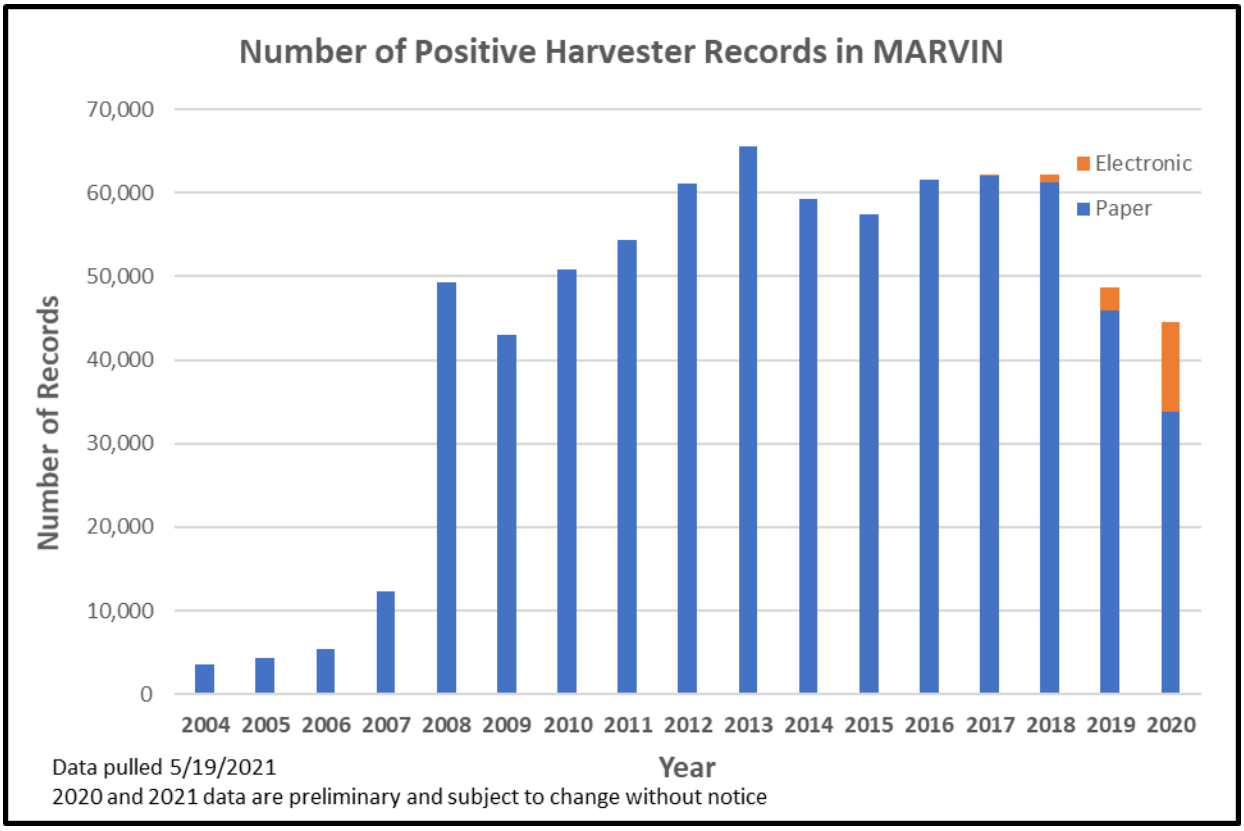


Figure 2: Number of Positive Trip Records Entered by MEDMR Staff and Industry into MARVIN

Landings data entered in MARVIN are uploaded to the ACCSP data warehouse. The significant increase in the amount of data entry, outreach/education and auditing are the single greatest challenge facing the landings harvester (including lobster) program staff. MEDMR currently funds seven positions that work at least part-time on harvester reporting. Currently no positions working on the harvester program are funded by ACCSP grants. **In addition to the FY20 ACCSP grant, MEDMR was able to secure additional one-time funding of $600K from NOAA through congressional appropriations as part of a large $1.6 million dollar bill to offset costs that might result from new regulations in the lobster fishery to protect right whales (split with MA, NH, ME and RI). While this funding is vital, it does not provide MEDMR with enough funds to fully fund multiple years of lobster reporting. MEDMR continues to look for other sources of funding (both internal and external) to fund 100% lobster reporting. MEDMR has modified the current budget from last year's funded proposal to account for the FY20 and other NOAA funds. The positions listed in this grant currently have no other funding source available.** MEDMR is now requesting funding for 4 new positions.

This proposal is designed to help fund the transition from 10% harvester reporting to 100% harvester reporting where most harvesters will be required to report electronically as required by Addendum XXVI. MEDMR understands that not everyone will be able to report electronically so a paper option must still be available. The positions being funded will be doing very little data entry and will mostly be assisting harvesters with reporting questions along with other data entry duties.

Summary of staffing:

MEDMR Landings Program staff involved in harvester reporting who are fully funded by MEDMR:

- Scientist IV: makes decisions on the general Landings Program direction.

- Scientist III: oversees the Landings Program, participates in ACCSP committees, transfers data to ACCSP; reporting technology development and responds to data requests.
- Scientist II: manages the day-to-day operations of the Landings Program, is responsible for database development, responds to data requests and updates the Landings Program web page. This position also audits data, and monitors licenses and compliance.
- Specialist II: provides one-on-one outreach with the harvesters; trains harvesters how to report electronically or on paper; follows up on compliance issues. This position audits data from "state-only" and "NMFS" harvesters. See the *Approach* section below for further details on auditing. This position is also assigned tasks in the dealer-reporting project.
- Office Associate II: corresponds with industry regarding new suspension authority for failure to report on time; identifies and notifies delinquent reporters; follows protocols for suspending licenses; works with the licensing division to ensure licenses are re-issued when reports have been submitted.
- Office Associate I: opens and processes mail and enters data into MARVIN.

Proposed new MEDMR Landings Program staff to be funded by additional NOAA grant:

- Marine Resource Scientist II (1 position): Oversee the daily operations of harvester reporting program, including but not limited to scheduling of duties, directly supervising four employees, managing harvester data audits, database maintenance and assisting with reporting writing.
- Marine Resource Scientist I (2 positions): Oversee the rollout of the new offline harvester reporting application, outreach with industry and overseeing data audits. These two positions will be one of the primary contacts for industry members that have reporting program questions.
- Office Specialist I Supervisor (1 position): Supervise three Office Associate I positions and two Office Associate II positions located in the West Boothbay Harbor, ME Laboratory. This position will assist with incomplete reports, handle in-person report drop-off, report rejections, compliance mailings and calls and data audits.
- Office Associate II (1 position): Will have similar duties to the Office Associate II listed below (currently filled by Alice Mayberry). Will be based out of our Augusta office and will be cross-trained to assist our Licensing Department when help is needed.
- Office Associate II (currently filled by Alice Mayberry): Primary contact for incomplete reports, rejects reports, primary contact for compliance and reporting questions, notifies new harvesters of reporting requirements, assists with audit research.

Proposed new MEDMR Landings Program staff to be funded by ACCSP grant:

- Marine Resource Specialist II (2 positions): Help run data audits and correct erroneous data, primary data audit researcher for dealer vs harvester audits and will assist the Marine Resource Scientist I's with any industry technical outreach questions.
- Office Associate II (2 positions): Will have similar duties to the Office Associate II listed above that is currently staffed by Alice Mayberry). This position will be based out of our West Boothbay Harbor office.

The MEDMR has discussed and decided against the idea to ramp up from the current number of harvesters selected to report to 100% reporting. It has determined the best way forward is to go directly to 100% harvester reporting. For MEDMR to provide excellent customer service from the beginning, the number of positions proposed are what we feel are necessary to provide the best level of customer service while being as fiscally responsible as possible. Each position created will be a limited period position and each year MEDMR will evaluate these new positions to determine if they are still needed. We anticipate that by year 3 to 5 we might be able to reduce the number of positions as harvesters become more versed with the reporting programs.

Finding funding to help defray the costs for this federally mandated requirement is something that the MEDMR has been looking for and will continue to look for. MEDMR will also look for ways to bring the overall costs down through either staff reductions as the program evolves or any and all in-house or outside sources. MEDMR will continue to look at ways to streamline the Landings Program's operation and will continue to try and automate as many processes (compliance and audits for instance) that will cut down on staffing needs. The extra staff included in this proposal will assist with the initial roll out and anticipated help that industry will need and the ability to assist industry within a reasonable amount of time to answer their questions.

It is essential that this harvester reporting program meet its funding needs, which are born as a result of ASMFC's requirement that MEDMR collect trip level harvester reports from 100% of all licensed commercial lobster harvesters. The implementation of new lobster fishery regulations in the Atlantic Large Whale Take Reduction Plan to reduce the threat of entanglement to endangered right whales is expediting the timeframe to increase reporting to 100% faster than Addendum XXVI required**. Requiring 100% lobster reporting will add another tool for monitoring Maine's commercial fisheries, which are large and economically important to the U.S. seafood industry.** According to the NMFS commercial fisheries database (as of 5/24/2021), Maine was ranked as the highest state on the Atlantic Coast in commercial value ($559.8 million of which $406 million were lobster) and fourth highest in whole pounds landed (185.8 million of which 96.6 million were lobster) in 2020. **This comprehensive harvester reporting program also addresses ASMFC compliance issues for several fisheries, including American lobster, Atlantic herring, American eel and Atlantic menhaden.**

This grant does not include any funding for the offline mobile harvester reporting application. The MEDMR will fully fund the original programming, programmatic updates and maintenance costs associated with this project. The MEDMR will continue to fund the monthly maintenance fees. MEDMR will continue to try to identify alternative sources of funding for the harvester reporting project, but the State of Maine is continuing to face budget challenges and there are few options for state funding to cover the total cost.

Results and Benefits:

The data collected so far through MEDMR's harvester reporting program have shown how valuable this information is for Maine's fisheries. **Currently MEDMR requires 12 fisheries to submit trip level harvester reports and lobster is the only fishery not collecting 100% of harvester trips (Figure 3 shows all non-confidential fisheries trips reported over past 5 years). Maine's commercial lobster fishery is by far the largest lobster fishery on the East Coast in both volume and number of individuals.** There are just under 5,800 licensed harvesters of which MEDMR currently only selects ~380 harvesters each year to report. Even with selecting only a percentage of harvesters in the lobster industry, MEDMR scientists have learned more about the fleet characteristics, gear configurations and fishing patters for full time and part time fishermen involved in this fishery than they have been able to with the current sampling programs. Other fishery managers are now analyzing landings data to learn more about the fishing fleet and the makeup of other fisheries. **Requiring 100% reporting will only increase the MEDMR's knowledge base and increase the amount of data collected. Since most data will be submitted to SAFIS and all data stored in the ACCSP Warehouse, this large dataset will be available to all partners.**

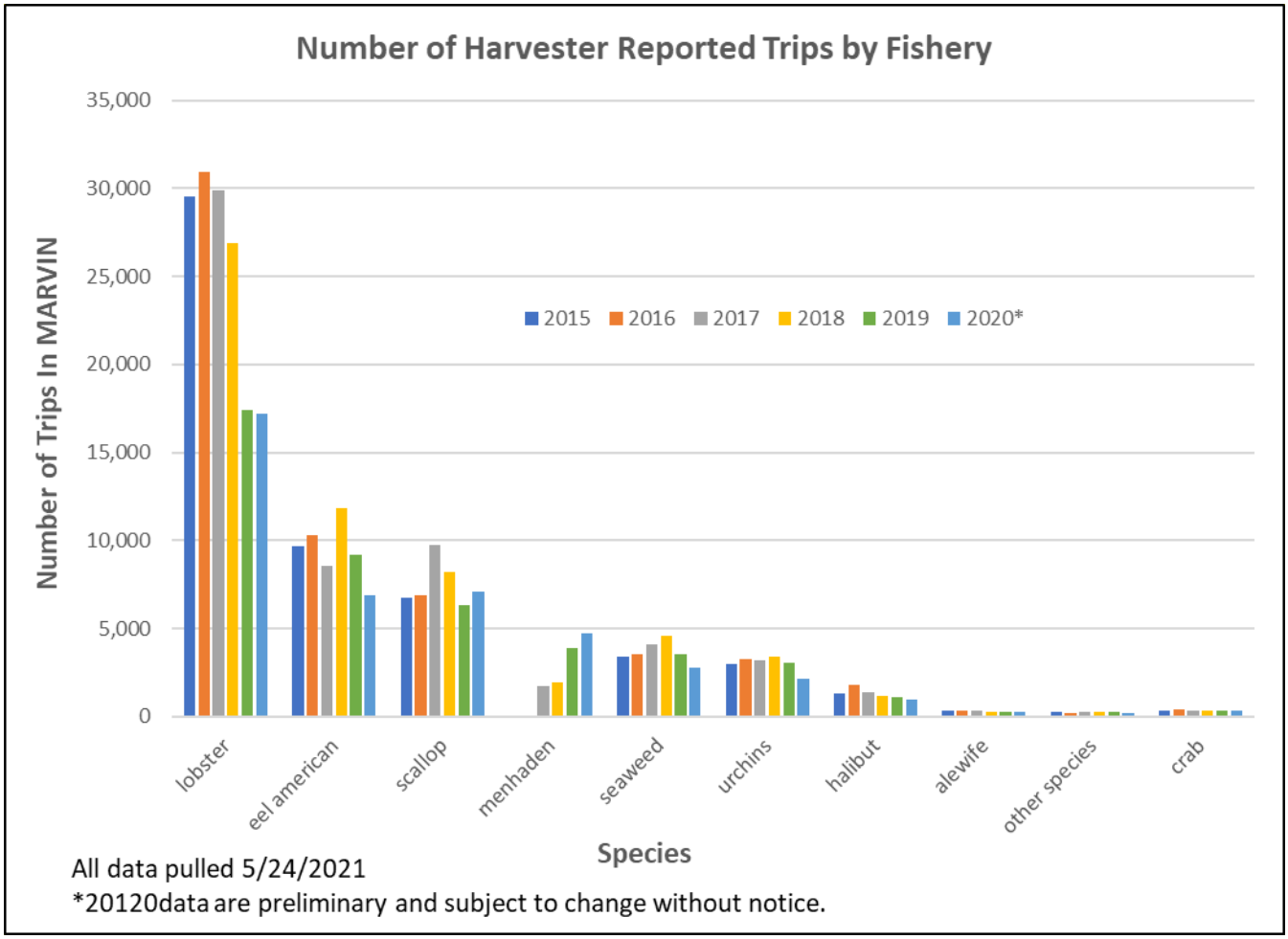


Figure 3: Number of Harvester Reported Trips by Fishery from Harvester Data

This grant will allow MEDMR to meet ASMFC's Addendum XXVI target of 100% harvester reporting in the lobster fishery by January 2024. This timeline is potentially being sped up by protected species issues and could require 100% trip level reporting in the lobster fishery by January 2023. This grant will allow MEDMR the ability to fund positions needed to ensure the data collected are as accurate as possible through more data auditing, especially linking dealer and harvester reports together though our "dealer vs harvester reporting" audits where we match up each harvester report to the dealer report and their total landings are scrutinized. Addendum XXVI does not necessarily require 100% electronic reporting; however, MEDMR will require nearly 100% lobster harvester electronic reporting and know that harvesters in other fisheries are looking to move from paper reporting to electronic reporting when this option is available in an intuitive offline application. MEDMR anticipates that any new harvesters that report on paper will be offset by those the currently report on paper but will be required to switch to an electronic reporting option and the data entry staff currently employed will be sufficient. Staff are fielding more calls each day asking about electronic reporting and are promoting our Maine LEEDS online reporting, but most want a mobile friendly reporting option. **MEDMR is already uploading data reported to MARVIN to ACCSP every six months and intends to start uploading every month; which benefits all partners.**

Metadata for the harvester program will be updated as needed according to the Federal Geographic Data Committee (FGDC) and the Content Standard for Digital Geospatial Metadata (CSDGM) standards where appropriate. The resulting metadata will be reported to ACCSP as text and XML.

This project will help MEDMR meet the data collection standards of ACCSP. All partners will benefit, as all data will be uploaded to ACCSP and many of the species landed in Maine have a broad geographic range which includes many other agencies in their management. Partners will benefit from the technologies built and lessons learned from the offline harvester reporting application MEDMR intends to have in production by early summer as this will be available to any partner.

Approach:

1. Enforce compliance

MEDMR staff will enforce compliance of the trip level reporting regulation through these methods:

- **Provide initial outreach and technical support needed for harvesters to report trip level landings to MEDMR. Meet with harvesters in a group setting and one on one as needed to explain reporting procedures, install application, troubleshoot issues with reporting, and explain consequences for failing to report.**
- **Review paper reports submitted for completeness and verify the submissions in Maine LEEDS. If reports are incomplete, MEDMR will contact industry to correct reporting mistakes. If a harvester cannot be contacted by phone, the report will be returned for correction. Reports submitted electronically are deemed complete upon submission.**
- **Send delinquent harvesters not included in the suspension process emails indicating what they are missing and send automated notifications within the Maine LEEDS program when a report is received or not.**
- **Complete suspension notices monthly to those harvesters involved in the halibut, herring, menhaden and elver fisheries that are delinquent enough to meet the minimum notification criteria as outlined in the suspension law (Attachment 4).**
- **Complete follow-up suspension notices monthly to those harvesters that are delinquent enough to meet the minimum notification criteria as outlined in the suspension law (Attachment 4).**
- **MEDMR will suspend harvester licenses for those who fail to report in a timely manner. See Attachment 4 for the law, which dictates suspension procedures MEDMR will follow.**

2. Data entry

Paper reports and electronic reports entered through the Maine LEEDS system will go directly into MARVIN and then uploaded to the ACCSP Warehouse at least every 6 months once it has been thoroughly audited.

The harvester reporting application MEDMR contracted to have built by Bluefin Data LLC will include point of entry validations for harvester, vessel, gear, gear to various other variables (i.e. fisheries, gear quantities), gear quantities, locations, pounds, dispositions for example. The data entered through these new applications will utilize ACCSP's API and all data will be submitted directly into SAFIS.

3. Encourage electronic reporting

MEDMR staff will encourage harvesters who report on paper to report using one of the two electronic reporting methods MEDMR will offer (Maine LEEDS or our own Offline Electronic Reporting Application). MEDMR staff will train all harvesters who are required to report electronically regardless if they have reporting obligations to NOAA or not.

MEDMR believes that electronic reporting will benefit industry as much as it benefits MEDMR. If harvesters enter their own data through the MEDMR proposed application, they will have the ability to run basic analytics within the application to view their own trends and harvest information. MEDMR will benefit by

reducing the amount of staff time spent entering data. If MEDMR was not able to offer an electronic reporting option, the number of data entry staff required to handle approximately 300,000 records per year would be at least 7 or 8 individuals in addition to what is currently proposed. Electronic reporting will not only save MEDMR staff data entry time, we will be able to automate many of our daily reporting processes, include data validation at the point of harvester entry and automate compliance and spend more time on data audits and outreach with industry.

4. Continue outreach with industry to promote buy-in.

MEDMR staff will continue to work with harvesters to explain the purpose and benefits of harvester reporting. Staff (along with staff from GARFO and Bluefin Data LLC) attended the annual Maine Fishermen's Forum in March 2020 to facilitate an electronic reporting discussion. This discussion allowed MEDMR, GARFO and Bluefin Data LLC an opportunity to show harvesters the current and future electronic reporting options that are/will be available. The session was lightly attended but helped formulate ideas of how to improve this important part of outreach. We also anticipate holding a workshop to demonstrate the two MEDMR electronic reporting options available to industry to help promote buy in. We will also utilize videos and remote outreach; however, there are times when it is most productive to hold a few large in-person meetings to assist those that are not as tech savvy as others and are more comfortable having an in-person meeting. Having to on-board almost 6000 new harvesters will require every tool we have in our toolbox. There are also areas in Maine where internet speeds and or connectivity are lacking so remote meetings are difficult (this is why we developed a reporting application that will work "offline"). We intend to rely heavily on remote meetings and creating video and reporting how-to's (many are already created) to assist those individuals that are comfortable with that format.

Staff will work with established industry organizations, such as the MEDMR advisory councils, lobster zone councils, and dealer and harvester associations to reiterate the program goals and show results of mandatory reporting. Staff will also focus on explaining the statutory authority for suspending licenses for those who fail to report on time, and how this will help gather more accurate data.

5. Audit of harvester data submitted.

Staff will audit data submitted monthly. Paper data will be audited twice per month; electronic audits sent via email from SAFIS will be corrected weekly. SAFIS audits for "state-only" harvesters will be corrected via an ODBC connection to a view of the Maine data. **Audits concerning federal harvesters will be vetted through the NMFS Northeast Region. MEDMR staff will audit electronic data submitted by federal harvesters because these harvesters submit data in order to also fulfill MEDMR reporting requirements. MEDMR performs basic audits of records to catch potential oversights from NMFS audits.** MEDMR also compares dealer-reported landings with harvester-reported landings and identifies both parties if there are any discrepancies. In these audits, MEDMR contacts dealers and harvesters when discrepancies are discovered and works to correct records or recover missing data.

MEDMR does intend to audit 100% of all individual records that are submitted. **Many of these audits will be simple gross audits (over the trip, gear quantity, spatial audits, etc.); however, the data submitted through the new mobile application will have validations built-in for pre-submission checks. Harvesters will not be able to enter certain gear/species combinations, certain dispositions for certain species and gear quantity checks for instance. Many of these audits will be canned within the audit database and will be added to a routine check. The dealer/harvester audits are performed annually**

and start by looking at yearly totals with a 2,000 pound discrepancy. Dealer/harvester audits are not performed on a trip by trip basis.

6. Transmission of harvester data to ACCSP.
MEDMR will continue to upload harvester data from MARVIN to the ACCSP data warehouse once every two months. In each data feed, the following fields are uploaded to the warehouse according to ACCSP protocols: cf_license_nbr, iss_agency, trip_type, supplier_trip_id, port, state, coast_guard_nbr, state_reg_nbr, trip_start_date, trip_start_time, trip_end_date, trip_end_time, num_crew, num_anglers, vtr_number, vessel_permit, sub_trip_type, reporting_source, fuel_used, fuel_price, charter_fee, distance, in_state, area_code, sub_area_code, local_area_code, latitude, longitude, gear, lma, gear_quantity, gear_sets, fishing_hours, hours_days, total_gear, gear_size, mesh_ring_length, mesh_ring_width, stretch_size, target_species, avg_depth, species_itis, disposition, market_code, grade_code, unit_of_measure, sale_disposition_flag, dealer_license_nbr, date_sold, reported_quantity, price, dea_iss_agency, catch_source, catch_latitude, catch_longitude, supplier_catch_id. MEDMR enters data daily and audits data weekly, so the data uploaded to the warehouse are a mix of pre- and post-audited records. MEDMR does not keep track of what percentage of the uploaded records are "reloads" due to errors, but simply reloads all the data in MARVIN to the warehouse once every three months. **In addition, the data supplied by the MEDMR offline mobile application will be sent directly to SAFIS daily.**

The MEDMR does not upload data from MARVIN to SAFIS because MEDMR staff continually audit data each week, so the data that are uploaded to the warehouse are a mix of pre- and post-audited records. The reloading of data from MARVIN to the Warehouse is an automated process that the MEDMR loads into a temporary table provided by the Warehouse. If we were to perform the same upload method to SAFIS we would need the ability to mass delete records from SAFIS (which we do not have the ability to do at this time) before records are reloaded to avoid creating duplicate records.

7. Report metadata to ACCSP.
Metadata will be created with ESRI ArcCatalog 10 in order to conform to the FGDC (Federal Geographic Data Committee) standards and specifications. As specified by the federal standard, MEDMR metadata will include the following main sections with detailed information on: identification information, data quality information, spatial data organization information, spatial reference information, entity and attribute information, distribution information, metadata reference information, citation information, time period information and contact information. Created metadata will be available in text and XML formats.

Geographic Location: Operations will be based out of Boothbay Harbor, Maine and the project will take place throughout Maine.

Milestone Schedule:

	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Enforce harvester compliance	X	X	X	X	X	X	X	X	X	X	X	X
2. Data enter harvester reports	X	X	X	X	X	X	X	X	X	X	X	X
3. Encourage electronic harvester reporting	X	X	X	X	X	X	X	X	X	X	X	X
4. Industry outreach to promote industry buy-in	X	X	X	X	X	X	X	X	X	X	X	X
5. Audit harvester data	X	X	X	X	X	X	X	X	X	X	X	X
6. Upload harvester data to ACCSP		X		X		X		X		X		X
7. Report metadata to ACCSP												X
8. Semi-annual reports						X						X
9. Annual reports												X

Table 2. Project Accomplishments Measurement:

Goal	Measurement	2019	2020*	2021*
Enforce Harvester Compliance	Number of compliance letters to harvesters	3,226	2,555	671
Enforce Harvester Compliance	Number of harvesters suspended for failing to report timely	447	421	-
Harvester Data Entry	Number of trip records by year landed in data warehouse	46,235	34,148	437
Harvester Data Entry	Number of positive trip records by year landed in MARVIN	48,655	44,595	6,949
Harvester Data Entry	Number of paper trip records entered in MARVIN	45,873	33,797	5,572
Harvester Data Entry	Number of electronic trip reports entered into Maine LEEDS	2,782	10,798	1,377
Harvester Data Entry	Number harvesters entering directly into Maine LEEDS	232	569	154
Harvester Data Entry	Number of positive trip records by year landed in SAFIS	-	-	-
Encourage Electronic Reporting	Number of harvesters submitting positive reports in SAFIS	-	-	-
Transmit Harvester Data to Data Warehouse	Frequency of data submitted by year landed	1 time every 6 months	1 time every 6 months	1 time every 6 months
Outreach	Number of custom data requests	479	1051	376

*2020 and 2021 data are incomplete at time of report creation.

Cost Summary: FY22 Managing 100% Lobster Harvester Reporting in Maine 5/1/2022 - 4/30/2023			
Personnel[A]	**Description**		**Cost**
2 Marine Resource Specialist II (to be created)	full time position for 12 months	2 @ $40,816	$81,632.00
2 Office Associate II (to be created)	full time position for 12 months	2 @ $34,361.60	$68,723.20
		Subtotal	**$150,355.20**
Fringe Benefits[A]			
2 Marine Resource Specialist II (to be created)	Includes health, dental, workers comp, FICA, life	2 @ $24,490	$48,980.00
2 Office Associate II (to be created)	insurance and retirement	2 @ $20,617	$41,234.00
		Subtotal	**$90,214.00**
		Total Personnel	**$240,569.20**
Travel			
1 vehicle[B]	1 car * $377.34/mo * 12 mo		$4,528.08
Mileage fee	1 car * 1,150 mi per mo * $.1533/mi * 12 mo		$2,115.54
Toll allowance	Estimated		$200.00
5 Overnight stays[C]	4* $150/night		$600.00
Per diem (includes extended days)	(2 overnights @ $65/day & 5 extended days @ $24/day)		$250.00
		Total Travel	**$7,693.62**
Supplies			
Year labels	1,000 labels (500/box * 2 boxes * $15.00/box)		$30.00
Folder labels	1,000 labels (500/box * 12 boxes * $24.50/box)		$49.00
AAK Color Coded Folders[D]	1,000 folders (50/box * 120 boxes * $23/box)		$460.00
Other			
Printing and binding of harvester report forms	500 logbooks * $2.50 per logbook		$1,250.00
Postage for logbooks	Mail 500 logbooks * $5.00 per logbook		$2,500.00
Postage for info packets and letters	($0.55*1000 compliance letters)		$550.00
Maine LEEDS enhancement programming			$2,100.00
Telecommunication charges[E]	5 phones * $50/mo * 12 mo		$3,000.00
		Total Supplies	**$9,939.00**
		Subtotal	**$17,632.62**
Total Direct Costs			**$258,201.82**
Indirect Costs (30%)			**$77,460.55**
Total Award to DMR			**$335,662.37**
A: Cost includes salary and benefits, which are dictated by contract with State of Maine and are non-negotiable.			
B: All state agencies must rent vehicles through state's Central Fleet Agency which is non-negotiable. Vehicle costs include the following services and costs: maintenance, repairs, insurance, and gasoline.			
C: DMR staff meet with and train harvesters how to electronically report to DMR and/or NMFS.			
D: AAK Color Coded Folders are folders MEDMR uses for all harvester reporting, they are reusable but will need 2 years supply eventually.			
E: One cell phone for each of the Scientist II, Scientist I (2) and Specialist II (2) working on the project.			

Partner Contribution For ACCSP Purposes

Scientist IV (7% time)	$9,116
Scientist III (25% time)	$25,919
Scientist II (25% time)	$28,742
Specialist II (25% time)	$19,788
Office Associate I (85% time)	$66,322
Office Associate I (50% time)	$39,013
Office Associate II (25%)	$19,604
	$208,504

Budget Narrative for FY2022 proposal:

Personnel and Fringe Benefits: The new positions proposed in this proposal (2 Marine Resource Specialist II and 2 Office Associate II). These positions are funded full time (100%) by this award and are a Department of Marine Resources' employees. Salary and benefits for this employee are dictated by contract with the State of Maine and are non-negotiable. Benefits include retirement benefits, FICA, health insurance, dental insurance, workers compensation and life insurance. The benefits are determined by a formula the state uses which is variable dependent upon the position classification, the pay grade of the employee (e.g. the number of years the person has been employed by the State of Maine) and type of coverage the employee selects.

Travel: The Scientists and Specialists are the employees who will be travelling. The travel is for holding electronic harvester reporting workshops, visiting harvesters to install reporting software, training harvester staff how to electronically report or troubleshooting reporting problems. Staff provide harvesters with one-on-one training first via phone but then in person if individuals need further assistance with the reporting system and help troubleshoot electronic reporting problems. Travel occurs throughout the coast of Maine, although trips to the interior are unusual unless the harvester can only meet inland. These harvesters must be trained in the use of electronic reporting and in some cases a group informational setting will not be enough for some to learn how to report their landings information.

The monthly fee for the vehicle is dictated by contract with the State of Maine Central Fleet Agency; the fee is based on the type of vehicle leased, and the mileage fee is based on how many miles the car was used the previous year. Because of this, the vehicle fees between projects may differ. This project has one Nissan Rogue SUV which is a state-owned vehicle that MEDMR leases from the State of Maine Central Fleet Agency.

Occasional extended day travel or overnight stays are necessary. If multiple harvester appointments to these remote areas are made for the same day, or appointments are made for consecutive days, overnight travel may be necessary. The rates were calculated through the GSA website for posted rates.

Supplies: Filing supplies are needed each year but as more harvesters eventually shift to electronic reporting the need for filing supplies will decrease. The filing supplies include AAK folders used to store individuals log sheets, labels (year and name) and protective coatings for these labels. These are the same folders used for all of MEDMR's harvester reports and are purchased from Allied Systems Products AAK Filing system.

Other: The MEDMR will try and push electronic reporting as much as possible and will require waivers to report on paper for lobster reporting. To help cut down on costs, MEDMR will try and have harvesters print their own paper forms when necessary from the MEDMR website. We do accept forms via email, fax or U.S. mail. The bound logbook includes a carbon copy that harvesters use for their records, or to resend should the original gets lost in the mail. Many harvesters like this carbon copy feature, which is one of the main reasons why we choose to continue to purchase these bound logbooks. Cell phones for the Specialists and the Scientists are necessary for communication and safety when on travel to harvester meeting locations. Staff often needs to call NMFS or the programmer when installing software or troubleshooting reporting issues in the field. The line for Maine LEEDS enhancement programming is to cover any programmatic cost associated with enhancements identified by MEDMR's once the new 100% reporting requirement is put in place. MEDMR anticipates that after the compliance enhancement is in place, other features that will be a large time saver for MEDMR will be identified.

Indirect costs: The Department of Marine Resources has an indirect cost rate of 34.3%; however, our Commissioner has authorized this proposal use the lower rate of 30%. See Attachment 3 for the Negotiated Indirect Cost Agreement. These indirect funds are a necessity to help defray and offset the administrative costs associated with the ASMFC's directive to increase MEDMR's lobster reporting from its current rate to 100%. These indirect monies are utilized to help cover the administrative costs not covered directly by this grant proposal and help offset any burden MEDMR assumes with fulfilling their ASMFC reporting requirements.

Cost Summary: FY21 Managing 100% Lobster Harvester Reporting in Maine (Proposal Withdrawn at Operations Fall Meeting) 5/1/2021 - 4/30/2022			
Personnel[A]	**Description**		**Cost**
2 Marine Resource Specialist II (to be created)	full time position for 12 months	2 @ $37,766	$75,532.00
1 Office Associate II (Alice Mayberry)	full time position for 12 months	1 @ $45,553.89	$45,553.89
1 Office Associate II (to be created)	full time position for 12 months	1 @ $33,289	$33,289.00
		Subtotal	**$154,374.89**
Fringe Benefits[A]			
2 Marine Resource Specialist II (to be created)	Includes health, dental, workers comp, FICA, life insurance and retirement	2 @ $21,652	$43,304.00
1 Office Associate II (Alice Mayberry)		1 @ $26,116.81	$26,116.81
1 Office Associate II (to be created)		1 @ $19,085	$19,085.00
		Subtotal	**$88,505.81**
		Total Personnel	**$242,880.70**
Travel			
1 vehicle[B]	1 car * $377.34/mo * 12 mo		$4,528.08
Mileage fee	1 car * 1,150 mi per mo * $.1533/mi * 12 mo		$2,115.54
Toll allowance	Estimated		$200.00
5 Overnight stays[C]	6* $150/night		$900.00
Per diem (includes extended days)	(6 overnights @ $65/day & 36 extended days @ $24/day)		$1,254.00
		Total Travel	**$8,997.62**
Supplies			
Year labels	1,000 labels (500/box * 2 boxes * $13.95/box)		$27.90
Folder labels	1,000 labels (500/box * 12 boxes * $24.50/box)		$49.00
AAK Color Coded Folders[D]	1,000 folders (50/box * 120 boxes * $23/box)		$460.00
Other			
Printing and binding of harvester report forms	1000 logbooks * $2.50 per logbook		$2,500.00
Postage for logbooks	Mail 1000 logbooks * $5.00 per logbook		$5,000.00
Postage for info packets and letters	($0.55*3250 compliance letters)		$1,787.50
Maine LEEDS enhancement programming			$28,000.00
Telecommunication charges[E]	5 phones * $40/mo * 12 mo		$2,400.00
		Total Supplies	**$40,224.40**
		Subtotal	**$49,222.02**
Total Direct Costs			**$292,102.72**
Indirect Costs (15%)			**$43,815.41**
Total Award to DMR			**$335,918.13**

A: Cost includes salary and benefits, which are dictated by contract with State of Maine and are non-negotiable.
B: All state agencies must rent vehicles through state's Central Fleet Agency which is non-negotiable. Vehicle costs include the following services and costs: maintenance, repairs, insurance, and gasoline.
C: DMR staff meet with and train harvesters how to electronically report to DMR and/or NMFS.
D: AAK Color Coded Folders are folders MEDMR uses for all harvester reporting, they are reusable but will need 2 years supply eventually.
E: One cell phone for each of the Scientist II, Scientist I (2) and Specialist II (2) working on the project.

Partner Contribution For ACCSP Purposes

Scientist IV (7% time)	$9,116
Scientist III (25% time)	$25,919
Scientist II (25% time)	$28,742
Specialist II (25% time)	$19,788
Office Associate I (85% time)	$66,322
Office Associate I (50% time)	$39,013
Office Associate II (25%)	$19,604
Mobile Harvester Reporting App Development	$32,050
	$240,554

Budget Narrative for FY2021 proposal (Proposal withdrawn at Operations Committee Meeting 9/2020:

Personnel and Fringe Benefits: The new positions proposed in this proposal (2 Marine Resource Specialist II and 1 Office Associate II) and current Office Associate II (currently filled by Alice Mayberry). These positions are funded full time (100%) by this award and are a Department of Marine Resources' employees. Salary and benefits for this employee are dictated by contract with the State of Maine and are non-negotiable. Benefits include retirement benefits, FICA, health insurance, dental insurance, workers compensation and life insurance. The benefits are determined by a formula the state uses which is variable dependent upon the position classification, the pay grade of the employee (e.g. the number of years the person has been employed by the State of Maine) and type of coverage the employee selects.

Travel: The Scientists and Specialists are the employees who will be travelling. The travel is for holding electronic harvester reporting workshops, visiting harvesters to install reporting software, training harvester staff how to electronically report or troubleshooting reporting problems. Staff provide harvesters with one-on-one training first via phone but then in person if individuals need further assistance with the reporting system and help troubleshoot electronic reporting problems. Travel occurs throughout the coast of Maine, although trips to the interior are unusual unless the harvester can only meet inland. These harvesters must be trained in the use of electronic reporting and in some cases a group informational setting will not be enough for some to learn how to report their landings information.

The monthly fee for the vehicle is dictated by contract with the State of Maine Central Fleet Agency; the fee is based on the type of vehicle leased, and the mileage fee is based on how many miles the car was used the previous year. Because of this, the vehicle fees between projects may differ. This project has one Nissan Rogue SUV which is a state-owned vehicle that MEDMR leases from the State of Maine Central Fleet Agency.

Occasional extended day travel or overnight stays are necessary. If multiple harvester appointments to these remote areas are made for the same day, or appointments are made for consecutive days, overnight travel may be necessary. The rates were calculated through the GSA website for posted rates.

Supplies: Filing supplies are needed each year but as more harvesters eventually shift to electronic reporting the need for filing supplies will decrease. The filing supplies include AAK folders used to store individuals log sheets, labels (year and name) and protective coatings for these labels. These are the same folders used for all of MEDMR's harvester reports and are purchased from Allied Systems Products AAK Filing system.

Other: The MEDMR will try and push electronic reporting as much as possible and will require waivers to report on paper for lobster reporting. To help cut down on costs, MEDMR will try and have harvesters print their own paper forms when necessary from the MEDMR website. We do accept forms via email, fax or U.S. mail. The bound logbook includes a carbon copy that harvesters use for their records, or to resend should the original gets lost in the mail. Many harvesters like this carbon copy feature, which is one of the main reasons why we choose to continue to purchase these bound logbooks. Cell phones for the Specialists and the Scientists are necessary for communication and safety when on travel to harvester meeting locations. Staff often needs to call NMFS or the programmer when installing software or troubleshooting reporting issues in the field. The line for Maine LEEDS enhancement programming is to cover any programmatic cost associated with enhancements identified by MEDMR's once the new 100% reporting requirement is put in place. MEDMR anticipates that after the compliance enhancement is in place, other features that will be a large time saver for MEDMR will be identified.

Indirect costs: The Department of Marine Resources has an indirect cost rate of 34.3%; however, our Commissioner has authorized this proposal use the lower rate of 15%. See Attachment 3 for the Negotiated Indirect Cost Agreement. These indirect funds are a necessity to help defray and offset the administrative costs associated with the ASMFC's directive to increase MEDMR's lobster reporting from its current rate to 100%. These indirect monies are utilized to help cover the administrative costs not covered directly by this grant proposal and help offset any burden MEDMR assumes with fulfilling their ASMFC reporting requirements.

Cost Summary: FY20 Managing 100% Lobster Harvester Reporting in Maine			
3/1/2020 - 2/28/2021			
Personnel[A]	**Description**		**Cost**
1 Marine Resource Scientist II (to be created)	full time position for 12 months	1 @ $50,079	$50,079
2 Marine Resource Scientist I (to be created	full time position for 12 months	2 @ $45,340	$90,680
2 Marine Resource Specialist II (to be created)	full time position for 12 months	2 @ $37,849	$75,698
2 Office Specialist I Supervisory (to be created)	full time position for 12 months	2 @ $36,234	$72,468
1 Office Specialist I (to be created)	full time position for 12 months	1 @ $34,424	$34,424
1 Office Associate II (to be created)	full time position for 12 months	1 @ $31,741	$31,741
		Subtotal	**$355,090**
Fringe Benefits[A]			
1 Marine Resource Scientist II (to be created)	Includes health, dental, workers comp, FICA, life insurance and retirement		$32,551
2 Marine Resource Scientist I (to be created			$58,942
2 Marine Resource Specialist II (to be created)			$49,204
2 Office Specialist I Supervisory (to be created)			$47,104
1 Office Specialist I (to be created)			$22,376
1 Office Associate II (to be created)			$20,632
		Subtotal	**$230,809**
		Total Personnel	**$585,899**
Travel			
1 vehicle[B]	1 car * $188.67/mo * 12 mo		$2,264
Mileage fee	1 car * 1,000 mi per mo * $.1533/mi * 12 mo		$1,840
Toll allowance	Estimated		$100
5 Overnight stays[C]	5* $150/night		$750
Per diem (includes extended days)	(5 overnights + 5 extended days) * $65/day		$650
		Total Travel	**$5,604**
Supplies			
Filing Supplies	folders, folder labels, year labels		$500
Other			
Printing and binding of harvester report forms	1000 logbooks * $2.50 per logbook		$2,500
Postage for logbooks	Mail 1000 logbooks * $4.75 per logbook		$2,375
Postage for info packets and letters	($0.50*3250 compliance letters)		$1,625
Software (Adobe DC Professional)	8 copies at $329.65/copy		$2,637
Technology (equipment, licenses)			$500
Enhancements to Maine LEEDS system	Automate compliance for electronic reporting		$40,000
Telecommunication charges[D]	5 phones * $40/mo * 12 mo		$2,400
		Total Supplies	**$52,537**
		Subtotal	**$58,141**
Total Direct Costs			**$644,039**
Indirect Costs (30%)			**$193,212**
Total Award to DMR			**$837,251**

A: Cost includes salary and benefits, which are dictated by contract with State of Maine and are non-negotiable.

B: All state agencies must rent vehicles through state's Central Fleet Agency which is non-negotiable. Vehicle costs include the following services and costs: maintenance, repairs, insurance, and gasoline.

C: DMR staff meet with and train harvesters how to electronically report to DMR and/or NMFS.

D: One cell phone for each of the two specialists, one each for the two scientists and one scientist II working on the project.

Partner Contribution For ACCSP Purposes	
Scientist IV (7% time)	$9,115
Scientist III (25% time)	$24,542
Scientist II (25% time)	$26,854
Specialist II (25% time)	$18,710
Office Associate I (85% time)	$47,568
Office Associate I (50% time)	$37,191
Office Associate II (50%)	$32,813
Office Associate II (15%)	$10,531
Office Associate II (15%)	$9,750
Office Associate II (15%)	$8,513
Office Associate II (100%)	$65,626
Mobile Harvester Reporting App Development	$150,000
	$441,211

Budget Narrative for FY2020 proposal:

Personnel and Fringe Benefits: The new positions proposed in this proposal (1 Marine Resource Scientist II, 2 Marine Resource Scientist I, 2 Marine Resource Specialist II, 2 Office Specialist I Supervisory, 1 Office Specialist I and 1 Office Associate II). These positions are funded full time (100%) by this award and are a Department of Marine Resources' employees. Salary and benefits for this employee are dictated by contract with the State of Maine and are non-negotiable. Benefits include retirement benefits, FICA, health insurance, dental insurance, workers compensation and life insurance. The benefits are determined by a formula the state uses which is variable dependent upon the position classification, the pay grade of the employee (e.g. the number of years the person has been employed by the State of Maine) and type of coverage the employee selects.

Travel: The Scientists and Specialists are the employees who will be travelling. The travel is for holding electronic harvester reporting workshops, visiting harvesters to install reporting software, training harvester staff how to electronically report or troubleshooting reporting problems. Staff provide harvesters with one-on-one training first via phone but then in person if individuals need further assistance with the reporting system and help troubleshoot electronic reporting problems. Travel occurs throughout the coast of Maine, although trips to the interior are unusual unless the harvester can only meet inland. These harvesters must be trained in the use of electronic reporting and in some cases a group informational setting will not be enough for some to learn how to report their landings information.

The monthly fee for the vehicle is dictated by contract with the State of Maine Central Fleet Agency; the fee is based on the type of vehicle leased, and the mileage fee is based on how many miles the car was used the previous year. Because of this, the vehicle fees between projects may differ. This project has one Nissan Rogue SUV which is a state-owned vehicle that MEDMR leases from the State of Maine Central Fleet Agency.

Occasional extended day travel or overnight stays are necessary. If multiple harvester appointments to these remote areas are made for the same day, or appointments are made for consecutive days, overnight travel may be necessary. The rates were calculated through the GSA website for posted rates.

Supplies: Filing supplies are needed each year but as more harvesters eventually shift to electronic reporting the need for filing supplies will decrease. The filing supplies include folders used to store individuals log sheets, labels (year and name) and protective coatings for these labels.

Other: The MEDMR will try and push electronic reporting as much as possible and will require waivers to report on

paper for lobster reporting. To help cut down on costs, MEDMR will try and have harvesters print their own paper forms when necessary from the MEDMR website. We do accept forms via email, fax or U.S. mail. The bound logbook includes a carbon copy that harvesters use for their records, or to resend should the original gets lost in the mail. Many harvesters like this carbon copy feature, which is one of the main reasons why we choose to continue to purchase these bound logbooks. Cell phones for the Specialists and the Scientists are necessary for communication and safety when on travel to harvester meeting locations. Staff often needs to call NMFS or the programmer when installing software or troubleshooting reporting issues in the field. All Landings Program staff use Adobe DC Pro to enter or audit paper reports or .PDF's that have been received electronically. The cost for this program has been set by our OIT Department. The line for Maine LEEDS enhancement is the programmatic cost to streamline MEDMR's compliance with harvester data submitted to SAFIS. MEDMR will need to create a SQL Server table to pull any data submitted by a harvester from the ACCSP Warehouse with Maine permits and flip their Maine LEEDS compliance record to submitted. This feature will be a large time saver for MEDMR and will save at least one full-time staff position.

Indirect costs: The Department of Marine Resources has an indirect cost rate of 30%. See Attachment 3 for the Negotiated Indirect Cost Agreement. These indirect funds are a necessity to help defray and offset the administrative costs associated with the ASMFC's directive to increase MEDMR's lobster reporting from its current rate to 100%. The anticipated increase to ~300,000 new harvester records and overall ~700,000 records (dealer and harvester) supplied to ACCSP's Data Warehouse will account for roughly 42% of all reports stored in the Data Warehouse. The increase in harvester reports received by MEDMR will be roughly 538%. These indirect monies are utilized to help cover the administrative costs not covered directly by this grant proposal and help offset any burden MEDMR assumes with fulfilling their ASMFC reporting requirements.

Attachment 1. Project History

Fund Year	Title	Cost	Extension through	Actual dates funding covered	Results
2020	FY20- Managing 100% Lobster Harvester Reporting in Maine	$336,120	Apr-22	May 2020 – Apr 2021	Start preparting for MEDMR to move from mandatory 10% lobster harvester reporting to 100% lobster. Work on enhancement to Maine LEEDS program and continue work on app development.
2021	FY21- Managing 100% Lobster Harvester Reporting in Maine	$335,918.13 (withdrawn)		May 2021 – Apr 2022	Continue preperations for MEDMR to move from mandatory 10% lobster harvester reporting to 100% lobster. Finalize enhancement to Maine LEEDS program, outreach with industry and rolling out MEDMR's offline harvester application built by Bluefin Data LLC.
2022	FY22- Managing 100% Lobster Harvester Reporting in Maine	$335,662		May 2022 – Apr 2023	Final preperations before 100% reporting requirement is implemented in January 2023. Continue with outreach, audits and implementing reporting requirements.

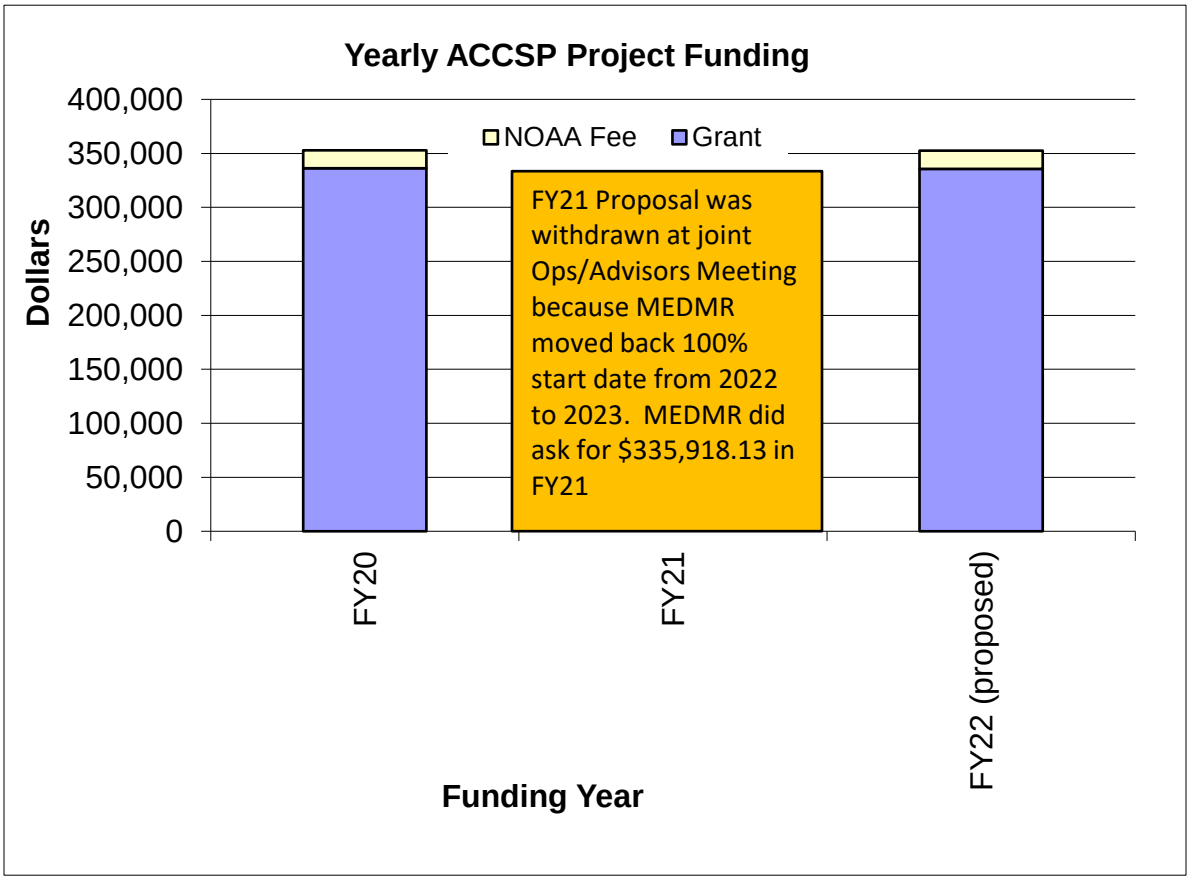


Figure 4. Project Funding History

Attachment 2: Negotiated Indirect Cost Agreement and Letter of Acknowledgement

U.S. Department of Commerce
Office of Acquisition Management – Grants Management Division
1401 Constitution Ave., NW, HCHB Rm 6412
Washington, DC 20230, Attn: Indirect Cost Program

CERTIFICATE OF INDIRECT COSTS

This is to certify that I have reviewed the indirect cost rate proposal prepared and maintained herewith and to the best of my knowledge and belief:

(1) All costs included in this proposal dated 3/18/20 to establish indirect cost billing rates for July 1, 2019 through June 30, 2020 are allowable in accordance with the requirements of the federal awards to which they apply and 2 CFR Part 200 , "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards". This proposal does not include any costs which are unallowable as identified in the applicable federal cost principles. For example, advertising contributions and donations, bad debts, entertainment costs or fines and penalties.

(2) All costs included in this proposal are properly allocable to federal awards on the basis of a beneficial or causal relationship between the expenses incurred and the agreements to which they are allocated in accordance with applicable requirements. Further, the same costs that have been treated as indirect costs have not been claimed as direct costs. Similar types of costs have been accounted for consistently and the Federal Government will be notified of any accounting changes that could affect the rate.

(3) The indirect cost rate calculated within the proposal is 34.30%, which was calculated using an indirect cost rate base type of Modified Total Direct Costs. The calculations were based on actual costs from fiscal year July 1, 2018 thru June 30, 2019 to obtain a federal indirect cost billing rate for fiscal year beginning July 1, 2019.

Subject to the provisions of the Program Fraud Civil Remedies Act of 1986, (31 USC 3801 et seq.), the False Claims Act (18 USC 287 and 31 USC 3729); and the False Statement Act (18 USC 1001), I declare to the best of my knowledge that the foregoing is true and correct.

Organization Name: State of Maine, Department of Marine Resources

CFO Signature: Gilbert Bilodeau Date: 3/18/2020

Name/Title Authorized Official: Gilbert M. Bilodeau, Director, Natural Res Ser Ctr

Dept Head Signature: Date: 03/18/2020

Name/Title Authorized Official: Patrick Keliher, Commissioner

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ACQUISITION AND GRANTS OFFICE

August 10, 2020

Mr. Brandon Flint
Managing Staff Accountant
Natural Resources Service Center
155 State House Station
Augusta, ME 04333

Dear Mr. Flint:

This letter supersedes the previous letter dated May 1, 2020 concerning this subject, and confirms that no further action is required under Department of Commerce Financial Assistance Standard Term & Condition A.05, Indirect Costs. Pursuant to OMB regulation 2 CFR Part 200, your organization is not required to submit an indirect cost allocation proposal or plan narrative to its cognizant agency. These plans are to be prepared and retained at the local government level. OMB regulation 2 CFR Part 200, Appendix V Il, par. D states, in part:

All department or agencies of the governmental unit desiring to claim indirect costs under Federal awards must prepare an indirect cost rate proposal and related documentation to support the costs. The proposal and related documentation must be retained for audit in accordance with the records retention requirements contained in the Common Rule.

When actual costs are known at the end of your fiscal year, you are required to account for differences between estimated and actual indirect costs by means of either: a) making an adjustment to the next year's indirect cost rate calculation to account for carry-forward (the difference between the estimated costs used to establish the rate and the actual costs of the fiscal year covered by the rate); or b) making adjustments to the costs charged to the various programs based on the actual charges calculated. Since OMB regulation 2 CFR Part 200 requires the independent auditor to determine the allowability of both direct and indirect costs, the organization's indirect cost charges will be subject to audit.

It is important to note that your organization is still required to submit to the Grants Management Division of the National Oceanic and Atmospheric Administration (NOAA) an annual Certificate of Indirect Costs. NOAA acknowledges receipt of your most recent certificate, submitted March 18, 2020 pertaining to your rate of 34.30% for Fiscal Year 2020. Additionally, your request to move to a two-year fixed rate with carry-forward schedule, is approved. Given this, the aforementioned indirect cost rate of 34.30% is also applicable for Fiscal Year 2021.

The submission of the Certificate of Indirect Costs is due to our office within six (6) months after the close of your fiscal year.

A copy of this letter will be retained in your official award file. If you have any questions, please contact Lamar Revis at 301.628.1308 or at lamar.revis@noaa.gov. Thank you.

Sincerely,

Lamar Dwayne Revis

Arlene Simpson Porter
Director, Grants Management Division

Department of Marine Resources

INTEROFFICE MEMORANDUM

TO: FILE

FROM: PATRICK KELIHER, COMMISSIONER

SUBJECT: RATE USED FOR COST ALLOCATION

DATE: 5/25/21

In accordance with OMB Circular A-87, the Department of Marine Resources has submitted to the U.S. Department of Commerce a departmental cost allocation plan for use during state fiscal year 2019 ending June 30, 2019. The indirect cost rate proposal is 34.30%. I am authorizing the use of the lesser rate of **30%** to be used during this period.

ACCSP
"FY22: Managing 100% Lobster Harvester Reporting in Maine"
(May 1, 2022 – April 30, 2023)

Patrick Keliher, Commissioner 5/26/21

Attachment 4: Authority to Suspension Licenses for Delinquent Reporters

An Act to Improve the Quality of the Data Used in the Management of Maine's Fisheries

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 12 MRSA §6301, sub-§6 is enacted to read:

6. Ownership identified. If a license issued under chapter 625 is issued to a firm, corporation or partnership, the individual who owns the highest percentage of that firm, corporation or partnership must be identified on the license application. When 2 or more individuals own in equal proportion the highest percentages of a firm, corporation or partnership, each of those owners must be identified.

Sec. 2. 12 MRSA §6412 is enacted to read:

§ 6412. Suspension of license or certificate for failure to comply with reporting requirements

1. Authority to suspend. The commissioner, in accordance with this section, may suspend a license or certificate issued under this Part if the holder of the license or certificate fails to comply with reporting requirements established by rule pursuant to section 6173. A license or certificate suspended under this section remains suspended until the suspension is rescinded by the commissioner. The commissioner shall rescind a suspension when:

A. The commissioner determines and provides notice to the holder of the suspended license or certificate that the holder has come into compliance with the reporting requirements established by rule pursuant to section 6173; and

B. The holder pays to the department a $25 administrative fee.

When a suspension is rescinded, the license or certificate is reinstated. Until the suspension is rescinded, the holder of the suspended license or certificate is not eligible to hold, apply for or obtain that license or certificate.

2. Process for suspension for failing to comply with weekly reporting. If the commissioner determines that a person who holds a license or certificate under this Part has failed to comply with a weekly reporting requirement established by rule pursuant to section 6173, the commissioner shall notify the person at the telephone number provided on the application for the license or certificate and by e-mail if an e-mail address is provided on the application. If the license or certificate holder has not complied with the reporting requirements within 2 days after the commissioner has provided the notice, the commissioner shall mail a notice of suspension to the license or certificate holder by certified mail or the notice must be served in hand. The notice must:

A. Describe the information that the license or certificate holder is required to provide pursuant to this Part that the department has not received; and

B. State that, unless all the information described in paragraph A is provided to the department or the license or certificate holder requests a hearing, the license or certificate will be suspended in 3 business days after the license or certificate holder's receipt of the notice.

If the license or certificate holder has not complied with the reporting requirements or requested a hearing within 3 business days after receipt of the notice, the commissioner shall suspend the license or certificate.

3. Process for suspension for failing to comply with monthly reporting. If the commissioner determines that a person who holds a license or certificate under this Part has failed to comply with a monthly reporting requirement established by rule pursuant to section 6173, the commissioner shall notify the person at the telephone number provided on the application for the license or certificate and by e-mail if an e-mail address is provided on the application. If the license or certificate holder has not complied with the reporting requirements within 45 days after the commissioner has provided the notice, the commissioner shall mail a notice of suspension to the license or certificate holder by certified mail or the notice must be served in hand. The notice must:

A. Describe the information that the license or certificate holder is required to provide pursuant to this Part that the department has not received; and

B. State that, unless all the information described in paragraph A is provided to the department or the license or certificate holder requests a hearing, the license or certificate will be suspended in 3 business days after the license or certificate holder's receipt of the notice.

If the license or certificate holder has not complied with the reporting requirements or requested a hearing within 3 business days after receipt of the notice, the commissioner shall suspend the license or certificate.

4. Hearing. A license or certificate holder receiving a written notice of suspension pursuant to this section may request a hearing on the suspension by contacting the department within 3 business days of receipt of the notice. If a hearing is requested, the suspension is stayed until a decision is issued following the hearing. The hearing must be held within 3 business days of the request, unless another time is agreed to by both the department and the license or certificate holder. The hearing must be conducted in the Augusta area. The hearing must be held in accordance with:

A. Title 5, section 9057, regarding evidence, except the issues are limited to whether the license or certificate holder has complied with reporting requirements established by rule pursuant to section 6173;

B. Title 5, section 9058, regarding notice;

C. Title 5, section 9059, regarding records;

D. Title 5, section 9061, regarding decisions, except the deadline for making a decision is one business day after completion of the hearing; and

E. Title 5, section 9062, subsections 3 and 4, regarding a presiding officer's duties and reporting requirements, except that notwithstanding Title 5, section 9062, subsection 1, the presiding officer must be the commissioner or the commissioner's designee.

Summary of Proposal for ACCSP Ranking

Proposal Type: Maintenance Proposal

Primary Program Priority and Percentage of Effort to ACCSP modules:

Catch and Effort (10 points): 100% of licensed lobster (and 11 other fisheries) must report trip level information. Most of these reports will be electronic.

Data Delivery Plan (2 Points): All electronic data through the MEDMR offline application will be submitted into SAFIS daily. All data entered into MEDMR's MARVIN database and will be sent to the ACCSP Data Warehouse on at least a bi-annual basis after all data have been thoroughly audited.

Project Quality Factors:

Regional Impact (5 Points): all partners will benefit, as all the data collected will be uploaded to ACCSP. Regional management organizations, such as ASMFC, will benefit from the trip level information from Maine. Partners may also benefit from the technologies/procedures tested in the new offline MEDMR mobile application. MEDMR is currently contracted with Bluefin Data LLC to build a mobile app for harvesters to use to meet the 100% lobster reporting requirement mandated in ASMFC Addendum XXVI. MEDMR is currently paying for all start-up costs associated with this project and shared findings with ACCSP. Partners will be able to utilize (the developer might charge a support fee) this application once built if they so choose.

Funding transition plan (4 Points): MEDMR will continue to look for other funding sources; however, with the timeline of 100% lobster reporting being pushed forward from the date set in Addendum XXVI, MEDMR will need help to achieve the requirements coming in the next few years. MEDMR is funding the development of an offline mobile harvester reporting application that will meet MEDMR, NMFS NERO and SERO along with HMS reporting requirements. MEDMR will pay for the ongoing monthly maintenance fee associated with this program. MEDMR has already secured an additional one-time $600K in additional federal funding for this project. Currently, the MEDMR does not have any plans to require electronic reporting for all fisheries but intends on pushing electronic reporting. Geographical restrictions prevent all harvesters from having reliable high-speed internet access at this time.

In-kind Contribution (3 Points): the partner contribution is listed on page 14. MEDMR's in-kind contribution is approximately 62% of the requested amount. We calculate our in-kind by dividing the total MEDMR contribution ($208,508) by the total requested amount ($335,662.37) to determine our in-kind contribution of 62%. All the positions listed as partner contributions are fully funded by the State of Maine and should be included as in-kind and not a match.

Improvement in Data Quality/Timeliness (4 Points): MEDMR can audit data at a more detailed level, including checking harvester reported data against dealer reported data. MEDMR encourages reporting timeliness through outreach with harvesters and is working with Marine Patrol to ensure industry understands the importance of submitting accurate and timely information. The Maine State Legislature also passed law that authorizes license suspensions for those who fail to report on time which has improved the timeliness and quality of the data submitted for the fisheries that utilize this law.

Potential secondary module as a by-product (in program priority order) (3 points): The offline application that MEDMR envisions will be able to eventually link up with certain dealer reports and accept tracker data which will revolutionize the way spatial data could be used to determine many effort fields and dealer and harvester reports are matched up.

Impact on Stock Assessment (3 Points): Regional management organizations which carry out stock assessments will benefit from the detailed landings data reported from Maine. This information is used in stock assessments for many species that are managed by regional agencies.

Properly Prepared (1 Points): MEDMR followed ACCSP guidelines and pertinent documents when preparing this proposal.

Merit (3 points): This proposal allows MEDMR to comply with mandatory ASMFC requirements. The MEDMR currently provides more data to the data warehouse than any other state and accounts for over 30% of all records landed in the Data Warehouse. MEDMR are always looking for ways to collect data in a timely and efficient manner.

Summary of Proposal for ACCSP Ranking (Abridged Ranking Process)

Achieved Goals: MEDMR did not receive FY20 funding for this grant from NOAA until June 8, 2020. MEDMR also pulled back our FY21 proposal with the understanding that the FY22 would be treated as a maintenance proposal since our new data to require 100% lobster reporting shifted from January 1, 2022 to January 1, 2023. MEDMR has already completed the Maine LEEDS enhancement to automate electronic reporting compliance. The offline harvester application is set for a soft roll out to select industry members on June 14, 2021.

Data Delivery Plan (2 Points): All electronic data through the MEDMR offline application will be submitted into SAFIS daily. All data entered into MEDMR's MARVIN database and will be sent to the ACCSP Data Warehouse on at least a bi-annual basis after all data have been thoroughly audited.

Level of Funding (1 Point): Last year MEDMR asked for $837,251 and was awarded $336,162. This FY22 proposal is asking for $335,620.77.

Properly Prepared (1 Points): MEDMR followed ACCSP guidelines and pertinent documents when preparing this proposal.

Merit (3 points): This proposal allows MEDMR to comply with mandatory ASMFC requirements. The MEDMR currently provides more data to the data warehouse than any other state and accounts for over 30% of all records landed in the Data Warehouse. MEDMR are always looking for ways to collect data in a timely and efficient manner.

Robert B. Watts II
Maine Department of Marine Resources
(207) 633-9412
rob.watts@maine.gov

June 2021

PROFILE:

- Knowledge of Maine and federal regulations pertaining to commercial fishing and associated reporting requirements through working with the Department of Marine Resources and the National Marine Fisheries Service.
- Knowledgeable of Maine's fishing industries and how they operate.

EDUCATION:

B.S. Marine Science, Maine Maritime Academy, Castine, ME 2002

EMPLOYMENT EXPERIENCE:

May 2016 – Present **Marine Resource Scientist III**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.
- Oversees DMR's landings suspension authority and process.
- Oversees DMR's swipe card reporting program.
- Oversees MEDMR's MARVIN database.
- Maintains dealer and harvester auditing databases.
- Oversaw Maine's Interactive Voice Response (IVR) reporting program (IVR reporting ended in 2019)
- Serves as key contact for Maine commercial landings information.
- Promotes Maine's partnership with Atlantic Coastal Cooperative Statistical Program (ACCSP), serving on the Operations Committee, Commercial Technical Committee, Information Systems Technical Committee, Standard Codes Committee and Outreach Committee; working to bring the Landings Program into compliance with ACCSP standards.

Jan 2014 – Jan 2016 **Marine Resource Scientist III (Acting Capacity)**
June 2015 – Apr 2016 **Marine Resource Scientist II**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.

- Oversees DMR's landings suspension authority and process.
- Oversees DMR's swipe card reporting program.
- Maintains dealer and harvester auditing databases.
- Oversees Maine's Interactive Voice Response (IVR) reporting program.
- Serves as key contact for Maine commercial landings information.
- Promotes Maine's partnership with Atlantic Coastal Cooperative Statistical Program (ACCSP) through serving on the Commercial Technical Committee, Information Systems Technical Committee and Outreach Committee; working to bring the Landings Program into compliance with ACCSP standards.

Feb 2012 – Apr 2015 **Marine Resource Scientist I**
Maine Department of Marine Resources

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises five Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.
- Oversees outreach to industry.
- Maintains dealer and harvester auditing databases.
- Oversees Maine's Interactive Voice Response (IVR) reporting program.
- Serves as key contact for Maine commercial landings.

Oct 2007 – Jan 2012 **Marine Resource Specialist II**
Maine Department of Marine Resources

- Oversee daily operations of the harvester landings program.
- Notify new harvesters about reporting requirements.
- Maintain databases used for data audits and data entry.
- Monitor reporting compliance database and notifies harvesters if they are delinquent.
- Supervise two Landings Program personnel.
- Oversees IVR reporting.
- Prepare data requests from various sources

Jul 2005 – Oct 2007 **Marine Resource Specialist I**
Maine Department of Marine Resources

- Interviewed marine recreational anglers all over the Maine coast to help determine fish stocks. Identified, weighed, measured and recorded fish caught by anglers.
- Created publications, updated regulation handouts and updated the recreational fishing website as needed.

May 2001 – Jun 2005 **Conservation Aid**
Maine Department of Marine Resources

- Interviewed marine recreational anglers all over the Maine coast to help determine fish stocks. Identified, weighed, measured and recorded fish caught by anglers.
- Acted as a liaison between the State of Maine and the recreational anglers, answered anglers questions about fishing regulations.

Erin L. Summers
Maine Department of Marine Resources
(207) 633-9556
erin.l.summers@maine.gov

June 2020

Profile:

- Work collaboratively with state, federal, academic, conservation, and industry partners to reduce whale entanglements
  and mortality in marine mammals and sea turtles through bodies such as the Atlantic Large Whale Take Reduction team and Atlantic Large Whale Disentanglement Network.
- Build research programs to provide baseline data on large whale life history, ecology, and habitat use in Maine's coastal rocky bottom habitats. Design new and emerging methodologies to inform management decisions.
- Oversee research and monitoring programs within the Division of Biological Monitoring at DMR, including the lobster programs, surveys for scallops, sea urchin, shrimp, and herring, recreational fisheries program, inshore trawl survey, and the landings and reporting group.
- Represent the Department of Marine Resources in stakeholder meetings, including those for wind energy permitting, Natural Resource Damage Assessments, department wide research and priority setting, etc.
- Member of the Atlantic Scientific Review Group advising NOAA Fisheries on marine mammal stock assessments

Education:

MA Biology: Boston University Marine Program	Woods Hole, Ma.	5/02
BA Biology, Spanish minor: Truman State University	Kirksville, Mo.	5/00

Employment:

Jan 2017 – present: **Marine Resource Scientist IV**
Maine Department of Marine Resources
West Boothbay Harbor, Me

- Oversee Division of Biological Monitoring, including Commercial Landings Program, Benthic group (lobster, scallops, urchins), and Pelagics group (herring, groundfish, shrimp, and recreational fishing)
- Lead Scientist for DMR's Large Whale Conservation Program
- Member of the Atlantic Large Whale Take Reduction Team

Feb 2006 – Jan 2017: **Marine Resource Scientist II**
Maine Department of Marine Resources

- Lead scientist for DMR's Large Whale Conservation Program
- Secured grant funding, wrote reports, tracked budgets to support research projects
- Completed projects to support management decisions for the Atlantic Large Whale Take Reduction Plan, including tagging humpback whales, right whale habitat surveys, passive acoustic surveys, gear density surveys, testing alternative fishing gear, characterizing fishing practices, etc.
- Oil Spill Response Coordinator
- Assist with GIS coordination

Jan 2010 – May 2010: **Adjunct Faculty**

Unity College
Unity, Me

- Taught upper level course in the biology of Marine Mammals

Feb 2004 – Feb 2006: **Marine Mammal Research Specialist**
University of New England
Biddeford, Me

- Lead Research technician on project to track and predict right whale habitat use and distribution
- Analysis of remotely sensed data and right whale sightings in the Bay of Fundy Critical Habitat
- Assisted with report writing and budget tracking
- Completed project and published paper analyzing right baleen using stable isotope analysis
- Completed project and published papers satellite tagging and tracking basking sharks off the coast of New England

Sept 2002 – Feb 2004: **Research Technician**
Cetacean and Sea Turtle Team, NOAA Fisheries Service
Beaufort, NC

- Lead technician tracking and analyzing movements of satellite tagged dolphins
- Perform field work including fishing gear and dolphin aerial surveys, boat based dolphin biopsy and photo-identification surveys, satellite tagging dolphins, responding to strandings, etc.
- Participate in necropsies as needed

Oct 2000 – June 2002: **Laboratory Technician**
Marine Biological Laboratories
Woods Hole, Ma

- Manage daily operations of the laboratory of marine veterinarian, Roxanna Smolowitz
- Run experiments and document methodologies and results
- Prepare media, samples, histology slides, and other lab bench work

STATE OF MAINE
DEPARTMENT OF
MARINE RESOURCES
MARINE RESOURCES LABORATORY
P.O. BOX 8, 194 MCKOWN POINT RD
W. BOOTHBAY HARBOR, MAINE 04575-0008

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

August 5, 2021

Atlantic Coastal Cooperative Statistics Program
1050 N. Highland St. Ste. 200 A-N
Arlington, VA 22201

Dear ACCSP:

We are pleased to submit the proposal titled "FY22: Managing Mandatory Dealer Reporting in Maine" for your consideration. This is a maintenance proposal which has not changed in the scope of work. The Maine Department of Marine Resources (MEDMR) has required mandatory swipe card reporting for elver dealers since the 2014 season; which the MEDMR fully funded. The MEDMR has required the sea urchin industry to use eDR mobile (ACCSP's swipe card program) for the past four seasons. This is the swipe card program that MEDMR worked collaboratively with the Massachusetts Division of Marine Fisheries (MADMF), National Marine Fisheries Service Greater Atlantic Regional Office (NMFS GARFO), ACCSP and HarborLight Software LLC. The MEDMR brought its experience with the Elver System swipe card project to this effort in the hope that other partners may benefit from the new swipe card system and we could use our "lessons learned" to make this project a success. The roll-out during the first two seasons did not go as smooth as intended; however, the past three seasons were greatly improved. The MEDMR also continued to monitor compliance and suspend those dealers who fail to report on time. The threat of a license suspension has improved the timeliness and quality of data submitted. Please view all graphs in color. **This proposal addresses the following 2022 ranking criteria: catch and effort, sociological and economic data, data delivery plan, regional impact, funding transition plan, in-kind contribution, improvement in data quality and timeliness, impact on stock assessment and properly prepared.** We are applying as a year 7 maintenance proposal with the COVID funding shortfall. As requested, the explanation for requesting the additional year of funding can be found in the FY22 Budget Narrative on pages 13-14. For a summary of the proposal for ranking purposes, please see page 26. There were no changes made to this final proposal from our pre-proposal as no questions were asked. Please contact Robert Watts at the MEDMR with any questions. Thank you for your consideration of this proposal.

Sincerely,

Robert B. Watts II
Marine Resources Scientist III
rob.watts@maine.gov
(207) 633-9412

Lessie L. White Jr
Marine Resources Scientist II
lessie.l.white@maine.gov
(207) 633-9509

Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street. Suite. 200A-N
Arlington, VA 22201

FY22: Managing Mandatory Dealer Reporting in Maine

Total Cost: $61,304.35

Submitted by:

Robert B. Watts II
Maine Department of Marine Resources
PO Box 8
West Boothbay Harbor, ME 04575
rob.watts@maine.gov

Lessie L. White Jr.
Maine Department of Marine Resources
PO Box 8
West Boothbay Harbor, ME 04575
lessie.l.white@maine.gov

Erin L. Summers
Maine Department of Marine Resources
PO Box 8
West Boothbay Harbor, ME 04575
erin.l.summers@maine.gov

Applicant Name: Maine Department of Marine Resources (MEDMR)

Principal Investigator: Robert Watts, Marine Resource Scientist

Project Title: FY22: Managing Mandatory Dealer Reporting in Maine

Project Type: Maintenance Project

Requested Award Amount (without the NOAA administration fee): $61,304.35

Requested Award Period: One year after receipt of funds

Change in Scope/Cost from Previous Year Project:

This is a maintenance proposal which has not changed its scope from the FY21 proposal. **The dealer reporting objectives have largely remained unchanged since 100% of licensed dealers must report trip level information on 100% species they purchase from harvesters, which meets ACCSP standards.** However, since 2014 the MEDMR required that all elver dealers report daily using a MEDMR initiated and funded swipe card reporting program called the "Elver System" for dealers to report. Elver dealers were required to report daily using the Elver System. Since 2015, the Elver System was modified to start tracking of dealer-to-dealer transactions. Not only are harvesters required to swipe a card at the initial point of sale, but also dealers are required to swipe a card for any dealer-to-dealer elver transactions. The MEDMR implemented swipe card reporting in the sea urchin fishery during the 2016-2017 season. The program used for sea urchins was the swipe card program (eDR mobile) that MEDMR worked collaboratively with the Massachusetts Division of Marine Fisheries (MADMF), National Marine Fisheries Service Greater Atlantic Regional Office (NMFS GARFO), ACCSP and HarborLight Software LLC. The MEDMR required all 9 sea urchin dealers to report for the 2020-2021 season through the eDR mobile program for the fifth season. This was the third consecutive season that the program had very few issues within the season. The MEDMR continues to bring its experience with the Elver System and now eDR mobile swipe card projects to the current effort in the hope that other partners may benefit from the new swipe card system. The MEDMR currently does not have any plans to expand swipe card reporting to other fisheries unless there are management needs that swipe cards would justify. The MEDMR staff was again able to present data on this past season within a week of seasons end. Industry was impressed with how fast MEDMR could provide them with accurate data. The use of swipe cards in the sea urchin fishery allowed MEDMR to continue their management approach towards fishing days in the sea urchin fishery. In past years, harvesters were provided with set days they could fish. For the past four seasons, the MEDMR allowed harvesters to pick their own days from a list of open fishing days. It was the hope of the MEDMR that allowing this flexibility will allow harvesters to stay home on foul weather days. **The MEDMR also continued to suspend dealer licenses for those who fail to report on time which has greatly improved the timeliness and quality of the data submitted.** The MEDMR continues to fund the position that administers this suspension authority. These costs are not included in this grant proposal. See Attachment 1 for a summary of the project history and Attachment 2 (view in color) for a graph of previous grant costs.

Objectives:

The objective of this proposal is to collect trip level landings information from all licensed dealers who buy directly from harvesters. The primary tasks will be regulation compliance, data entry and auditing. Staff will also focus on dealer outreach to help industry understand the importance of the accurate and timely reporting. Electronic reporting will be encouraged for those still opting to report on paper. The continuous expansion of electronic reporting requires the MEDMR to spend a significant amount of time on outreach, explaining each system to dealers and troubleshooting any issues that might arise. In 2014 Maine State Legislature passed a law requiring that all elver dealers report using a swipe card program. Another law was passed in 2015

that provides the MEDMR the authority to require scallop and sea urchin dealers to report with swipe cards. **The results of the Elver System have proven successful and the MEDMR feels that swipe cards only be used where there is a fisheries management need.** Currently the MEDMR does not anticipate any new fisheries be required to report via swipe card. The MEDMR used their swipe card program experience as a learning process to help create a more complete swipe card program in collaboration with MADMF, NOAA GARFO, ACCSP and HarborLight Software LLC. Since the 2016-2017 sea urchin season the MEDMR required all sea urchin dealers to use eDR mobile to report all sea urchin transactions. There is no plan to mandate electronic reporting for all other dealers at this time, as this is not an ACCSP requirement.

Need:

Maine has many dealers who can buy directly from harvesters, and spends significant resources tracking compliance, entering and auditing many records. In 2020, approximately 500 dealers were licensed to buy from harvesters and 193 (38%) of them were required to report to National Marine Fisheries Service (NMFS). Regardless of their federal permit status, MEDMR works with all dealers to ensure all landings are reported either to MEDMR or to SAFIS, and staff audits all records with a state landed of Maine. Of the dealers, 179 (33%) chose to report on paper; 149 (28%) chose Trip Ticket (electronic reporting software developed by Bluefin Data LLC); 102 (19%) chose file upload; 57 (11%) chose key entry SAFIS; 36 (7%) were required to use VESL (swipe card reporting program developed by Bluefin Data LLC and used exclusively by MEDMR elver dealers, the number of dealers will fluctuate from year to year); 9 (2%) were required to use eDR mobile (swipe card program created jointly by ACCSP, MADMF, MEDMR and NOAA GARFO) and 5 (1%) would report using the NMFS quahog database (Table 1).

Table 1: Reporting Methods Chosen for the 2020 Primary Buyers in Maine

Reporting Method	Combo Dealers	State Dealers	Total Dealers
Paper	9	170	**179**
Trip Ticket	97	52	**149**
VESL Program	0	36	**36**
eDR Mobile	1	8	**9**
SAFIS Key Entry	32	25	**57**
File Upload	59	43	**102**
Quahog Electronic Logbook	4	0	**4**
Total Electronic*	**193**	**164**	**357**
Grand Total	**202**	**334**	**536**

*Data submitted via Trip Ticket, SAFIS Key Entry, eDR Mobile, VESL, File Upload and Quahog Electronic Logbook are data electronically reported.
Note: Fourteen dealers chose multiple methods of reporting, so they were counted two or more times on this table.

Some dealers opted to report using multiple methods, (largely due to the exemption of certain species in the federal reporting requirement**). Of the 1.133 million trips for 2020 in the data warehouse, 352,519 (31%) of them were landed in Maine which exceeds any other state (Figure 1 – view in color). These records were submitted by both "state-only" dealers (those that only report to MEDMR) as well as "combo" dealers (those that report to fulfill both NMFS and MEDMR requirements). Because MEDMR cooperatively works with NMFS to collect and audit data from federally permitted dealers, MEDMR staff devotes time and resources to help these "combo" dealers submit data and MEDMR staff audits all these records.**

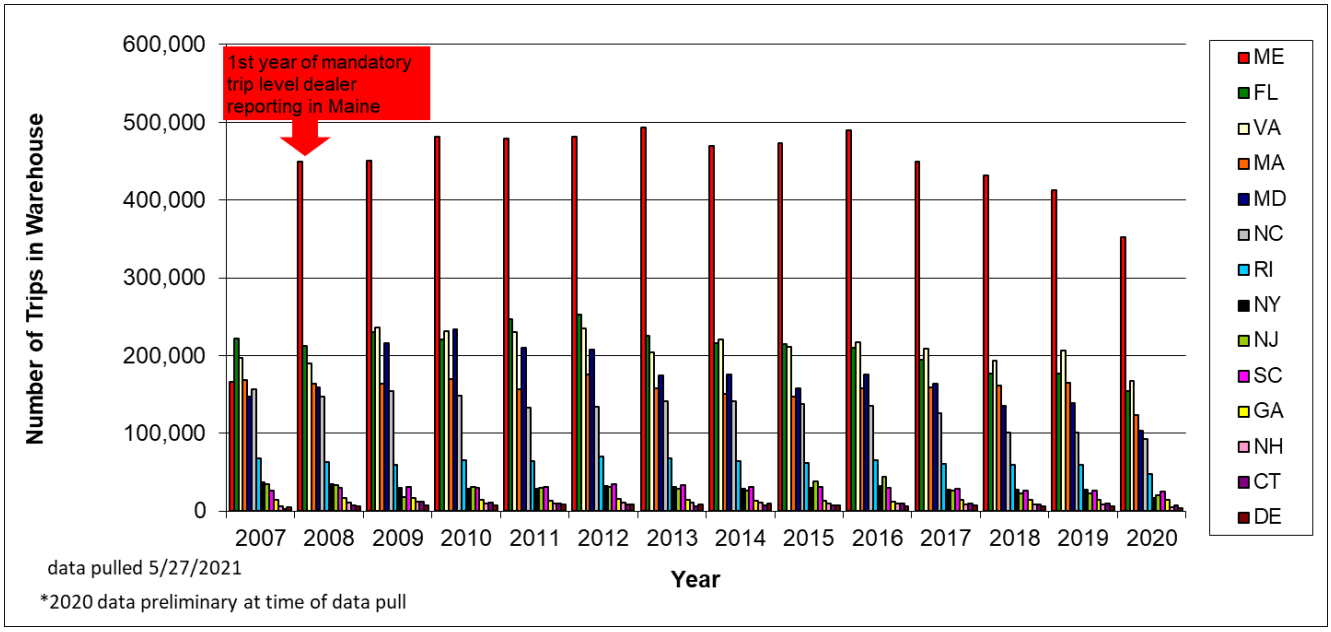


Figure 1: Number of Reported Trip Records by State Landed in ACCSP Data Warehouse

The number of trip records that MEDMR staff uploaded into SAFIS or data entered into MARVIN (MEDMR's database that contains all sampling, biological and landings data that MEDMR collects) has increased 112% since 2007 (Figure 2 – view in color). When dealers submit reports on paper, they are entered into the MARVIN database. **MARVIN is used for reports submitted on paper because it is a faster method of data entry and MEDMR wishes to use this tool to audit the data before sending a copy of it to ACCSP. Routines are configured to convert the MARVIN data to ACCSP codes before they are uploaded to the ACCSP warehouse.**

The numbers in Figures 1 and 2 differ because they contain different data sets. Figure 1 shows the Maine-landed data in the warehouse which contains data from: MARVIN dealer data, MARVIN harvester data, SAFIS data, the federal ocean quahog data, and highly migratory species data. Figure 2 only shows Maine-landed records from MARVIN dealer data and SAFIS data.

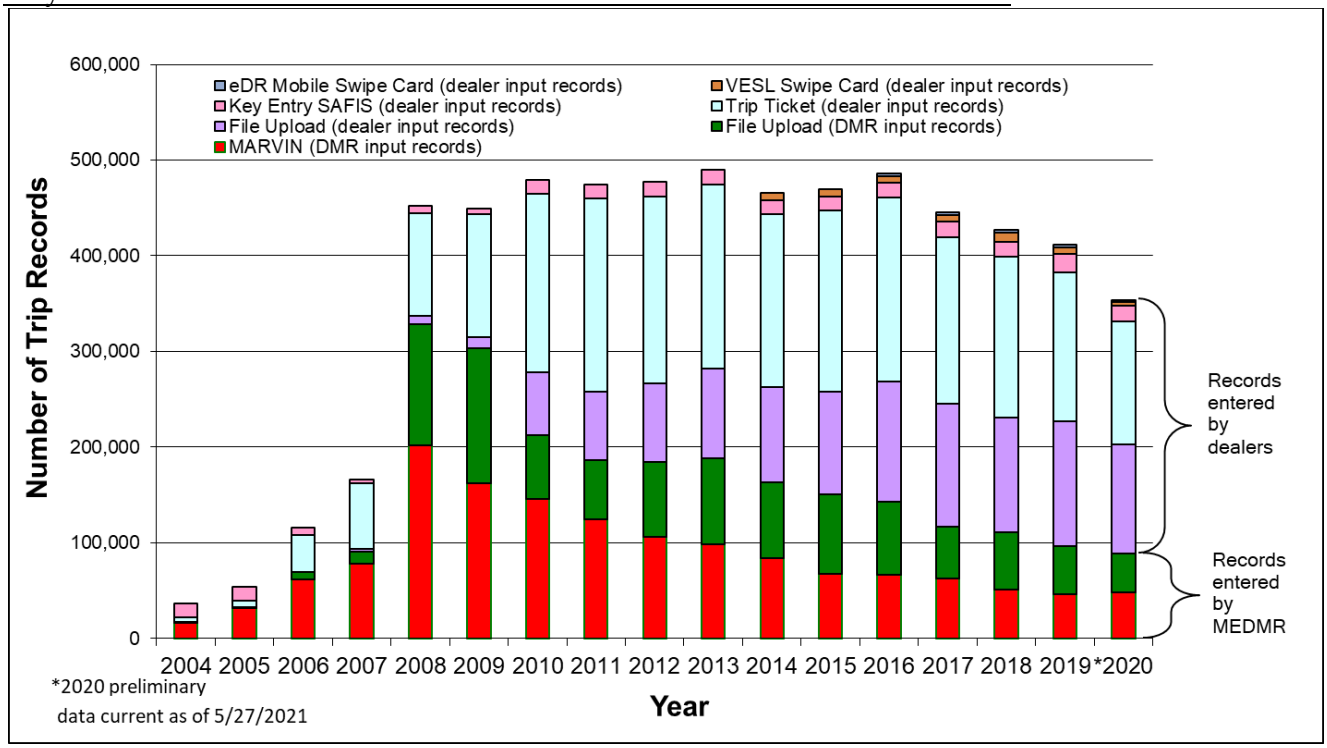


Figure 2: Number of Dealer Reported Trip Records entered in MARVIN and SAFIS

Landings data entered in MARVIN are uploaded to the ACCSP data warehouse. The significant increase in the amount of data entry and auditing is the single greatest challenge for the dealer program staff. Within the past few years, MEDMR absorbed the cost of three of the four positions (and 8 months for the last position) previously funded by ACCSP grants, and MEDMR is also funding the position who will administer the license suspension process of the program. MEDMR is now requesting partial funding (four months) for one existing position: one Specialist I who audits data, helps set up dealers with electronic reporting (trip ticket, file upload, key entry SAFIS and swipe card programs), uploads data for "state-only" dealers, trains and supports "combo" dealers to report their own data, and provides the personal outreach with industry. **It is essential that this dealer reporting program continue as it is an important tool for monitoring Maine's commercial fisheries which are large and economically important to the U.S. seafood industry. According to the NMFS commercial fisheries database (as of 5/24/2021), Maine was ranked as the highest state on the Atlantic Coast in commercial value ($559.8 million) and fourth highest in whole pounds landed (185.8 million) in 2020. This comprehensive dealer reporting program is also an ASMFC (Atlantic States Marine Fisheries Commission) compliance issue for several fisheries, including American lobster which is Maine's largest fishery.**

Summary of staffing:

MEDMR Landings Program staff involved in dealer reporting who are fully funded by MEDMR:

- Scientist IV: makes decisions on the general Landings Program direction.
- Scientist III: oversees the Landings Program, participates in ACCSP committees, transfers data to ACCSP; reporting technology development and responds to data requests.
- Scientist II: manages the day-to-day operations of the Landings Program, is responsible for database development, responds to data requests and updates the Landings Program web page. This position also audits data, and monitors licenses and compliance.
- Specialist II: provides one-on-one outreach with the seafood dealers; trains dealers how to report electronically or on paper; follows up on compliance issues; uploads data from "state-only" dealers who choose to file upload; and audits data. This position trains "combo" dealers how to file upload their own data, maintains dealer upload conversion tables, troubleshoots uploading errors, and installs Trip Ticket at dealer locations. This position not only audits data from "state-only" dealers, but also data submitted electronically by "combo" dealers. This position frequently works with federally permitted dealers because the dealers are also submitting this information in order to fulfill MEDMR reporting requirements. See the *Approach* section below for further details on auditing. This position is also assigned tasks in the harvester-reporting project.
- Office Associate II: corresponds with industry regarding new suspension authority for failure to report on time; identifies and notifies delinquent reporters; follows protocols for suspending licenses; works with the licensing division to ensure licenses are re-issued when reports have been submitted.
- Office Associate I: opens and processes mail and enters data into MARVIN.

MEDMR Landings Program staff currently funded by ACCSP and in need of additional ACCSP funding:

- Specialist I (four months): provides one-on-one outreach with the seafood dealers; trains dealers how to report electronically or on paper; follows up on compliance issues; uploads data from "state-only" dealers who chose to file upload; and audits data. This position trains "combo" dealers how to file upload their own data, maintains dealer upload conversion tables, troubleshoots uploading errors, and installs Trip Ticket at dealer locations. This position not only audits data from "state-only" dealers, but also data submitted electronically by "combo" dealers. This position frequently works with federally permitted dealers because the dealers are also submitting this information in order to fulfill MEDMR reporting requirements. MEDMR staff help federally permitted dealers to submit data and staff audit the data submitted to ensure the data are as accurate as possible, even though the data may have been submitted under the NMFS partner ID. See the *Approach* section below for further details on auditing.

The FY14 through FY21 grant did not include any funding for the elver swipe card program. The MEDMR fully funded the original programming, programmatic updates and maintenance costs associated with this project. The MEDMR will continue to fund the monthly maintenance fees.

Results and Benefits:

The data collected so far have shown how valuable this information is for Maine's fisheries. In the lobster industry, MEDMR scientists have learned more about the fleet characteristics and number of active full time and part time fishermen involved in this fishery than they have been able to with the current sampling programs. Other fishery managers are now analyzing landings data to learn more about the fishing fleet and the makeup of other fisheries. MEDMR has learned how many harvesters are active in each fishery (Figure 3 – view in color).

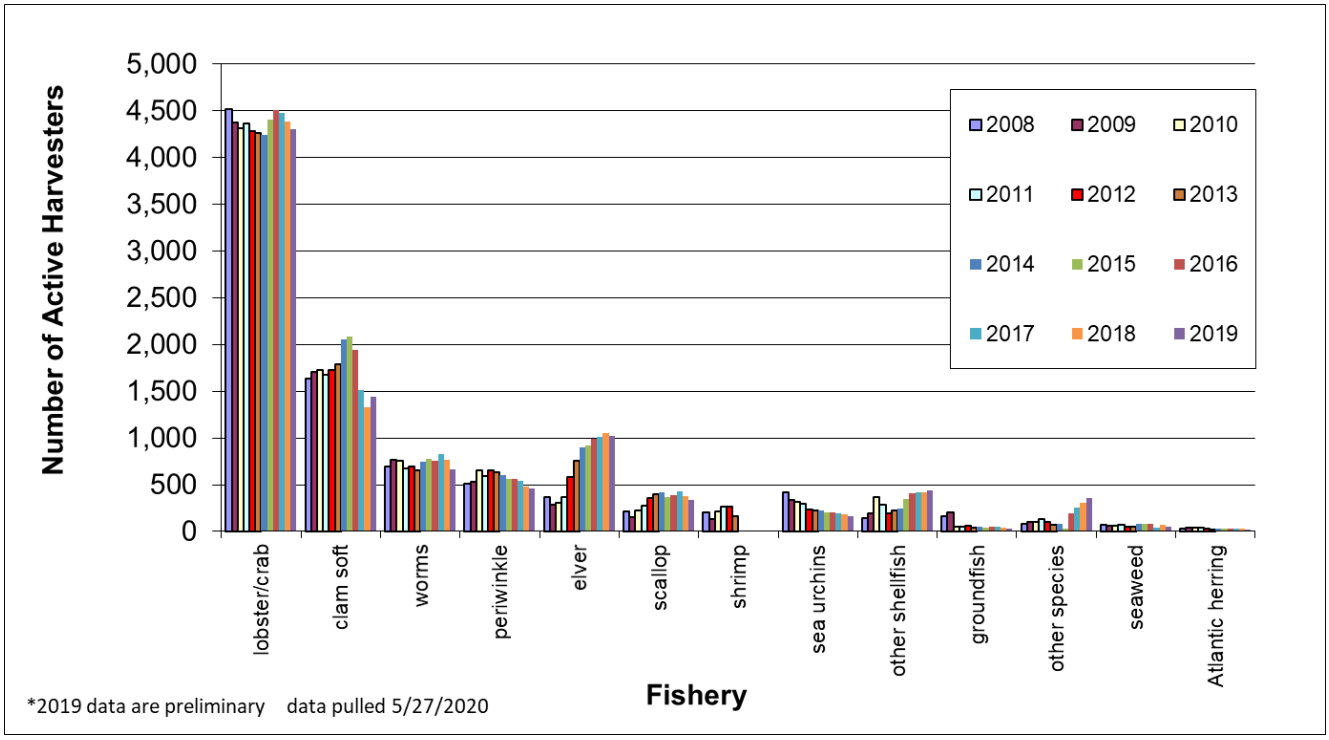


Figure 3: Number of Active Harvesters Reported in Dealer Data

This grant will allow MEDMR to complete an 14th year of mandatory trip level reporting for all dealers. More data auditing and follow up with dealers will help to ensure the data reported are as accurate as possible. MEDMR continues to encourage more dealers to move from paper reporting to electronic reporting as dealers become more comfortable with trip level reporting and will continue to mandate electronic swipe card reporting in the elver and sea urchin fishery. The MEDMR participated in a collaborative effort that created a complete swipe card program with MADMF, NOAA GARFO, ACCSP and HarborLight Software LLC that was used for sea urchin reporting the past two seasons. The MEDMR expects other fisheries will eventually be required to use the swipe card program. MEDMR is already uploading data reported to MARVIN to ACCSP every six months and intends to start uploading every month; which benefits all partners.

Metadata for the dealer program will be updated as needed according to the Federal Geographic Data Committee (FGDC) and the Content Standard for Digital Geospatial Metadata (CSDGM) standards where appropriate. The resulting metadata will be reported to ACCSP as text and XML.

This project will help MEDMR meet the data collection standards of ACCSP. All partners will benefit, as all data will be uploaded to ACCSP and many of the species landed in Maine have a broad geographic range which includes many other agencies in their management. Partners have also benefited from the technologies built and lessons learned from the elver dealer swipe

card/mobile app project that was rolled out to elver dealers in 2014 and the ACCSP eDR mobile app project in 2016.

Approach:

1. Enforce compliance

MEDMR staff will enforce compliance of the trip level reporting regulation through these methods:

- Provide initial outreach and technical support needed for dealers to report trip level landings to MEDMR. Meet with dealers individually as needed to explain reporting procedures, load software, troubleshoot problems with reporting, and explain consequences for failing to report.
- Review reports submitted for completeness and log the submissions in the compliance database. If reports are incomplete, MEDMR will contact industry to correct reporting mistakes. If a dealer cannot be contacted by phone, the report will be returned for correction.
- **Complete suspension notices monthly to those dealers that are delinquent enough to meet the minimum notification criteria as outlined in the suspension law (Attachment 4).**
- Complete follow-up suspension notices monthly to those dealers that are delinquent enough to meet the minimum notification criteria as outlined in the suspension law (Attachment 4).
- **MEDMR will suspend dealer licenses for those who fail to report in a timely manner. See Attachment 4 for the law, which dictates suspension procedures MEDMR will follow.**

2. Data entry

Paper reports will be entered into MARVIN. Staff will file upload all data through the SAFIS interface for those "state-only" dealers who choose to report from their own accounting systems.

3. Encourage electronic reporting

MEDMR staff will encourage dealers reporting on paper to report using one of the three electronic reporting methods (SAFIS key entry, Trip Ticket, or file upload). Currently only certain fisheries are required to report using swipe card technology, so the swipe card report type is not counted above. MEDMR staff will train "combo" dealers who are required to report electronically according to NMFS regulation to upload their own data and will help them maintain their conversion tables so the correct fishermen, vessels, ports and species-grade-market-unit combinations are reported. MEDMR staff will install Trip Ticket at those dealer locations where file uploading is not an option. Staff will also customize the Trip Ticket program so that only the correct harvesters, vessels, species, ports and gears pertinent to the dealer can be chosen.

MEDMR believes the electronic reporting can benefit many in the industry as much as it benefits MEDMR by reducing the amount of key entry required of staff. Starting with the 2014 elver season and continuing through 2021 season, the MEDMR required all elver dealers report daily using the "VESL" (formally the "Elver System"), which was created by Bluefin Data LLC. The MEDMR required VESL to be used to record and report all harvester to dealer transactions. In 2015 through 2021, the Elver System and VESL also tracked dealer-to-dealer transactions. The MEDMR paid for and supplied each dealer with an Elver System or VESL (starting in 2017) program and swipe card reader and training. There was a total of 12 buying stations that could have purchased directly from harvesters in 2021, 18 in 2020, 16 in 2019, 36 in 2018, 24 in 2017, 22 in 2016 and 27 in 2015. Starting in September 2016 MEDMR required that all sea urchin dealers use eDR Mobile (created through collaborative effort with MEDMR, MADMF, ACCSP, NOAA GARFO and HarborLight Software) to purchase sea urchins directly from harvesters. During the 2020 – 2021 season, 9 dealer locations were set up and required to use swipe card technology to purchase sea urchins from licensed harvesters. This figure is down slightly from the 11 sea urchin dealers that reported through eDR Mobile for the 2019-2020 seasons and 12 for the 2018-2019 and 2017-2018 seasons. A total of 15 that were set up for the 2016 – 2017 season. While the initial roll-out for the first two seasons did not come without glitches, the rollout for the past three seasons (2020-2021, 2019-2020 and 2018-

2019) were very smooth. **The use of the swipe cards in the elver and sea urchin fishery has eliminated the need of MEDMR staff to manually enter approximately 10,000 transactions between both fisheries each year while also providing staff with the most up to date data available. Dealers were required to report daily which allowed the MEDMR to monitor each harvester's individual quota (elver only) and the overall quota (elver only). For the past four sea urchin seasons the MEDMR was able to utilize eDR mobile to allow for harvesters to pick which days they fished based off a pre-determined calendar of fishing days. It was the hope to make this fishery safer for all involved by allowing harvesters to stay home on bad weather days.**

4. Continue outreach with industry to promote buy-in.

MEDMR staff will continue to work with dealers to explain the purpose and benefits of this reporting system. Staff will attend the annual Maine Fishermen's Forum and present a Landings Program poster explaining the importance of accurate reporting as well as displaying preliminary data by fishery. At the 2020 Fishermen's Forum, MEDMR released its "Landings Data Portal" (https://mainedmr.shinyapps.io/Landings_Portal/) which provides the public with non-confidential data summarized by species and port. This portal also includes all historical data currently available in .PDF form on our website (https://www.maine.gov/dmr/commercial-fishing/landings/historical-data.html). It is the hope that providing more accessibility to our non-confidential data will reduce the amount of time MEDMR staff spend on basic queries while providing the public with better access to the data collected. Since it's release, the data portal has been used to download a data file 529 times (see project accomplishment chart). Staff will work with established industry organizations, such as the MEDMR advisory councils, lobster zone councils, and dealer and harvester associations to reiterate the program goals and show results of mandatory reporting. Staff will also focus on explaining the new statutory authority for suspending licenses for those who fail to report on time, and how this will help gather more accurate data.

5. Audit of dealer data submitted.

Staff will audit data submitted monthly. Paper data will be audited twice per month; electronic audits sent via email from SAFIS will be corrected weekly. SAFIS audits for "state-only" dealers will be corrected via an ODBC connection to a view of the Maine data. Audits concerning "combo" dealers will also be vetted through the NMFS Northeast Region. MEDMR staff audit data submitted by "combo" dealers because these dealers submit data in order to also fulfill MEDMR reporting requirements. MEDMR performs basic audits of records to catch potential oversights from NMFS audits, audits data exempted from the federal reporting rule (e.g. softshell clams, razor clam, mussels, oysters, quahog, elver, and worm data), and performs additional audits that NMFS does not. For example, MEDMR audits all records to flag those harvesters selling without a license for that species. MEDMR also compares dealer-reported landings with harvester-reported landings and identifies dealers with discrepancies. In these audits, MEDMR contacts dealers when discrepancies are discovered and works to correct records or recover missing data.

6. Transmission of dealer data to ACCSP.

MEDMR will try to upload dealer data from MARVIN to the ACCSP data warehouse once every two months but at a minimum every 6 months. In each data feed, the following fields are uploaded to the warehouse according to ACCSP protocols: supplier dr id, supplier dealer id, supplier trip id, supplier cf id, supplier vessel id, unload year, unload month, unload day, state code, county code, port code, primary gear, data source, data supplier, reported quantity, live pounds, dollars, disposition code, grade code, unit measure, species ITIS, market code, supplier action flag, dr seq id, fishing mode. **MEDMR enters data daily and audits data weekly, so the data uploaded to the warehouse are a mix of pre- and post-audited records. MEDMR does not keep track of what percentage of the uploaded records are "reloads" due to errors, but simply reloads <u>all</u> the data in MARVIN to the warehouse once every three months. In addition, the data supplied by the Elver System are sent directly to SAFIS daily during elver season.**

The MEDMR does not upload data from MARVIN to SAFIS because MEDMR staff continually audit data each week, so the data that are uploaded to the warehouse are a mix of pre- and post-audited records. The reloading of data from MARVIN to the Warehouse is an automated process that the MEDMR loads into a temporary table provided by the Warehouse. If we were to perform the same upload method to SAFIS we would need the ability to mass delete records from SAFIS (which we do not have the ability to do at this time) before records are reloaded to avoid creating duplicate records. In addition, quahog data are loaded into the warehouse and not into SAFIS, so all Maine dealer data would still reside in the warehouse and not SAFIS.

7. Report metadata to ACCSP.

Metadata will be created with ESRI ArcCatalog 10 in order to conform to the FGDC (Federal Geographic Data Committee) standards and specifications. As specified by the federal standard, MEDMR metadata will include the following main sections with detailed information on: identification information, data quality information, spatial data organization information, spatial reference information, entity and attribute information, distribution information, metadata reference information, citation information, time period information and contact information. Created metadata will be available in text and XML formats.

Geographic Location: Operations will be based out of Boothbay Harbor, Maine and the project will take place throughout Maine.

Milestone Schedule:

	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Enforce dealer compliance	X	X	X	X	X	X	X	X	X	X	X	X
2. Data enter dealer reports	X	X	X	X	X	X	X	X	X	X	X	X
3. Encourage electronic dealer reporting	X	X	X	X	X	X	X	X	X	X	X	X
4. Industry outreach to promote dealer buy-in	X	X	X	X	X	X	X	X	X	X	X	X
5. Audit dealer data	X	X	X	X	X	X	X	X	X	X	X	X
6. Upload dealer data to ACCSP		X		X		X		X		X		X
7. Report metadata to ACCSP												X
8. Semi-annual reports						X						X
9. Annual reports												X

Project Accomplishments Measurement:

*2020 and 2021 data are incomplete at the time of proposal submission

Goal	Measurement	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*	2021*
Enforce Dealer Compliance	Number of dealer licenses rejected due to failure to report	43	155	48	56	66	81	16	35	15	115	407	-	-	-	-	-	-	-
Enforce Dealer Compliance	Frequency of referrals to Marine Patrol due to missing reports	-	-	-	-	-	4X per yr	4X per yr	4X per yr	4X per yr	4X per yr	4X per yr through 6/1/14	-	-	-	-	-	-	-
Enforce Dealer Compliance	Number of compliance calls to delinquent dealers	-	-	-	-	166	297	259	451	523	420	269	208	45	37	25	25	18	15
Enforce Dealer Compliance	Number of suspension letters to delinquent dealers	-	-	-	-	-	-	-	-	-	-	407	567	177	876	532	421	338	11
Enforce Dealer Compliance	Number of dealers suspended for failing to report timely	-	-	-	-	-	-	-	-	-	-	27	57	38	32	29	89	43	0
Dealer Data Entry	Number of trip records by year landed in data warehouse	15,858	27,455	127,936	166,468	449,216	451,056	481,668	478,819	481,204	493,212	469,200	473,185	489,166	448,825	431,546	412,536	354,473	55,112
Dealer Data Entry	Number of positive trip records by year landed in MARVIN	15,824	31,486	61,656	76,744	197,289	159,437	143,766	124,057	105,760	98,195	83,942	67,871	66,656	62,447	51,055	46,603	46,881	5,537
Dealer Data Entry	Number of positive trip records by year landed in SAFIS	21,602	26,382	59,452	91,551	250,656	290,155	333,132	350,232	371,391	391,192	381,413	401,520	418,957	383,235	377,103	365,071	305,660	51,622
Encourage Electronic Reporting	Number of dealers submitting positive reports in SAFIS	69	78	98	142	204	230	275	291	312	328	342	330	339	329	340	321	347	221
Transmit Dealer Data to Data Warehouse	Frequency of data submitted by year landed	Yearly	Yearly	Yearly	Yearly	yearly to twice per month	twice per month	twice per month	twice per month	twice per month	twice per month	bi-monthly	once every 6 months	once every 6 months	once every 6 months	once every 6 months	once every 6 months	once every 6 months	once every 6 months
Outreach	Number of custom data requests	-	11	95	155	204	269	275	281	302	419	434	569	806	720	532	479	946	272
Outreach	Number of custom data requests from portal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	362	167

MEDMR does not consider data complete until the end of the following year. This is a standard practice we have always worked under. Example: 2020 data will be considered complete in January of 2022.

Cost Summary: FY22 Managing Mandatory Dealer Reporting in Maine			
10/1/2022 - 9/30/2023			
Personnel[A]	**Description**		**Cost**
1 Specialist I (Eileen Greenleaf)	full time position for 4 months		15,276.26
		Subtotal	**15,276.26**
Fringe Benefits[A]			
1 Specialist I (Eileen Greenleaf)	Includes health, dental, workers comp, FICA, life insurance and retirement		9,656.43
		Subtotal	**9,656.43**
		Total Personnel	**24,932.69**
Travel			
Mileage Reimbursement	1000 miles @ $0.44/mile		440.00
Per diem (includes extended days)	12 extended days @$24/day		288.00
		Total Travel	**728.00**
Supplies			
Filing Supplies	folders, folder labels, year labels		300.00
Other			
Printing and binding of dealer report forms	500 logbooks * $3.50 per logbook		1,750.00
Postage for logbooks	Mail 350 logbooks * $5.00 per logbook		1,750.00
Postage for info packets and letters	($0.50*325 compliance letters)		162.50
Technology (computer programs, equipment)			350.00
Telecommunication charges[C]	4 phones * $50/mo * 12 mo		2,400.00
		Total Supplies	**6,712.50**
Contractual			
Trip Ticket 1 yr maintenance	$1,232/mo fee * 12 mo		14,784.00
(Software support and upgrades)		**Total Contractual**	**14,784.00**
		Subtotal	**22,224.50**
Total Direct Costs			**47,157.19**
Indirect Costs (30%)			**14,147.16**
Total Award to DMR			**61,304.35**
A: Cost includes salary and benefits, which are dictated by contract with State of Maine and are non-negotiable.			
B: DMR staff meet with and train dealers how to electronically report to DMR and/or NMFS.			
C: One cell phone for each of the two specialists and one each for the two scientists working on the project.			

Partner Contribution For ACCSP Purposes

Scientist IV (15% time)	$9,115
Scientist III (50% time)	$51,837
Scientist II (50% time)	$57,484
Specialist II (75% time)	$59,364
Specialist I (67% time)	$51,906
Office Associate I (15% time)	$11,704
Office Associate II (85%)	$66,654
Elver Mobile Swipe Card Project	$10,605
	$318,669

Budget Narrative for FY-2022 proposal:

Personnel and Fringe Benefits: The Specialist I named in the grant is Eileen Greenleaf. The position was transitioned from being fully funded (100%) by this award to only 4 months in the FY21 and MEDMR will assume the remainder of the salary on an annual basis. This same situation will occur for FY22. This position is a Department of Marine Resources' employee. Salary and benefits for this employee are dictated by contract with the State of Maine and are non-negotiable. Benefits include retirement benefits, FICA, health insurance, dental insurance, workers compensation and life insurance. The benefits are determined by a formula the state uses which is variable dependent upon the position classification, the pay grade of the employee (e.g. the number of years the person has been employed by the State of Maine) and type of coverage the employee selects. The total cost for this position is approximately $75,500/year. The remainder of this position is captured within the in-kind calculation.

Travel: The Specialists are the employees who will be travelling. The travel is for visiting dealers to install reporting software, training dealer staff how to electronically report or troubleshooting reporting problems. Staff provide dealers with one-on-one training on these reporting systems and help troubleshoot electronic reporting problems. Travel occurs throughout the coast of Maine, although trips to the interior are not unusual if the dealer headquarters is located inland. These dealers must be trained in the use of electronic reporting and in some cases given reporting software to submit their landings information.

The mileage reimbursement rate is set by the State of Maine and are not negotiable.

Occasional extended day travel or overnight stays are necessary. If multiple dealer appointments to these remote areas are made for the same day, or appointments are made for consecutive days, extended days have replaced overnight stays to keep budget costs to a minium. The rates were calculated through the GSA website for posted rates. The number of extended days have increased to accommodate the extra trips the Specialists have made for dealer set ups for swipe card reporting and removing the overnight stays.

Supplies: Filing supplies are needed each year. The MEDMR does not require paper dealers to use the supplied bound logbook. Many of our paper dealers download the electronic version of their form from our website. We do accept forms via email, fax or U.S. mail. The bound logbook includes a carbon copy that dealers use for their records, or to resend should the original gets lost in the mail. Many dealers like this carbon copy feature, which is one of the main reasons why we choose to continue to purchase these bound logbooks.

Contract: The Trip Ticket reporting software is custom-made software only available from Bluefin Data LLC and was purchased in a previous grant. This is the only vendor that can provide the software support and maintenance, this is the only outside vendor providing these services to ACCSP and NMFS as well as MEDMR. In this grant segment, this award will pay for a maintenance contract for Bluefin Data LLC to provide backup support, to be available for troubleshooting software problems and provide program upgrades as needed. This program is essential, as seafood dealers in Maine use the software to comply with MEDMR regulations. The information is used by MEDMR, National Marine Fisheries Service and other state agencies for fisheries management. The increase in cost for FY22 reflects that in 2019, NMFS stopped their support agreement with Bluefin and shifted the cost to the dealer. The additional cost will cover all the state-only and "combo" dealers.

Other: Cell phones for the Specialists and the Scientists are necessary for communication and safety when on travel to dealer locations. The Scientist positions are not mentioned in the personnel costs because the positions are paid for with state money (not grant money), although staff members travel while working on this grant award. Staff often needs to call NMFS or Bluefin Data LLC when installing software or troubleshooting reporting issues at the dealer locations. Dealer reporting logbooks are printed every year and distributed to those who opt to report on paper. Some dealers use many logbooks per year, depending on the logbook type they choose and the number of harvesters with which they do business.

Indirect costs: The Department of Marine Resources has an indirect cost rate of 30%. See Attachment 2 for the Negotiated Indirect Cost Agreement.

Year 7 Funding Appendix: The MEDMR is asking for one additional year of funding to help offset budget shortfalls due to the COVID-19 pandemic. At the time of this pre-proposal's submission, MEDMR has been

flat funded for the current biennium budget. These additional funds will allow MEDMR to continue to fund the MR Specialist I position at the same level as the FY21 proposal allowed, and continue to fund dealer reporting software (Trip Ticket and paper reporting) for state and combo (state/federal) dealers. It is the hope of MEDMR that the current COVID-19 issues on budgets will dissipate and MEDMR will have the opportunity to request these additional funds be included in our next state biennium budget in 2023. There will be no unspent funds from our FY20 or FY21 Managing Mandatory Dealer Reporting in Maine grant at the end of the FY21 funding period.

Cost Summary: FY21 Managing Mandatory Dealer Reporting in Maine		
10/1/2021 - 9/30/2022		
Personnel[A]	**Description**	**Cost**
1 Specialist I (Eileen Greenleaf)	full time position for 4 months	15,276.26
	Subtotal	**15,276.26**
Fringe Benefits[A]		
1 Specialist I (Eileen Greenleaf)	Includes health, dental, workers comp, FICA, life insurance and retirement	9,656.43
	Subtotal	**9,656.43**
	Total Personnel	**24,932.69**
Travel		
Mileage Reimbursement	1000 miles @ $0.44/mile	440.00
5 Overnight stays[B]	5* $150/night	750.00
Per diem (includes extended days)	(5 overnights @ $65/day & 12 extended days @$24/day	613.00
	Total Travel	**1,803.00**
Supplies		
Filing Supplies	folders, folder labels, year labels	300.00
Other		
Printing and binding of dealer report forms	500 logbooks * $3.50 per logbook	1,750.00
Postage for logbooks	Mail 500 logbooks * $4.00 per logbook	2,000.00
Postage for info packets and letters	($0.50*300 compliance letters)	150.00
Technology (computer programs, equipment)		350.00
Telecommunication charges[C]	4 phones * $50/mo * 12 mo	2,400.00
	Total Supplies	**6,950.00**
Contractual		
Trip Ticket 1 yr maintenance	$1,120/mo fee * 12 mo	13,440.00
(Software support and upgrades)	**Total Contractual**	**13,440.00**
	Subtotal	**22,193.00**
Total Direct Costs		**47,125.69**
Indirect Costs (30%)		**14,137.71**
Total Award to DMR		**61,263.40**

A: Cost includes salary and benefits, which are dictated by contract with State of Maine and are non-negotiable.
B: DMR staff meet with and train dealers how to electronically report to DMR and/or NMFS.
C: One cell phone for each of the two specialists and one each for the two scientists working on the project.

Partner Contribution For ACCSP Purposes

Scientist IV (15% time)	$9,115
Scientist III (50% time)	$51,837
Scientist II (50% time)	$57,484
Specialist II (75% time)	$59,364
Specialist I (67% time)	$51,906
Office Associate I (15% time)	$11,704
Office Associate II (85%)	$66,654
Elver Mobile Swipe Card Project	$9,500
	$317,564

Budget Narrative for FY-2021 proposal:

Personnel and Fringe Benefits: The Specialist I named in the grant is Eileen Greenleaf. The position is in transition from being fully funded (100%) by this award to only 4 months then MEDMR will assume the remainder of the salary on an annual basis. This position is a Department of Marine Resources' employee. Salary and benefits for this employee are dictated by contract with the State of Maine and are non-negotiable. Benefits include retirement benefits, FICA, health insurance, dental insurance, workers compensation and life insurance. The benefits are determined by a formula the state uses which is variable dependent upon the position classification, the pay grade of the employee (e.g. the number of years the person has been employed by the State of Maine) and type of coverage the employee selects. The total cost for this position is approximately $75,500/year. The remainder of this position is captured within the in-kind calculation.

Travel: The Specialists are the employees who will be travelling. The travel is for visiting dealers to install reporting software, training dealer staff how to electronically report or troubleshooting reporting problems. Staff provide dealers with one-on-one training on these reporting systems and help troubleshoot electronic reporting problems. Travel occurs throughout the coast of Maine, although trips to the interior are not unusual if the dealer headquarters is located inland. These dealers must be trained in the use of electronic reporting and in some cases given reporting software to submit their landings information.

The mileage reimbursement rate is set by the State of Maine and are not negotiable.

Occasional extended day travel or overnight stays are necessary. If multiple dealer appointments to these remote areas are made for the same day, or appointments are made for consecutive days, overnight travel may be necessary. The rates were calculated through the GSA website for posted rates. The breakdown of overnight stays and extended days are now split because their costs are different. The number of extended days have increased to accommodate the extra trips the Specialists have made for dealer set ups for swipe card reporting.

Supplies: Filing supplies are needed each year. The MEDMR does not require paper dealers to use the supplied bound logbook. Many of our paper dealers download the electronic version of their form from our website. We do accept forms via email, fax or U.S. mail. The bound logbook includes a carbon copy that dealers use for their records, or to resend should the original gets lost in the mail. Many dealers like this carbon copy feature, which is one of the main reasons why we choose to continue to purchase these bound logbooks.

Contract: The Trip Ticket reporting software is custom-made software only available from Bluefin Data LLC and was purchased in a previous grant. This is the only vendor that can provide the software support and maintenance, this is the only outside vendor providing these services to ACCSP and NMFS as well as MEDMR. In this grant segment, this award will pay for a maintenance contract for Bluefin Data LLC to provide backup support, to be available for troubleshooting software problems and provide program upgrades as needed. This program is essential, as seafood dealers in Maine use the software to comply with MEDMR regulations. The information is used by MEDMR, National Marine Fisheries Service and other state agencies for fisheries management. The increase in cost for FY21 reflects that in 2019, NMFS stopped their support agreement with Bluefin and shifted the cost to the dealer. The additional cost will cover all of the state-only and "combo" dealers.

Other: Cell phones for the Specialists and the Scientists are necessary for communication and safety when on travel to dealer locations. The Scientist positions are not mentioned in the personnel costs because the positions are paid for with state money (not grant money), although staff members travel while working on this grant award. Staff often needs to call NMFS or Bluefin Data LLC when installing software or troubleshooting reporting issues at the dealer locations. Dealer reporting logbooks are printed every year and distributed to those who opt to report on paper. Some dealers use many logbooks per year, depending on the logbook type they choose and the number of harvesters with which they do business.

Indirect costs: The Department of Marine Resources has an indirect cost rate of 30%. See Attachment 3 for the Negotiated Indirect Cost Agreement. (A new agreement was not available at time of submission, will submit new agreement before final proposal submission).

Cost Summary: FY20 Managing Mandatory Dealer Reporting in Maine			
10/1/2020 - 9/30/2021			
Personnel[A]	**Description**		**Cost**
1 Specialist I (Eileen Greenleaf)	full time position for 12 months		$46,207
		Subtotal	**$46,207**
Fringe Benefits[A]			
1 Specialist I (Eileen Greenleaf)	Includes health, dental, workers comp, FICA, life insurance and retirement		$29,289
		Subtotal	**$29,289**
		Total Personnel	**$75,496**
Travel			
Mileage Reimbursement	2500 miles @ $0.44/mile		$1,100
5 Overnight stays[C]	5* $150/night		$750
Per diem (includes extended days)	(5 overnights + 5 extended days) * $65/day		$650
		Total Travel	**$2,500**
Supplies			
Filing Supplies	folders, folder labels, year labels		$300
Other			
Printing and binding of dealer report forms	500 logbooks * $2.50 per logbook		$1,250
Postage for logbooks	Mail 500 logbooks * $4.00 per logbook		$2,000
Postage for info packets and letters	($0.50*600 compliance letters)		$300
Technology (computer programs, equipment)			$250
Telecommunication charges[D]	4 phones * $40/mo * 12 mo		$1,920
		Total Supplies	**$6,020**
Contractual			
Trip Ticket 1 yr maintenance	$850/mo fee * 12 mo		$10,200
(Software support and upgrades)		**Total Contractual**	**$10,200**
		Subtotal	**$18,720**
Total Direct Costs			**$94,216**
Indirect Costs (30%)			**$28,265**
Total Award to DMR			**$122,480**

A: Cost includes salary and benefits, which are dictated by contract with State of Maine and are non-negotiable.
B: All state agencies must rent vehicles through state's Central Fleet Agency which is non-negotiable. Vehicle costs include the following services and costs: maintenance, repairs, insurance, and gasoline.
C: DMR staff meet with and train dealers how to electronically report to DMR and/or NMFS.
D: One cell phone for each of the two specialists and one each for the two scientists working on the project.

Partner Contribution For ACCSP Purposes

Scientist IV (7% time)	$9,115
Scientist III (50% time)	$51,837
Scientist II (50% time)	$57,484
Specialist II (75% time)	$59,364
Office Associate I (15% time)	$11,704
Office Associate II (100%)	$78,417
Elver Mobile Swipe Card Project	$21,900
	$289,821

Budget Narrative for FY-2020 proposal:

Personnel and Fringe Benefits: The Specialist I named in the grant is Eileen Greenleaf. The position is funded full time (100%) by this award and are a Department of Marine Resources' employee. Salary and benefits for this employee are dictated by contract with the State of Maine and are non-negotiable. Benefits include retirement benefits, FICA, health insurance, dental insurance, workers compensation and life insurance. The benefits are determined by a formula the state uses which is variable dependent upon the position classification, the pay grade of the employee (e.g. the number of years the person has been employed by the State of Maine) and type of coverage the employee selects.

Travel: The Specialists are the employees who will be travelling. The travel is for visiting dealers to install reporting software, training dealer staff how to electronically report or troubleshooting reporting problems. Staff provide dealers with one-on-one training on these reporting systems and help troubleshoot electronic reporting problems. Travel occurs throughout the coast of Maine, although trips to the interior are not unusual if the dealer headquarters is located inland. These dealers must be trained in the use of electronic reporting and in some cases given reporting software to submit their landings information.

The mileage reimbursement rate is set by the State of Maine and are not negotiable.

Occasional extended day travel or overnight stays are necessary. If multiple dealer appointments to these remote areas are made for the same day, or appointments are made for consecutive days, overnight travel may be necessary. The rates were calculated through the GSA website for posted rates.

Supplies: Filing supplies are needed each year. The MEDMR does not require paper dealers to use the supplied bound logbook. Many of our paper dealers download the electronic version of their form from our website. We do accept forms via email, fax or U.S. mail. The bound logbook includes a carbon copy that dealers use for their records, or to resend should the original gets lost in the mail. Many dealers like this carbon copy feature, which is one of the main reasons why we choose to continue to purchase these bound logbooks.

Contract: The Trip Ticket reporting software is custom-made software only available from Bluefin Data LLC and was purchased in a previous grant. This is the only vendor that can provide the software support and maintenance and this is the only outside vendor providing these services to ACCSP and NMFS as well as MEDMR. In this grant segment, this award will pay for a maintenance contract for Bluefin Data LLC to provide backup support, to be available for troubleshooting software problems and provide program upgrades as needed. This program is essential, as seafood dealers in Maine use the software to comply with MEDMR regulations. The information is used by MEDMR, National Marine Fisheries Service and other state agencies for fisheries management.

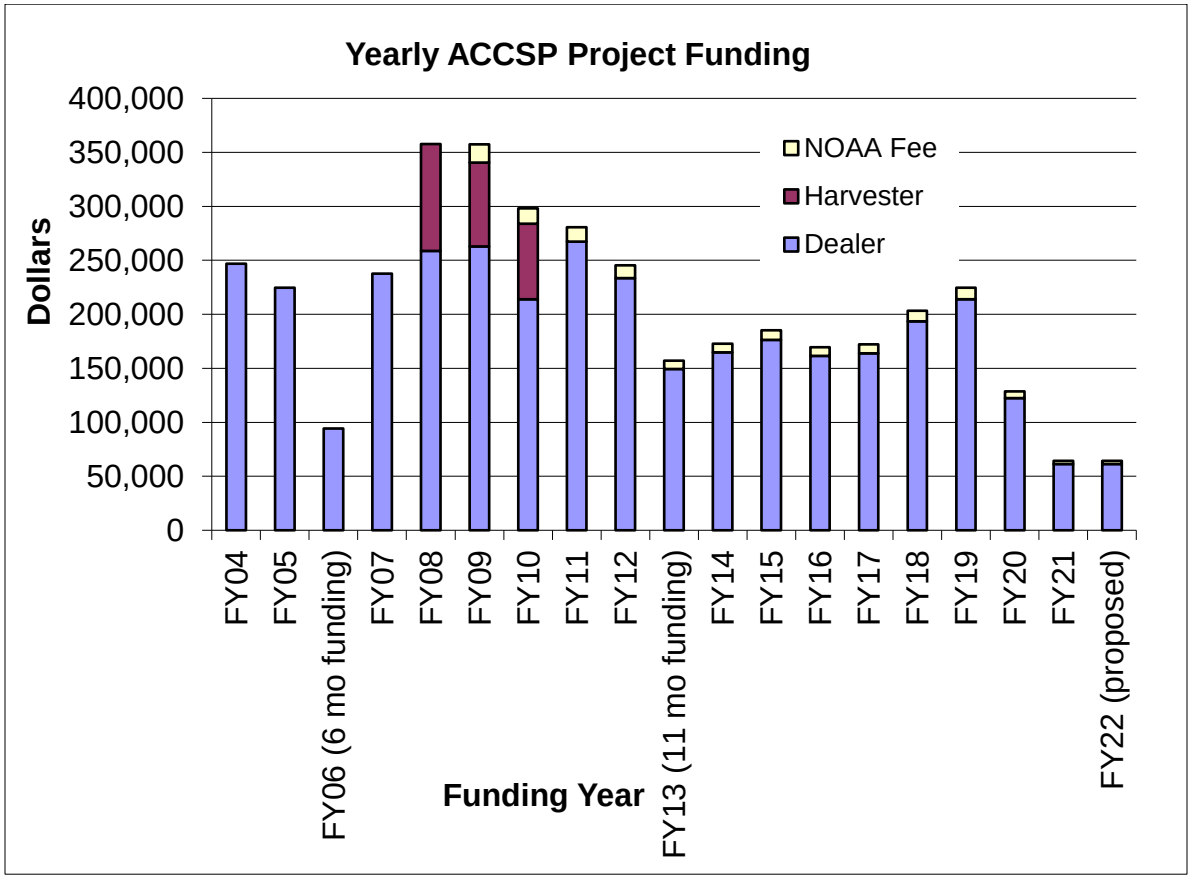
Other: Cell phones for the Specialists and the Scientists are necessary for communication and safety when on travel to dealer locations. The Scientist positions are not mentioned in the personnel costs because the positions are paid for with state money (not grant money), although staff members travel while working on this grant award. Staff often needs to call NMFS or Bluefin Data LLC when installing software or troubleshooting reporting issues at the dealer locations. Dealer reporting logbooks are printed every year and distributed to those who opt to report on paper. Some dealers use many logbooks per year, depending on the logbook type they choose and the number of harvesters with which they do business.

Indirect costs: The Department of Marine Resources has an indirect cost rate of 30%. See Attachment 3 for the Negotiated Indirect Cost Agreement.

Attachment 1: Project History

Fund Year	Title	Cost	Extension through	Actual dates funding covered	Results
2004	Implementation of a Mandatory Dealer Reporting System for Maine Commercial Landings According to ACCSP Standards	$246,965	Apr-06	Jul 2004-Apr 2006 (extension required when Ops Committee asked MEDMR not to hire Office Associate I with this grant and salary savings when Specialist I quit)	Established Reporting Advisory Committee; drafted trip level reporting regulation; extensive outreach with industry including 10 state-wide meetings and 11 industry-specific meeting; worked with SCBI to develop and deploy "Trip Ticket" to state dealers; 1174 dealer visits; recruited dealers to report voluntarily; defeated a legislative bill to stop MEDMR's reporting program; see Completion Report for more info.
2005	Continuation of Implementation of a Mandatory Dealer Reporting System for Maine Commercial Landings According to ACCSP Standards	$224,749	Jun-07	May 2006-Jun 2007 (extension required because FY04 was extended and a Specialist I was promoted in MEDMR, leaving vacant position for a number of months)	Worked with ACCSP to make SAFIS usable for Maine state dealers; began file uploading voluntary dealer data; began collecting voluntary paper trip tickets; 380 dealer visits; 67 dealers actively reporting; worked to modify report options in "Trip Ticket" software to benefit dealers; began phasing out duplicative reporting by dealers; passed comprehensive trip level reporting regulation for all dealers in June 2007 which will give momentum to project.
2006	Interim Support for Mandatory Dealer Reporting in Maine	$94,093	Dec-07	Jun 2007-Dec 2007	Worked to get remaining 404 dealers set up with a trip level reporting method. Notified dealers to begin reporting trip level data as of Jan 1, 2008. Began uploading harvester license & vessel data weekly to SAFIS.
2007	FY07 – Mandatory Dealer Reporting for Maine Commercial Landings	$237,548	8-Oct	Jan 2008 -Oct 2008	Began enforcing trip level reporting; begin audit dealer data; began monthly compliance calls to delinquent dealers; encouraged more electronic reporting; staff entering paper data from 433 dealers and uploading electronic data from 58 dealers.
2008	FY08- Managing Mandatory Dealer and Harvester Reporting in Maine	$357,574	9-Oct	Nov 2008-Sept 2009	Complete 1st year of mandatory dealer reporting regulation; enter, audit and transmit data to ACCSP; year 1 of 10% lobster and dogfish harvester reporting; begin to implement scallop harvester reporting.
2009	FY09 – Managing Mandatory Dealer and Harvester Reporting in Maine	$357,415	10-Nov	Oct 2009-Sept 2010	Complete 2nd year of mandatory dealer reporting; enter, audit and transmit data to ACCSP; year 2 of 10% lobster and dogfish harvester reporting; year 2 of scallop harvester reporting. Enter, audit and transmit data to ACCSP.
2010	FY10- Managing Mandatory Dealer and Harvester Reporting in Maine	$298,129	11-Nov	Oct 2010-Oct 2011	Complete 3rd year of mandatory dealer reporting; enter, audit and transmit data to ACCSP; year 3 of 10% lobster and dogfish harvester reporting; year 3 of scallop harvester reporting. Enter, audit and transmit data to ACCSP.
2011	FY11- Managing Mandatory Dealer Reporting in Maine	$280,605	12-Nov	Aug 2011 – July 2012	Complete 4th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Work on more audits, including dealer data vs. harvester data submitted.
2012	FY12 – Managing Mandatory Dealer Reporting in Maine	$245,303	13-Nov	Aug 2012-July 2013	Complete 5th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Expanding audits, including dealer data vs. harvester data submitted.
2013	FY13- Managing Mandatory Dealer Reporting in Maine	$156,966	14-Oct	Aug 2013-June 2014	Complete 6th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Expanding audits, including dealer data vs. harvester data submitted for different fisheries.
2014	FY14- Managing Mandatory Dealer Reporting in Maine	$164,663		July 2014 – Sep 2015	Complete 7th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Enforce timely reporting with license suspension and implement new swipe card program for elver dealers.
2015	FY15- Managing Mandatory Dealer Reporting in Maine	$176,373		Oct 2015 – Sep 2016	Complete 8th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Enforce timely reporting with license suspension and help develop new swipe card program for multiple fisheries.
2016	FY16- Managing Mandatory Dealer Reporting in Maine	$161,558		Oct 2016 – Sep 2017	Complete 9th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Enforce timely reporting with license suspension and implement new swipe card program for sea urchin dealers.
2017	FY17- Managing Mandatory Dealer Reporting in Maine	$161,001		Oct 2016 – Sep 2017	Complete 10th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Enforce timely reporting with license suspension and continue swipe card reporting for sea urchin and elver dealers.
2018	FY18- Managing Mandatory Dealer Reporting in Maine	$193,516		Oct 2017 – Sep 2018	Complete 11th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Enforce timely reporting with license suspension and continue swipe card reporting for sea urchin and elver dealers.
2019	FY19- Managing Mandatory Dealer Reporting in Maine	$213,951		Oct 2018 – Sep 2019	Complete 12th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Enforce timely reporting with license suspension and continue swipe card reporting for sea urchin and elver dealers.
2020	FY20- Managing Mandatory Dealer Reporting in Maine	$122,480		Oct 2019 – Sep 2020	Complete 13th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Enforce timely reporting with license suspension and continue swipe card reporting for sea urchin and elver dealers.
2021	FY21- Managing Mandatory Dealer Reporting in Maine	$61,263		Oct 2020 – Sep 2021	Complete 14th year of mandatory dealer reporting; enter, audit and transmit data to ACCSP. Enforce timely reporting with license suspension and continue swipe card reporting for sea urchin and elver dealers.

Attachment 2: Yearly Breakdown of ACCSP Funding



Attachment 3: Negotiated Indirect Cost Agreement and Letter of Acknowledgement

U.S. Department of Commerce
Office of Acquisition Management – Grants Management Division
1401 Constitution Ave., NW, HCHB Rm 6412
Washington, DC 20230, Attn: Indirect Cost Program

CERTIFICATE OF INDIRECT COSTS

This is to certify that I have reviewed the indirect cost rate proposal prepared and maintained herewith and to the best of my knowledge and belief:

(1) All costs included in this proposal dated 3/18/20 to establish indirect cost billing rates for July 1, 2019 through June 30, 2020 are allowable in accordance with the requirements of the federal awards to which they apply and 2 CFR Part 200 , "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards". This proposal does not include any costs which are unallowable as identified in the applicable federal cost principles. For example, advertising contributions and donations, bad debts, entertainment costs or fines and penalties.

(2) All costs included in this proposal are properly allocable to federal awards on the basis of a beneficial or causal relationship between the expenses incurred and the agreements to which they are allocated in accordance with applicable requirements. Further, the same costs that have been treated as indirect costs have not been claimed as direct costs. Similar types of costs have been accounted for consistently and the Federal Government will be notified of any accounting changes that could affect the rate.

(3) The indirect cost rate calculated within the proposal is 34.30%, which was calculated using an indirect cost rate base type of Modified Total Direct Costs. The calculations were based on actual costs from fiscal year July 1, 2018 thru June 30, 2019 to obtain a federal indirect cost billing rate for fiscal year beginning July 1, 2019.

Subject to the provisions of the Program Fraud Civil Remedies Act of 1986, (31 USC 3801 et seq.), the False Claims Act (18 USC 287 and 31 USC 3729); and the False Statement Act (18 USC 1001), I declare to the best of my knowledge that the foregoing is true and correct.

Organization Name: State of Maine, Department of Marine Resources

CFO Signature: Gilbert Bilodeau Date: 3/18/2020

Name/Title Authorized Official: Gilbert M. Bilodeau, Director, Natural Res Ser Ctr

Dept Head Signature: Date: 03/18/2020

Name/Title Authorized Official: Patrick Keliher, Commissioner

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ACQUISITION AND GRANTS OFFICE

August 10, 2020

Mr. Brandon Flint
Managing Staff Accountant
Natural Resources Service Center
155 State House Station
Augusta, ME 04333

Dear Mr. Flint:

This letter supersedes the previous letter dated May 1, 2020 concerning this subject, and confirms that no further action is required under Department of Commerce Financial Assistance Standard Term & Condition A.05, Indirect Costs. Pursuant to OMB regulation 2 CFR Part 200, your organization is not required to submit an indirect cost allocation proposal or plan narrative to its cognizant agency. These plans are to be prepared and retained at the local government level. OMB regulation 2 CFR Part 200, Appendix V Il, par. D states, in part:

All department or agencies of the governmental unit desiring to claim indirect costs under Federal awards must prepare an indirect cost rate proposal and related documentation to support the costs. The proposal and related documentation must be retained for audit in accordance with the records retention requirements contained in the Common Rule.

When actual costs are known at the end of your fiscal year, you are required to account for differences between estimated and actual indirect costs by means of either: a) making an adjustment to the next year's indirect cost rate calculation to account for carry-forward (the difference between the estimated costs used to establish the rate and the actual costs of the fiscal year covered by the rate); or b) making adjustments to the costs charged to the various programs based on the actual charges calculated. Since OMB regulation 2 CFR Part 200 requires the independent auditor to determine the allowability of both direct and indirect costs, the organization's indirect cost charges will be subject to audit.

It is important to note that your organization is still required to submit to the Grants Management Division of the National Oceanic and Atmospheric Administration (NOAA) an annual Certificate of Indirect Costs. NOAA acknowledges receipt of your most recent certificate, submitted March 18, 2020 pertaining to your rate of 34.30% for Fiscal Year 2020. Additionally, your request to move to a two-year fixed rate with carry-forward schedule, is approved. Given this, the aforementioned indirect cost rate of 34.30% is also applicable for Fiscal Year 2021.

The submission of the Certificate of Indirect Costs is due to our office within six (6) months after the close of your fiscal year.

A copy of this letter will be retained in your official award file. If you have any questions, please contact Lamar Revis at 301.628.1308 or at lamar.revis@noaa.gov. Thank you.

Sincerely,

Lamar Dwayne Revis

Arlene Simpson Porter
Director, Grants Management Division

Department of Marine Resources

INTEROFFICE MEMORANDUM

TO: FILE

FROM: PATRICK KELIHER, COMMISSIONER

SUBJECT: RATE USED FOR COST ALLOCATION

DATE: 5/17/21

In accordance with OMB Circular A-87, the Department of Marine Resources has submitted to the U.S. Department of Commerce a departmental cost allocation plan for use during state fiscal year 2019 ending June 30, 2019. The indirect cost rate proposal is 34.30%. I am authorizing the use of the lesser rate of 30% to be used during this period.

ACCSP
"FY22: Managing Mandatory Dealer Reporting in Maine"
(Oct 1, 2022 – Sept 30, 2023)

Patrick Keliher, Commissioner 5/26/21

Attachment 4: Authority to Suspension Licenses for Delinquent Reporters

An Act to Improve the Quality of the Data Used in the Management of Maine's Fisheries

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 12 MRSA §6301, sub-§6 is enacted to read:

6. Ownership identified. If a license issued under chapter 625 is issued to a firm, corporation or partnership, the individual who owns the highest percentage of that firm, corporation or partnership must be identified on the license application. When 2 or more individuals own in equal proportion the highest percentages of a firm, corporation or partnership, each of those owners must be identified.

Sec. 2. 12 MRSA §6412 is enacted to read:

§ 6412. Suspension of license or certificate for failure to comply with reporting requirements

1. Authority to suspend. The commissioner, in accordance with this section, may suspend a license or certificate issued under this Part if the holder of the license or certificate fails to comply with reporting requirements established by rule pursuant to section 6173. A license or certificate suspended under this section remains suspended until the suspension is rescinded by the commissioner. The commissioner shall rescind a suspension when:

A. The commissioner determines and provides notice to the holder of the suspended license or certificate that the holder has come into compliance with the reporting requirements established by rule pursuant to section 6173; and

B. The holder pays to the department a $25 administrative fee.

When a suspension is rescinded, the license or certificate is reinstated. Until the suspension is rescinded, the holder of the suspended license or certificate is not eligible to hold, apply for or obtain that license or certificate.

2. Process for suspension for failing to comply with weekly reporting. If the commissioner determines that a person who holds a license or certificate under this Part has failed to comply with a weekly reporting requirement established by rule pursuant to section 6173, the commissioner shall notify the person at the telephone number provided on the application for the license or certificate and by e-mail if an e-mail address is provided on the application. If the license or certificate holder has not complied with the reporting requirements within 2 days after the commissioner has provided the notice, the commissioner shall mail a notice of suspension to the license or certificate holder by certified mail or the notice must be served in hand. The notice must:

A. Describe the information that the license or certificate holder is required to provide pursuant to this Part that the department has not received; and

B. State that, unless all the information described in paragraph A is provided to the department or the license or certificate holder requests a hearing, the license or certificate will be suspended in 3 business days after the license or certificate holder's receipt of the notice.

If the license or certificate holder has not complied with the reporting requirements or requested a hearing within 3 business days after receipt of the notice, the commissioner shall suspend the license or certificate.

3. Process for suspension for failing to comply with monthly reporting. If the commissioner determines that a person who holds a license or certificate under this Part has failed to comply with a monthly reporting requirement established by rule pursuant to section 6173, the commissioner shall notify the person at the telephone number provided on the application for the license or certificate and by e-mail if an e-mail address is provided on the application. If the license or certificate holder has not complied with the reporting requirements within 45 days after the commissioner has provided the notice,

the commissioner shall mail a notice of suspension to the license or certificate holder by certified mail or the notice must be served in hand. The notice must:

A. Describe the information that the license or certificate holder is required to provide pursuant to this Part that the department has not received; and

B. State that, unless all the information described in paragraph A is provided to the department or the license or certificate holder requests a hearing, the license or certificate will be suspended in 3 business days after the license or certificate holder's receipt of the notice.

If the license or certificate holder has not complied with the reporting requirements or requested a hearing within 3 business days after receipt of the notice, the commissioner shall suspend the license or certificate.

4. Hearing. A license or certificate holder receiving a written notice of suspension pursuant to this section may request a hearing on the suspension by contacting the department within 3 business days of receipt of the notice. If a hearing is requested, the suspension is stayed until a decision is issued following the hearing. The hearing must be held within 3 business days of the request, unless another time is agreed to by both the department and the license or certificate holder. The hearing must be conducted in the Augusta area. The hearing must be held in accordance with:

A. Title 5, section 9057, regarding evidence, except the issues are limited to whether the license or certificate holder has complied with reporting requirements established by rule pursuant to section 6173;

B. Title 5, section 9058, regarding notice;

C. Title 5, section 9059, regarding records;

D. Title 5, section 9061, regarding decisions, except the deadline for making a decision is one business day after completion of the hearing; and

E. Title 5, section 9062, subsections 3 and 4, regarding a presiding officer's duties and reporting requirements, except that notwithstanding Title 5, section 9062, subsection 1, the presiding officer must be the commissioner or the commissioner's designee.

Summary of Proposal for ACCSP Ranking

Proposal Type: Maintenance

Primary Program Priority and Percentage of Effort to ACCSP modules:

Catch and Effort (10 points): 100% of licensed dealers must report trip level information on 100% species they purchase from harvesters.

Social and Economic (2 points): The data collected by 100% of licensed dealers collects the majority of fields required for commercial fisheries.

Data Delivery Plan (2 Points): All electronic data are submitted into SAFIS daily. All data reported on paper reports are entered into MEDMR's MARVIN database and will be sent to the ACCSP Data Warehouse on at least a bi-annual basis after all data have been thoroughly audited.

Project Quality Factors:

Regional Impact (5 Points): all partners will benefit, as all the data collected will be uploaded to ACCSP. Regional management organizations, such as ASMFC, will benefit from the trip level information from Maine. Partners may also benefit from the technologies/procedures tested in the elver swipe card/mobile app reporting project. MEDMR contracted to have a mobile app built for dealers to use in conjunction with swipe card technology and required elver dealers to use since the 2014 season. MEDMR paid for all start-up costs associated with this project and shared findings with ACCSP.

Funding transition plan (4 Points): through MEDMR's reorganization, the cost of two positions was absorbed by state and MEDMR is no longer asking for funding for salary and benefits. MEDMR also funds the Office Associate II that is responsible for license suspensions for those who fail to report, and all costs associated with that additional position. MEDMR paid for the development of a "limited species" version of the Trip Ticket software and a mobile app that will be used in conjunction with harvester swipe cards for elver dealers to report with swipe card technology. MEDMR will pay for the ongoing monthly maintenance fee associated with this program. Currently, the MEDMR does not have any plans to require electronic reporting for all fisheries. Geographical restrictions prevent all dealers from having reliable high-speed internet access at this time.

In-kind Contribution (4 Points): the partner contribution is listed on page 12.

Improvement in Data Quality/Timeliness (4 Points): MEDMR can audit data at a more detailed level, including checking dealer reported data against harvester reported data. MEDMR encourages reporting timeliness through outreach with dealers and is working with Marine Patrol to ensure industry understands the importance of submitting accurate and timely information. The Maine State Legislature also passed a new law that authorizes license suspensions for those who fail to report on time which will improve the timeliness and quality of the data submitted. MEDMR mandated electronic reporting through a swipe card system for the elver fishery starting with the 2014 season and in 2015 started requiring dealer to dealer transactions. In 2016 MEDMR required sea urchin dealers to report through swipe cards, which improved timeliness and data quality.

Potential secondary module as a by-product (in program priority order) (3 points): This project has led to the development of swipe card reporting which has proven to be a great data collection tool. This project helped develop eDR mobile which was used to successfully collect timely data and change how the MEDMR manages a fishery.

Impact on Stock Assessment (3 Points): Regional management organizations which carry out stock assessments will benefit from the detailed landings data reported from Maine. This information is used in stock assessments for many species that are managed by regional agencies.

Properly Prepared (1 Points): MEDMR followed ACCSP guidelines and pertinent documents when preparing this proposal.

Merit (3 points): This proposal allows MEDMR to comply with mandatory ASMFC requirements. The MEDMR currently provides more data to the data warehouse than any other state and accounts for over 31% of all records landed in the Data Warehouse. MEDMR are always looking for ways to collect data in a timely and efficient manner.

Summary of Proposal for ACCSP Ranking (Abridged Ranking Process)

Properly Prepared (1 Points): MEDMR followed ACCSP guidelines and pertinent documents when preparing this proposal.

Merit (3 points): This proposal allows MEDMR to comply with mandatory ASMFC requirements. The MEDMR currently provides more data to the data warehouse than any other state and accounts for over 21% of all records landed in the Data Warehouse. MEDMR are always looking for ways to collect data in a timely and efficient manner.

Achieved Goals (3 points): The MEDMR has always achieved the goals they have outlined in their proposals. Current goals for this grant cycle have been clearly outlined and how MEDMR intends to achieve have been discussed within this proposal.

Data Delivery Plan (2 Points): All electronic data are submitted into SAFIS daily. All data reported on paper reports are entered into MEDMR's MARVIN database and will be sent to the ACCSP Data Warehouse on at least a bi-annual basis after all data have been thoroughly audited.

Level of Funding (1 Point): The MEDMR are asking for the exact amount of the mandated 33% cut. The decrease was achieved by removing two thirds of a full-time position from the grant. The MEDMR still has a larger in-kind contribution than what is being asked for in this grant proposal.

Robert B. Watts II
Maine Department of Marine Resources
(207) 633-9412
rob.watts@maine.gov

June, 2021

PROFILE:

- Knowledge of Maine and federal regulations pertaining to commercial fishing and associated reporting requirements through working with the Department of Marine Resources and the National Marine Fisheries Service.
- Knowledgeable of Maine's fishing industries and how they operate.

EDUCATION:

B.S. Marine Science, Maine Maritime Academy, Castine, ME 2002

EMPLOYMENT EXPERIENCE:

May 2016 – Present **Marine Resource Scientist III**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.
- Oversees DMR's landings suspension authority and process.
- Oversees DMR's swipe card reporting program.
- Oversees MEDMR's MARVIN database.
- Maintains dealer and harvester auditing databases.
- Oversaw Maine's Interactive Voice Response (IVR) reporting program (IVR reporting ended in 2019)
- Serves as key contact for Maine commercial landings information.
- Promotes Maine's partnership with Atlantic Coastal Cooperative Statistical Program (ACCSP), serving on the Operations Committee, Commercial Technical Committee, Information Systems Technical Committee, Standard Codes Committee and Outreach Committee; working to bring the Landings Program into compliance with ACCSP standards.

Jan 2014 – Jan 2016 **Marine Resource Scientist III (Acting Capacity)**
June 2015 – Apr 2016 **Marine Resource Scientist II**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.

- Oversees DMR's landings suspension authority and process.
- Oversees DMR's swipe card reporting program.
- Maintains dealer and harvester auditing databases.
- Oversees Maine's Interactive Voice Response (IVR) reporting program.
- Serves as key contact for Maine commercial landings information.
- Promotes Maine's partnership with Atlantic Coastal Cooperative Statistical Program (ACCSP) through serving on the Commercial Technical Committee, Information Systems Technical Committee and Outreach Committee; working to bring the Landings Program into compliance with ACCSP standards.

Feb 2012 – Apr 2015 **Marine Resource Scientist I**
Maine Department of Marine Resources

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises five Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.
- Oversees outreach to industry.
- Maintains dealer and harvester auditing databases.
- Oversees Maine's Interactive Voice Response (IVR) reporting program.
- Serves as key contact for Maine commercial landings.

Oct 2007 – Jan 2012 **Marine Resource Specialist II**
Maine Department of Marine Resources

- Oversee daily operations of the harvester landings program.
- Notify new harvesters about reporting requirements.
- Maintain databases used for data audits and data entry.
- Monitor reporting compliance database and notifies harvesters if they are delinquent.
- Supervise two Landings Program personnel.
- Oversees IVR reporting.
- Prepare data requests from various sources

Jul 2005 – Oct 2007 **Marine Resource Specialist I**
Maine Department of Marine Resources

- Interviewed marine recreational anglers all over the Maine coast to help determine fish stocks. Identified, weighed, measured and recorded fish caught by anglers.
- Created publications, updated regulation handouts and updated the recreational fishing website as needed.

May 2001 – Jun 2005 **Conservation Aid**
Maine Department of Marine Resources

- Interviewed marine recreational anglers all over the Maine coast to help determine fish stocks. Identified, weighed, measured and recorded fish caught by anglers.
- Acted as a liaison between the State of Maine and the recreational anglers, answered anglers questions about fishing regulations.

Lessie White Jr.
Maine Department of Marine Resources
(207) 633-9509
lessie.l.white@maine.gov

June, 2021

PROFILE:

- Knowledge of tracking systems and applications to retrieve fishing intensity.
- Knowledge of and working relationship with many fishing industries in Maine.

EDUCATION:

M.S. Marine Biology, University of Maine/Orono Campus, Orono, ME 2000
B.S. Marine Science/Biology, Long Island University/Southampton Campus, Southampton, NY 1997

EMPLOYMENT EXPERIENCE:

Jul 2016 – Present **Marine Resource Scientist II**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.
- Oversees DMR's landings suspension authority and process.
- Oversees DMR's swipe card reporting program.
- Maintains dealer and harvester auditing databases.
- Oversees Maine's Interactive Voice Response (IVR) reporting program.
- Serves as key contact for Maine commercial landings information.

Jul 2000 – Jul 2016 **Marine Resource Scientist I**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Implemented the RockSeven tracker project; Tracked boats using GPS trackers to determine fishing activity; Worked with Rock Seven to develop application to show fishing intensity at different speed ranges; Managed the funds;
- Participated in Locus Traxx project; Tracked boats using GPS trackers to determine daily movement and fishing activity; Checked for daily trip reports of fishing activity; Called fishermen to confirm fishing activity; Constructed a spreadsheet to show the performance of the on board reporting system.
- Responsible for implementation of the sea urchin and shrimp port sampling programs; Coordinating sampling schedule; Supervised employee during winter months; Conduct interviews; Collect samples; Process samples in the field and in the lab; Run data quality checks; Maintaining sampling gear; Train other scientists in urchin and shrimp procedures for working up sample; Data analysis on Maine, Massachusetts and New Hampshire's shrimp data; Participate in the stock assessment for shrimp.

- Participated in scallop, quahog and sea cucumber port sampling program; Sample catches at the docks; Interview the vessel captains for fishing and effort information; Process samples.
- Participated in a Fishing Gear Technology Working Group trying to look at all gear technology advancements for all fisheries; my primary focus was shrimp and lobsters.
- Participated in a Trawl Gear Workshop entitled "Working Together to Improve Fishing Technology". This workshop looked at different ways to improve otter trawl selectivity through technological advances in materials and trawl designs.
- Participated in Bycatch in Northeast Fisheries: Moving Forward Workshop, where I participated at observing the roadblocks facing researchers and fishermen in trying to get new gear technology into fisheries management.
- Was responsible for shrimp logbook program; Distributing logbook forms; Developing a database to track compliance; Direct contact with fishermen to obtain correct entries; Answer any question the fishermen may have related to the logbook program.
- Participate in lobster sea sampling and ventless survey trips; Measure carapace length; Determine sex; Determine cull code; Determine V notch code; Determine egg classification code; Determine molt; Determine shell disease prevalence; Interviewing the vessel captains for fishing and effort information; Enter data into database.
- Participate in the summer shrimp trawl survey as lead shrimp biologist to assess the status of the stock; Train other scientists in shrimp identification, sex and stage identification, and procedures for working up samples; Work on a limited basis with FSCS (Fisheries Scientific Computing System).
- Implemented whiting gear research; supervised two contract positions; Observed and sorted the catch; Processed catch; analyzed data.
- Acted as DMR liaison and lead scientist on the NEC New Generation Trawl groundfish gear project. This included supervising four contract positions and two observer positions, overseeing data collection, collecting data, data entry, data checking, data analysis and writing the final report.
- Implemented the shrimp combination grate and cod end research; Sorted, identified, and measured the catches; Data analysis; Partial report writing; used underwater camera to video shrimp grate in action. Supervised one contract position.
- Participated as a member of the New England Fishery Management Council's Plan Development Team for deep-sea red crabs; Assisting in the initial development of a Fishery Management Plan for deep-sea red crabs.
- Participated as an observer in the experimental Atlantic halibut fishery; conducted a literature search on the tagging methods in the halibut fishery.
- Implemented a green crab trapping experiment looking at catchability, retention and cost of five different traps; Looked at converting current gear with the least amount of effort and cost; Set up sampling schedule and area; obtained the equipment; ran the experiments; partial data analysis.

Oct 1997 – Dec 2000 **Graduate Student Research**
University of Maine/Orono Campus
Orono, ME

- Graduate research project on cod energetics; Ran a small closed water aquaculture system; Raised larval and juvenile cod; Raised live food for larval cod; Conducted water quality tests; Gave presentations; Analyzed data; Did minor repairs and cleaned system; Gave tours.

Erin L. Summers
Maine Department of Marine Resources
(207) 633-9556
erin.l.summers@maine.gov

June, 2021

Profile:

- Work collaboratively with state, federal, academic, conservation, and industry partners to reduce whale entanglements
  and mortality in marine mammals and sea turtles through bodies such as the Atlantic Large Whale Take Reduction team and Atlantic Large Whale Disentanglement Network.
- Build research programs to provide baseline data on large whale life history, ecology, and habitat use in Maine's coastal rocky bottom habitats. Design new and emerging methodologies to inform management decisions.
- Oversee research and monitoring programs within the Division of Biological Monitoring at DMR, including the lobster programs, surveys for scallops, sea urchin, shrimp, and herring, recreational fisheries program, inshore trawl survey, and the landings and reporting group.
- Represent the Department of Marine Resources in stakeholder meetings, including those for wind energy permitting, Natural Resource Damage Assessments, department wide research and priority setting, etc.
- Member of the Atlantic Scientific Review Group advising NOAA Fisheries on marine mammal stock assessments

Education:

MA Biology: Boston University Marine Program	Woods Hole, Ma.	5/02
BA Biology, Spanish minor: Truman State University	Kirksville, Mo.	5/00

Employment:

Jan 2017 – present: **Marine Resource Scientist IV**
Maine Department of Marine Resources
West Boothbay Harbor, Me

- Oversee Division of Biological Monitoring, including Commercial Landings Program, Benthic group (lobster, scallops, urchins), and Pelagic group (herring, groundfish, shrimp, and recreational fishing)
- Lead Scientist for DMR's Large Whale Conservation Program
- Member of the Atlantic Large Whale Take Reduction Team

Feb 2006 – Jan 2017: **Marine Resource Scientist II**
Maine Department of Marine Resources

- Lead scientist for DMR's Large Whale Conservation Program
- Secured grant funding, wrote reports, tracked budgets to support research projects
- Completed projects to support management decisions for the Atlantic Large Whale Take Reduction Plan, including tagging humpback whales, right whale habitat surveys, passive acoustic surveys, gear density surveys, testing alternative fishing gear, characterizing fishing practices, etc.
- Oil Spill Response Coordinator
- Assist with GIS coordination

Jan 2010 – May 2010: **Adjunct Faculty**
Unity College
Unity, Me

- Taught upper level course in the biology of Marine Mammals

Feb 2004 – Feb 2006: **Marine Mammal Research Specialist**
University of New England
Biddeford, Me

- Lead Research technician on project to track and predict right whale habitat use and distribution
- Analysis of remotely sensed data and right whale sightings in the Bay of Fundy Critical Habitat
- Assisted with report writing and budget tracking
- Completed project and published paper analyzing right baleen using stable isotope analysis
- Completed project and published papers satellite tagging and tracking basking sharks off the coast of New England

Sept 2002 – Feb 2004: **Research Technician**
Cetacean and Sea Turtle Team, NOAA Fisheries Service
Beaufort, NC

- Lead technician tracking and analyzing movements of satellite tagged dolphins
- Perform field work including fishing gear and dolphin aerial surveys, boat-based dolphin biopsy and photo-identification surveys, satellite tagging dolphins, responding to standings, etc.
- Participate in necropsies as needed

Oct 2000 – June 2002: **Laboratory Technician**
Marine Biological Laboratories
Woods Hole, Ma

- Manage daily operations of the laboratory of marine veterinarian, Roxanna Smolowitz
- Run experiments and document methodologies and results
- Prepare media, samples, histology slides, and other lab bench work

STATE OF MAINE
DEPARTMENT OF
MARINE RESOURCES
MARINE RESOURCES LABORATORY
P.O. BOX 8, 194 MCKOWN POINT RD
W. BOOTHBAY HARBOR, MAINE 04575-0008

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

Atlantic Coastal Cooperative Statistics Program
Operation and Advisory Committee
1050 N. Highland Street, Suite 200A-N
Arlington, VA 22201

August 16, 2022

We are pleased to submit the revised proposal entitled **"Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries"**

This is a maintenance proposal that has not changed its scope from the previously funded project in 2021. The top priority is the biological sampling of the Atlantic herring and Atlantic menhaden commercial fishery because the information derived has critical value on the health of herring and menhaden populations.

We have addressed all the general comments and have had no specific comments for this year. We did, however, add a paragraph for clarity in the Need section. Changes from the original proposal are highlighted in yellow as directed.

Dr. Matthew Cieri and Erin Summers

Proposal for Funding made to:
Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street, Suite 200A-N
Arlington, VA 22201

Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries

Total Cost: $26,253.50

Submitted by:

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Applicant Name: Maine Department of Marine Resources (MEDMR)

Principal Investigator: Matthew Cieri, Marine Resource Scientist

Project Title: Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries

Project Type: Maintenance Project

Requested Award Period: One year after receipt of funds

Change in Scope/Cost from Previous Year Project:
This is a maintenance proposal that has not changed its scope from the previously funded project in 2021 The overall cost is slightly more than the FY21 final award amount due to projected increased costs in milage and vehicle costs.

Objectives:

To maintain and expand the biological sampling of primarily the Atlantic herring commercial fishery including Atlantic menhaden and mackerel and other incidentally retained species of interest.

A secondary objective is to continue the portside bycatch sampling for trips targeting Atlantic herring.

Need:
Atlantic herring and Atlantic menhaden are important forage and bait species with fisheries from Maine to North Carolina in the US. A recent benchmark for Atlantic herring found declining stock size and an overfished designation which resulted in much lower quotas through 2022 when compared to recent history. Each of the focus pelagic fisheries has recently become the subject of management action because of their status as forage species and because of potential bycatch problems associated with the directed fishery. In particular, Atlantic herring and Atlantic menhaden have been the focus of the emerging trend towards ecosystem management. Additionally, the commercial catch sampling portion of this project covers four important species River herring (*Alosa sp.*), Atlantic menhaden (*Brevoortia tyrannus*), Spiny dogfish (*Squalus acanthias*), and Shad (*Alosa sapidissima*)

Atlantic herring *(Clupea harengus)*, Atlantic menhaden (*Brevoortia tyrannus*), and Atlantic mackerel (*Scomber scombrus*) are three of the most ecologically and economically important fish species in the western Atlantic. All three are high volume, low-value species utilized for bait, reduction, or human consumption. The three species are oceanic plankton-feeding fish that occur in large schools, inhabiting coastal and continental shelf waters from Labrador to Florida. These species provide a significant forage base for other fish species, marine mammals, and birds. Atlantic herring landings in 2020 (the last year that NMFS data was available) were reported at approximately 9,368.5 mt with an estimated value above $2.3 million; the result of drastically reduced quotas. In addition to the direct economic contribution of herring landings, this fishery supports a domestic value-added industry worth approximately $15 million, and the North Atlantic lobster fishery which is estimated at over $500 million. Atlantic mackerel landings in 2020 were reported as approximately 8,215 mt with an estimated value above $9 million. The domestic value-added industry (frozen whole fish) for mackerel, based in Cape May, NJ, and Fall River, New Bedford, and Gloucester, MA, is estimated at $14 million. The Atlantic menhaden 2020 catch was ~191,000 mt valued at ~$90 million. Generally, 35-40% of all menhaden are landed for bait.

This study will continue the biological commercial catch sampling of Atlantic herring, Atlantic mackerel, and Atlantic menhaden. Additionally, other species of interest, such as dogfish, both river herring species, and shad will be sampled as they are routinely encountered in this study.

This proposal will also continue to survey bycatch during trips targeting Atlantic herring using the protocols developed over the last decade of sampling. Approximately seventy percent (70%) of project resources are needed

to carry out the first and prime objective (or module) of the sampling portion of the project while thirty percent (30%) of resources are needed for the bycatch module.

Since this proposal was first submitted, we have carried over the FY 2020 award to FY 2021. We anticipate that all of the FY 2021 award and unspent FY 2020 carried over into FY 2021 will be spent before the start of the FY 2022 sampling season. In the event a resurgence in COVID-19 prevents full utilization of these funds, we anticipate extending any unspent award from FY 2021 into FY 2022. As FY 2022 is the final year of this project, any unspent FY 2022 award will be either returned to ACCSP or be used to sample the summer-autumn sampling spawning season for herring and menhaden, at ACCSP's discretion. Given the recent activity in fishing effort targeting menhaden in the Gulf of Maine over the past two years and the projected increase in herring landings in FY 2022, we do not anticipate any remaining award at the end of FY 2022.

Commercial catch sampling of Atlantic herring, Atlantic mackerel, and Atlantic menhaden

MEDMR has collected and processed Atlantic herring commercial catch samples since 1960. A significant focus of this proposal is a continuation of the commercial catch sampling program for Atlantic herring along the east coast. MEDMR maintains primary responsibility for the fishery-dependent sampling of the east coast Atlantic herring fishery. Duties include processing biological samples, compiling catch data, and constructing the catch at age matrix for the age-structured model. Currently, staffing and financial limitations prevent MEDMR from providing adequate commercial catch sampling coverage without ACCSP support. Furthermore, NMFS has reduced port agents and other staff, such that biological sampling of herring has become a lower priority. To improve the commercial catch sampling program, MEDMR has supported a dedicated northeast herring sampler who covers fishery landings from NJ through Maine.

The Atlantic herring fishery has recently undergone significant management changes as a result of federal action through Amendment 8. Also, a large reduction in both quotas and stock status was implemented in 2019. A recent update to the Atlantic herring benchmark assessment has also revealed a potential re-emergence of a retrospective pattern. Such a pattern for Atlantic herring tends to overestimate spawning stock biomass and underestimate fishing mortality in the terminal year. While changes to selectivity and natural mortality may be the cause of this pattern, age discrepancies between fishery dependent and commercial catch sampling may also play a role. As such, continued commercial catch sampling will be vital in the potential resolution of this issue

Without ACCSP support, samples would not be collected or aged, resulting in no catch-at-age information for the assessment. Atlantic herring would move from an age-structured stock assessment to one developed for data-poor species and would be categorized as a data-poor species in need of sampling. Because ACCSP has funded this project, however, Atlantic herring are currently adequately sampled and are not scored by ACCSP. Given the most recent management changes, changes in the most recent stock assessment, ongoing litigation, and the importance to both state and federal partners, Atlantic herring would have scored very high in the process had it been part of the scoring.

Although ACCSP has not identified Atlantic mackerel as a priority, commercial catch sampling should be important given recent changes to the Squid, Mackerel, and Butterfish Plan as implemented by the Mid-Atlantic Council. Further mackerel has transitioned to an age-structured assessment, further increasing the importance of fishery-dependent sampling for this stock. Like Atlantic herring, fleet behavior may change markedly, as a result of bycatch quotas recently implemented for River herring and ongoing discussions between Mid-Atlantic and New England Councils on incidental catch limits of Atlantic herring. Traditionally the commercial mackerel catch was sampled by NMFS; however, due to the closure of port offices and limited personnel, current mackerel sampling is limited. With the existing and predicted growth in the domestic mackerel harvest, additional sampling is necessary to adequately cover the fishery.

Since 2016 Atlantic menhaden have been increasing in numbers in Maine state waters. As a result of this, and a lack of herring being landed from all areas, Maine landings have increased for this important baitfish. Because of this, Maine has increased its biological sampling program for this species to both fulfill ASMFC sampling objectives and to provide valuable fishery-dependent data for the stock assessment.

Continued commercial catch sampling has been put forth as imperative research need in the most recent menhaden assessment. Further importance has been placed on increased commercial catch sampling in the northern portions of the

stock's range and the bait fishery in general. This is particularly important as the menhaden assessment team analyzes changes in selectivity resulting from changes in state-by-state allocation of the resource.

As the Atlantic herring, Mackerel, and Menhaden fisheries encounter bycatch, this project also samples all species encountered during either the bycatch or commercial catch sampling modules. Four species River herring (*Alosa sp.*), Atlantic menhaden (*Brevoortia tyrannus*), Spiny dogfish (*Squalus acanthias*), and Shad (*Alosa sapidissima*), are routinely encountered and samples for length, weight, and otolith/scales are forwarded to other institutions for age analysis.

Continued bycatch sampling

During at-sea operations NMFS observers use basket sampling to document the occurrence of other species during targeted Atlantic herring and mackerel trips. These non-target species are then included in the data as retained or "Kept" (http://www.nefsc.noaa.gov/fsb/manuals/2013/NEFSC_Observer_Program_Manual.pdf). Normally, ten 50 lb. basket sub-samples are taken at regular intervals during the pumping process from the net to hold. These samples are then checked for bycatch and the results expanded. Because the Atlantic herring fishery is a high volume fishery much of the bycatch is retained during the pumping process, particularly for co-occurring pelagic species such as river herring.

Until the spring of 2011 MEDMR port sampling procedure measured bycatch using a "lot" (~40,000 lbs.) approach. Lot sampling involves looking intensively at a portion of a vessel's landings and then extrapolating those results to the entire offload. This sort of sampling contrasts that done by NMFS and MADMF, which takes regularly spaced basket subsamples during pumping.

Analysis of more than ten years (2005-2014) of both portside and at sea bycatch data and results from the DMR, DMF, and NMFS databases revealed that "lot" sampling, as MEDMR had been conducting it, was not useful when comparing the portside and at-sea programs. The reasoning behind this stems from the variability of catch composition in vessels with multiple fish holds. Fish being partitioned into separate holds may be from the same, different, or a mixture of multiple tows or sets. While lot sampling has provided valuable spatial and temporal insights to bycatch distribution and frequency, it is unable to resolve variability between vessel holds. Sampling entire vessel offloads allows that variability to be reflected in the data.

In an attempt to more closely align our data with both the at-sea observer data and DMF portside data, we (DMR) have moved away from the practice of "lot" sampling in 2011 and instead now use a protocol similar to DMF and NMFS.

In 2012 MEDMR, with ACCSP funding, implemented concurrent sampling of Atlantic herring trips portside that had also been sampled by at-sea observers. After 4 years, MEDMR had the required number of trips, by gear, area season, and year, to analyze the data and statistically determine if portside and at-sea sampling give similar results. Further analysis was provided upon request during the FY 2019 proposal process as a result of a request by the reviewers and will be included in the 5-year report During Sept 2019. That said the summary of the findings suggests results between portside and at-sea sampling are statistically similar for small-bodied species in high volume fisheries.

Given the results, MEDMR is now using this newly revamped protocol and during routine portside bycatch monitoring of the Atlantic herring fishery. DMR's efforts, coupled with ongoing work by MA DMF and the NEFOPS program will help to increase sample sizes for determining bycatch amounts in the Atlantic herring fishery. Data from both MEDMR and MA DMF portside programs are used to monitor bycatch quotas for haddock or River herring, data from both programs were also used to set the River herring quotas by gear type (https://s3.amazonaws.com/nefmc.org/NEFMC-Adopts-2021-2023-Herring-Specifications-Adjusts-Herring-Measures-to-Facilitate-Mackerel-Harvest.pdf)

Results and Benefits:

Commercial catch sampling

This program collects all the Atlantic herring-directed samples from the U.S East coast fishery and a portion of all the collected mackerel and menhaden samples use in assessments of the stocks and management of the fisheries. Regarding the need for the work as stated above, if this project was not funded there are currently no other resources that would or could be shifted to collect samples of Atlantic herring, Atlantic mackerel, or Atlantic menhaden. There are also limited resources to perform Atlantic herring, Atlantic mackerel, or Atlantic menhaden bycatch studies. The catch at age analysis for all three species would lack coverage for the full range of the fishery without this project.

Annually collected samples of Atlantic herring from the commercial fishery provide the cohort catch at age data for the SARC's periodic assessment of the herring population and are used to predict and define the ASMFC's (Atlantic States Marine Fisheries Commission) rolling spawning area closures and give evidence of overall health of the Coastal Stock Complex. All Atlantic herring sample data is uploaded to the ACCSP data warehouse. Commercial catch sampling can also provide insight into the biological and management processes that drive the stock and fishery. Recently an analysis was performed to examine changes in length at spawning for Atlantic herring. Results were presented to the ASMFC Atlantic Herring Section that is in the process of finalizing spawning relationship changes to account for a decrease in herring length at full maturation.

Maine DMR processes all commercial catch herring samples for the east coast fishery. DMR maintains a lab facility with the equipment and staffing necessary for processing more than 200 commercial herring samples a year. Also, DMR provides staff oversight of the field sampling program and scientific analysis of the data generated from the program which is then fed directly into the assessment. Without the ACCSP funded program, samples would not be collected or aged, resulting in no catch-at-age information to inform the assessment. As such, Atlantic herring would move from an age-structured stock assessment to one developed for data-poor species and would be categorized as a data-poor species in need of sampling. Because ACCSP has funded this project, however, Atlantic herring are current adequately sampled and are not scored by ACCSP. This may change, however, as this is the last year this project is eligible for funding through ACCSP.

In addition to sampling Atlantic herring and mackerel to develop catch-at-age matrices, this program has provided biological samples for multiple research projects. Herring have been collected for the Gulf of Maine Research Institute acoustics project, the NEFSC's (North East Fishery Science Center) morphometrics study, genetics studies, and most recently stomach and fat content samples have been provided to various organizations to examine the role of climate change in the nutritional content of herring. The commercial catch samples also provide the basis for determining the start date for the three Atlantic States Marine Fisheries Commission herring spawning closure areas (two along the Maine coast and one along the NH/MA coast).

Atlantic menhaden were added as a sample species in 2010. Menhaden can be collected as bycatch during herring operations as well as from a growing purse seine directed fishery for lobster bait in the Northeast. While the bulk of this fishery occurs in the Mid-Atlantic, there is a growing interest in menhaden as a result of recent management changes in the Atlantic herring fishery. Bait landings of menhaden in Southern New England and the Mid-Atlantic have tripled in the past two years. Even more recently, Maine landings have risen sharply as the stock has entered the state of Maine waters. Because menhaden stratify in latitude by age, a more complete sampling of the menhaden catch in the northern parts of its range may improve our understanding of the population dynamics of this important forage species.

The commercial catch sampling program funded historically by ACCSP has proven extremely successful and has provided important information to the fishery managers. The biological information on size, age, and maturation of herring feeds directly into the stock assessments for Atlantic herring, Atlantic mackerel, and Atlantic menhaden. ASMFC has routinely used the data collected from this project to implement management changes to herring spawning regulations, as well as to make other decisions with regards to the allocation of quota among management areas.

Bycatch sampling

The data collected through the bycatch survey supplements the federal at-sea observer coverage program, as well as the MA DMF River Herring Avoidance Program, which has vastly increased the amount of information available on bycatch in the herring fishery. This project will maintain and expand an effective and scalable method for the long-term

monitoring of bycatch in the Atlantic herring fishery. A portside bycatch sampling methodology has been developed and tested and has demonstrated the ability to observe high volumes of landed herring catch. Portside efforts will complement but not replace the NMFS at-sea observer coverage. This proposed bycatch survey represents a unique opportunity to collect data in an inexpensive but efficient and accurate way. Given this, in 2018 NMFS started the process of incorporating Maine DMR and MA DMF portside sampling into the quota monitoring system for Haddock and river herring bycatch quotas. This effort is now fully implemented with data from Maine DMR and MA DMF being incorporated fully into the process of quota monitoring

Beyond the immediate benefit to the NMFS, MA DMF, and MEDMR bycatch sampling in this fishery, the proposed project may guide other bycatch sampling programs in other fisheries. More importantly, DMR's proposed portside sampling will augment the MA DMF and NEFOP efforts allowing for better estimation of River herring, haddock, and potentially other species caught as bycatch in the directed Atlantic herring fishery

Review of Previous Results:

This proposal is a continuation of an ACCSP funded herring sampling and combined portside bycatch survey. The project has evolved over the past several years to maximize the use of funds. Project history is shown in Attachment 2 and explains the evolution of the project, including the transition to an emphasis on portside bycatch sampling in conjunction with biological sampling along with a review of project costs. The Project for FY 2020 has just ended so full analysis has yet to be completed, but the most recent semi-annual report is in Attachment 3. This report concluded that the data collected from both the and Commercial Catch Sampling Program were useful for the Atlantic herring stock assessment as well as for mackerel. Additionally, Portside Bycatch Program quantified incidental catch particularly River herring; and that these dates are starting to be used to monitor the River herring/Shad bycatch quotas for the Atlantic herring fishery.

Approach:

It should be noted that for both bycatch and biological sampling, ME DMR expects the continuation of full sampling effort despite lower Atlantic herring quotas. While herring quotas have and will continue to decline, the number of trips should be only slightly less. This in part, due to ASMFC imposed effort controls, as well as the sampling frame. The sampling frame is designed on a trip basis, rather than by volume landed. Thus, it is anticipated that the number of trips is likely to remain similar to 2020 levels, but that the volume of each trip might decline. As such, any reduction in herring bycatch and biological sampling is expected to be offset by increased sampling effort in menhaden and mackerel. In particular menhaden landings have increased dramatically in the state of Maine over the past few years, requiring more effort to sample effectively. Additionally, depending on the New England Fishery Management Council (NEFMC) actions later this year, it is expected that quotas for Atlantic herring may increase starting in 2022 if only marginally.

As of June 2021, this project is being completed under the Spring 2021 social distancing guidelines as per the Governor's Office for the State of Maine. Because it is anticipated that these measures will be relaxed in the coming months, no impact on sampling in 2022 is anticipated

Commercial catch sampling of Atlantic herring, Atlantic mackerel, and Atlantic menhaden

Commercial catch sampling will be conducted at herring and mackerel pumping and processing sites along the east coast. As a general rule commercial catch sampling occurs such that there is at least one sample per statistical area, per week, per gear type and generally meets NMFS protocols of one sample per 500 mt.

The samplers will follow the existing protocol developed for commercial catch sampling of Atlantic herring (Attachment 4). This protocol complies with the guidelines laid out by ACCSP. Samples will be processed and aged by in-house staff, primarily Lisa Pinkham. Samples are processed for length; weight, maturity, and aged per NMFS (National Marine Fisheries Service) protocols (please see www.nefsc.noaa.gov/publications/crd/crd0406/crd0406.pdf Page 22). This information is uploaded to the ACCSP warehouse and is used for the assessment of Atlantic herring.

The same vessels that harvest Atlantic herring primarily pursue Atlantic mackerel on the east coast. Traditionally, when markets are available the pelagic fishing fleet transfers some of their effort from herring to mackerel in the winter and early spring. The samplers funded by this grant can easily collect mackerel by keeping in touch with the herring vessels that enter the mackerel fishery. Most of the ports where significant mackerel landings occur overlap with major herring ports; this is largely because herring processing facilities are also capable of freezing mackerel. Sampling will follow the existing NMFS protocol for mackerel and the guidelines established by ACCSP (Attachment 4).

Atlantic menhaden sampling

Support for port sampling for Atlantic menhaden (*Brevoortia tyrannus*) is also requested. Currently, there have been increased menhaden catches in the New England Area, particularly Maine, when compared to previous years. This trend is expected to continue for the next several years. National Marine Fisheries Service in Beaufort, North Carolina has requested commercial samples from the northern extent of this stock's range (north of Cape Cod). Such sampling of the "snapper rig bait fishery" (Northeast purse seine) is also listed as a priority research initiative in the most recent menhaden assessment. Such samples are critical to the assessment process for Atlantic menhaden and inaccurately estimating the catch at age. During our normal sampling of the Atlantic herring bait fishery, we will collect Atlantic menhaden samples primarily from purse seines using the protocols outlined by NMFS, Beaufort (Attachment 4), and forward scales and measurements for use in the next assessment.

ASMFC sample requirements state "One 10-fish sample (age and length) per 300 metric tons landed for bait purposes for ME, NH, MA, RI, CT, NY, NJ, and DE. While minimums have been met, a more rigorous sampling design by gear, time, and fishing area is planned at the end of this year. This sort of analysis has been delayed in part due to personnel changes and COVID restrictions.

Bycatch sampling

The herring industry has changed tremendously resulting in a much more centralized distribution structure. Generally, the herring used for bait goes through a wholesale dealer to smaller dealers and lobster wharves along the coast. The wholesale dealers have facilities where they sort, barrel, freeze, and store bait for redistribution. It is at these sites where effective bycatch surveys can also be done, thereby including the bait sector in this study. Herring is also landed at larger centralized processing plants which may process for a food-grade market for export or direct sale into the regional bait market.

The sampling takes place at centralized processing plants and bait dealers. A goal of observing 2 trips per month from January through May and one or two trips per week during the June-Oct period (when the fishery is most active) is proposed. Trip selection will be haphazard, with an overall goal of sampling multiple gears and management areas each month and to scale bycatch sampled trips with the activity of the fishery.

The samplers will quantify bycatch from individual off-loadings that enter the processing and bait plants according to a NMFS specified protocol. The total weight of any observed bycatch will be recorded along with species identification, total species weight, individual lengths, and weights of all fish or a representative sub-sample. The total estimated bycatch weight by species will then be compared to census sampling by MA DMF and/or at sea basket sampling conducted by NEFOP as appropriate.

Using existing MEDMR protocols (Attachment 5) and in close concert with NMFS observers and MA DMF portside samplers, staff will directly target trips that have been observed by either of those two programs. Where possible, and as practicable, staff will also conduct a full census of landed bycatch from full offloading events (trips) which have also been sampled at-sea; thereby allowing a direct analysis and validation of current at-sea bycatch monitoring methods. Particular emphasis will be placed on sampling those trips, using current MEDMR methods that had both NMFS and MA DMF bycatch sampling.

Once the data are collected, they will be housed and archived in a MEDMR relational database. Data requests and queries will be performed to assist in monitoring quotas, as well as to provide bycatch information to the NEFMC Plan

Development Team, NMFS, and other interested parties. Data on River herring/Shad as well as Haddock are routinely provided to the Regional Office at NOAA for use in quota monitoring activities.

Geographic Location and Temporal Distribution of Effort:
Sampling will occur in ports from Prospect Harbor, ME to Cape May, NJ, and reflect landings and effort from NC, through ME. Efforts will be coordinated with the NMFS NEFSC in Woods Hole, NMFS, Beaufort, NC, NJ, MA, MA DMF, NH F&G, and RI, DEM, and other state agencies throughout the range of the herring and mackerel fisheries. Staff will be based out of the MEDMR Boothbay Harbor lab facility. Because of herring and mackerel availability to the fishery, market conditions, and other factors, it is difficult to pinpoint where the fleet may be landing at any given time. Sampling will thus occur after direct contact with vessel captains and plant managers to identify where sampling should take place.

In general herring, biological and bycatch sampling is primarily conducted spring, summer, and fall, with some effort during the winter months. Mackerel sampling occurs primarily in the winter months, and it's anticipated that menhaden sampling will occur in the late summer to early fall. Bycatch sampling and commercial sampling become more infrequent in the winter months, while travel to get to the landing sites increases. Report writing and data analysis occur between regular commercial and bycatch sampling.

Data Management:
Data collected through this study are regularly entered into the MARVIN biological database housed at MEDMR. Data are first entered into MARVIN and run through Quality Assurance/ Quality Control (QA/QC) routines to ensure accurate reporting. Data can then be utilized for running analyses and/or stored until needed for the assessment or use by managers.

Metadata will be created with ArcCatalog to conform to the (Federal Geographic Data Committee (FGDC)) standards and specifications. Created metadata will be available in text and XML formats.

Milestone Schedule:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Catch Sampling-HERR	x	x	x	x	x	x	x	x	x	x	x	x
Catch Sampling-MACK	x	x	x	x	x							x
Bycatch Sampling-co-occurring NMFS	x	x	x	x	x	x	x	x	x	x	x	x
Analysis	x	x	x	x	x	x	x	x	x	x	x	x

***** - Upon request, MEDMR will provide bycatch sampling data on a state-by-state basis three times a year.

Project Accomplishment Measurement

Commercial Catch Sampling

Atlantic herring	At Least 10% sampled trips by gear type and month
Atlantic mackerel	At Least 10% sampled trips by gear type and month

Bycatch Sampling

Atlantic herring	At least 40 trips sampled by area, gear type and quarter

FY 2022 Budget & Narrative

FY2021 Budget (State FY22)
7/1/22 - 6/30/23

Cost Summary: Portside bycatch sampling

Personnel Services	**Description**	**ACCSP**
None		
All Other		
Travel Expenses		
PROJECT VEHICLE 12 months	$300/mo	$ 3,600.00
Mileage fee	31000 @ $.22/mi	$ 6,820.00
Toll allowance		$ 150.00
35 Overnight stays	$105/night	$ 3,675.00
Per diem (includes extended days)	$50/day	$ 2,750.00
		$ 16,995.00
Office Supplies & Minor Equipment		
2 Cell Phones	2 @ $50/month	$ 1,200.00
1 air card	1 @ $75/month	$ 900.00
Sampling Gear		$ 500.00
Lab Supplies		$ 600.00
		$ 3,200.00
Total Direct Costs		**$ 20,195.00**
Indirect Costs (30%)		**$ 6,058.50**
Award to DMR		**$ 26,253.50**

Partner Contribution – For ACCSP Purposes

Scientist IV (10% time)	$10,000
Scientist III (25% time)	$15,000
Scientist I (100% time)	$90,000
Specialist I (25%)	$12,000
Total	$127,000

Future Project Needs:
This project is designed to benefit all states from Maine to New Jersey, ASMFC, and federal management agencies including the NEFMC, NMFS, and the Mid-Atlantic Fishery Management Council (MAFMC). While accessory funding is available for FY 22 to cover all personnel costs, MEDMR continues to pursue long-term and permanent funding for this project through a commitment made by the participating states and the federal government. Given that this is the last year of ACSP funding for this project and should a funding solution not be found, this project will terminate at the end of FY 2022.

Budget Narrative:

Personnel and Fringe Benefits: Because of state funding resources, we are not requesting to fund either Scientist I (Chris Uraneck) or Specialist I (Lisa Pinkham).

Travel and vehicles

Travel is requested for 35 overnight trips and an additional 20 extended days. The exact number and length of trips will depend on the fleet activity and port of landing. A small utility 4x4 truck is proposed for safety reasons during winter sampling in remote locations, as well as to haul equipment from time to time. Central fleet for the State of Maine stipulates rates, and private rentals are prohibited by state policies. The current request reflects a recent policy change by Central Fleet to charging less per month but increasing the mileage rate for trucks.

Office Supplies & Minor Equipment
Two cell phones and an "Air Card" are requested. One cell phone is for the sampler to contact vessels and to coordinate with NEFOP and MA DMF personnel. A second phone is requested for the supervisor to provide direction if needed and to allow for communication in case of an emergency. An air card is also requested which allows the user to connect to the State network from any location with cell phone coverage. Air cards allow for the efficient entry of data while waiting for vessels to land, along with allowing access to the VMS system to better pinpoint landing events. While tethering to a state phone for access is possible, negating the need for an air card, the change in plan required would increase the cell phone costs beyond the total cost of the air card.

Other Lab and Sampling supplies include baskets for sampling, scale calibration, rain gear, waterproof paper, sample boxes, safety equipment, and other items. These have been reduced in part to offset the increase in vehicle costs.

Indirect costs: The Department of Marine Resources has an indirect cost rate of 30%. See Attachment 6 for the Negotiated Indirect Cost Agreement.

Attachment 1: FY 2021 Budget & Narrative

FY 2021 Budget & Narrative

FY2021 Budget (State FY22)
7/1/21 - 6/30/22

Cost Summary: Portside bycatch sampling

Personnel Services	**Description**	**ACCSP**
None		
All Other		
Travel Expenses		
PROJECT VEHICLE 12 months	$295/mo	$ 3,540.00
Mileage fee	31000 @ $.21/mi	$ 6,510.00
Toll allowance		$ 150.00
35 Overnight stays	$102/night	$ 3,570.00
Per diem (includes extended days)	$50/day	$ 2,750.00
		$ 16,520.00
Office Supplies & Minor Equipment		
2 Cell Phones	2 @ $50/month	$ 1,200.00
1 air card	1 @ $75/month	$ 900.00
Sampling Gear		$ 500.00
Lab Supplies		$ 800.00
		$ 3,400.00
Total Direct Costs		**$ 19,920.00**
Indirect Costs (30%)		**$ 5,976.00**
Award to DMR		**$ 25,896.00**

Partner Contribution – For ACCSP Purposes

Scientist IV (10% time)	$10,000
Scientist III (25% time)	$15,000
Scientist I (100% time)	$90,000
Specialist I (25%)	$12,000
Total	$127,000

Budget Narrative: 2021

Personnel and Fringe Benefits: Because of state funding resources, we are not requesting to fund either Scientist I (Chris Uraneck) or Specialist I (Lisa Pinkham). Since the last proposal, the Specialist II position occupied by James Becker has been occupied by Chris Uraneck and upgraded to a Scientist I. This change to State funding of personnel is a shift in the project which reduces overall costs to ACCSP.

Travel and vehicles
Travel is requested for 35 overnight trips and 20 extended days. The exact number and length of trips will depend on the fleet activity and port of landing. A small utility 4x4 truck is proposed for safety reasons during winter sampling in remote locations, as well as to haul equipment from time to time. Central fleet for the State of Maine stipulates rates, and private rentals are prohibited by state policies. The current request reflects a recent policy change by Central Fleet to charging less per month but increasing the mileage rate for trucks.

Office Supplies & Minor Equipment

Two cell phones and an "Air Card" are requested. One cell phone is for the sampler to contact vessels and to coordinate with NEFOP and MA DMF personnel. A second phone is requested for the supervisor to provide direction if needed and to allow for communication in case of an emergency. An air card is also requested which allows the user to connect to the State network from any location with cell phone coverage. Air cards allow for the efficient entry of data while waiting for vessels to land, along with allowing access to the VMS system to better pinpoint landing events.

Other Lab and Sampling supplies include baskets for sampling, scale calibration, rain gear, waterproof paper, sample boxes, safety equipment, and other items

Attachment 2: Project history

YEAR	TITLE	COST	Rational/Emphasis	RESULTS
2001	Commercial catch sampling of Atlantic herring	$52,299	catch sampling, herring	expanded sampling of herring
2002	Commercial catch sampling of Atlantic herring	$67,168	catch sampling, herring	herring and mackerel sampling
2003	Commercial catch sampling of Atlantic herring and other northeast fisheries	$67,168	catch sampling, herring	herring, mackerel, and halibut
2004	Commercial catch sampling and bycatch survey of the northeast Atlantic herring fishery	$70,441	catch sampling, herring and mackerel	herring, halibut, mackerel and pilot portside bycatch sampling
2005	Commercial catch sampling and bycatch survey of two pelagic fisheries	$69,949	catch sampling, herring and mackerel	herring, halibut, mackerel and pilot portside bycatch sampling
2006	Portside bycatch sampling and commercial catch sampling of the Atlantic herring and Atlantic mackerel fisheries	$104,633	portside bycatch survey herring and mackerel catch sampling	herring and mackerel portside bycatch at 5% level and catch sampling
2007	Portside bycatch sampling and commercial catch sampling of the Atlantic herring and Atlantic mackerel fisheries	$108,891	portside bycatch survey herring and mackerel catch sampling	herring and mackerel portside bycatch at 5% level
2008	Portside bycatch sampling and commercial catch sampling of the Atlantic herring and Atlantic mackerel fisheries	$116,300	portside bycatch survey herring and mackerel catch sampling	herring and mackerel portside bycatch at 5% level
2009	Portside bycatch sampling and commercial catch sampling of the Atlantic herring, Atlantic mackerel, and Atlantic menhaden fisheries	$105,985	portside bycatch survey herring menhaden and mackerel catch sampling	herring and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2010	Portside bycatch sampling and commercial catch sampling of the Atlantic herring, Atlantic mackerel, and Atlantic menhaden fisheries	$84,451	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2011	Portside bycatch sampling and commercial catch sampling of the Atlantic herring, Atlantic mackerel, and Atlantic menhaden fisheries	$174,778	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2012	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$0	portside bycatch survey herring menhaden and mackerel catch sampling	Funds were not requested because of previous cost-saving measures; allowing for the continuation of the previous work with no added costs.
2013	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$113,774	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2014	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$130,599	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at 5% level
2015	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$136,306	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level.

2016	Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$23,606	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level.
2017	Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$24,975	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level.
2018	Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$25,974	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level.
2019	Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$25,974	portside bycatch survey herring menhaden and mackerel catch sampling	herring menhaden and mackerel portside bycatch and commercial catch sampling and bycatch at a 5% level. Final analysis Ongoing
2020	Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$26,116	portside bycatch survey herring menhaden and mackerel catch sampling	ongoing
2021	Portside commercial catch sampling and bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries	$25,896	portside bycatch survey herring menhaden and mackerel catch sampling	Not yet started

Proposed ACCSP Ranking

Proposal Type: Maintenance

Primary Program Priority and Percentage of Effort to ACCSP modules:

Biological Sampling (8 Points): Although Atlantic herring is missing from the top quartile of the Biological Matrix, a correct scoring would certainly adjust it to that level. The score would rise to the top of the matrix with the elimination of biological sampling. Additionally, River herring and shad, caught as bycatch in the Atlantic herring and menhaden fisheries are near the top of the Biological Matrix.

Bycatch/Species Interaction (6 Points): Mid-Water trawl gear targeting Atlantic herring and mackerel is currently the most scrutinized for bycatch of river herring and groundfish. Amendment 7 of the Atlantic herring FMP is calling for an added increase in bycatch monitoring via portside sampling for the Mid-water trawl fleet. It is ranked 9th out of 18 on the "Quartile of Bycatch Matrix".

Metadata (2 Points): will be created with ESRI ArcCatalog 10 to conform to the FGDC standards and specifications. Created metadata will be submitted to ACCSP in text and XML formats.

Project Quality Factors:

Regional Impact (5 Points): all partners will benefit, as all data collected will be uploaded to ACCSP. Regional management organizations, such as ASMFC, will benefit from the biological and bycatch information from the proposed project.

Funding transition plan (4 Points): MEDMR will continue to seek alternative sources of funding to further transition from ACCSP grant money.

In-kind Contribution (4 Points): the partner contribution is listed below the budget.

Improvement in Data Quality/Timeliness (4 Points): Data collected through this study are regularly entered into the MARVIN biological database housed at MEDMR. Data are first entered into MARVIN and run through QA/QC routines to ensure accurate reporting. The biological sampling data is uploaded to the ACCSP data warehouse regularly.

Potential secondary model (4 Points) Data collected through this proposed project is used in the assessment and management of river herring, Atlantic herring, Mackerel, and menhaden as outlined to the expected benefits section

Impact on Stock Assessment (3 Points): Regional management organizations that carry out stock assessments would benefit from the detailed biological sampling and bycatch data. This information could be used in stock assessments for many species that are managed by regional agencies.

Properly Prepared (5 Points): MEDMR followed ACCSP guidelines and pertinent documents when preparing this proposal.

Attachment 3: FY2020 semi Report

DEPARTMENT OF COMMERCE
RESEARCH PERFORMANCE PROGRESS REPORT (RPPR)

For instructions, please visit
http://www.osec.doc.gov/oam/grants_management/policy/documents/RPPR%20Instructions%20and%20Privacy%20Statement.pdf

AWARD INFORMATION	
1. Federal Agency: Department of Commerce / NOAA	2. Federal Award Number: NA19NMF4740097
3. Project Title: Portside Commercial catch sampling and comparative bycatch sampling for Atlantic herring (Clupea haren	
4. Award Period of Performance Start Date: 07/01/2019	5. Award Period of Performance End Date: 06/30/2021
PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR	
6. Last Name and Suffix: Uraneck , null	7. First and Middle Name: Christopher ,
8. Title: Marine Resource Scientist I	
9. Email: chris.b.uraneck@maine.gov	10. Phone Number: 207-350-6040
AUTHORIZING OFFICIAL	
11. Last Name and Suffix: Nutting , null	12. First and Middle Name: Rochelle ,
13. Title: Resource Administrator	
14. Email: rochelle.nutting@maine.gov	15. Phone Number: 207-624-6556
REPORTING INFORMATION	
Signature of Submitting Official: N/A	
16. Submission Date and Time Stamp:	17. Reporting Period End Date: 12/31/2020
18. Reporting Frequency: Annual Semi-Annual Quarterly	19. Report Type: Not Final Final
RECIPIENT ORGANIZATION	
20. Recipient Name: MARINE RESOURCES, MAINE DEPARTMENT OF	

21. Recipient Address:
32 BLOSSOM LN, AUGUSTA, ME 04330-5780 USA

22. Recipient DUNS: 809045826	23. Recipient EIN: 016000001

ACCOMPLISHMENTS

24. What were the major goals and objectives of this project?

1. Continuation of the portside bycatch survey
a. Expand the coverage of landed herring and menhaden monitored for bycatch.
b. Increase the percentage of unobserved at-sea sampling offloads.

2. Continuation of commercial catch sampling and species collection upon request.

25. What was accomplished under these goals?

Due to COVID-19 and changes in staff only one bycatch sampling event was performed. Since March staff have been unable to leave the state as part of ongoing efforts to prevent the spread of COVID-19 and protect the health of staff. Some sampling and landings do occur in NH, MA and RI during this reporting period.

Additionally, James Becker moved to another position on March 9th at DMR and has been replaced on the team with Chris Uraneck. Chris started June 1st with the herring and menhaden group but only worked part-time on the project until a replacement could be found for his previous job in Recreational fisheries. This did not happen in full until November 1.

Despite these issues, the project was still able to secure 17 herring, 0 mackerel, and 37 menhaden samples. One portside bycatch trip was also sampled shore-side. Additionally, while the data have been collected and uploaded, analysis has been slowed for the reasons mentioned above.

It is anticipated that both sampling and analysis will be caught up to usual levels, once the new staff member is fully trained, and more normal operations are resumed in the wake of COVID-19 restrictions.

ACCOMPLISHMENTS *(cont'd)*

26. What opportunities for training and professional development has the project provided?

N/A

27. How were the results disseminated to communities of interest?

In general, the herring spawn data gathered from the commercial catch samples are shared with the Atlantic States Marine Fishery Commission (ASMFC) for spawn monitoring for Maine, NH, and MA http://www.massmarinefisheries.net/herring/. The herring and menhaden data are used for each of their stock assessments http://www.asmfc.org/species/atlantic-herring. The herring bycatch data are used for bycatch quota monitoring for ASMFC and NMFS https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/reports_frame.htm. Data from the one portside bycatch study was uploaded to our federal partners, but biological sample data is not due to ASMFC or NOAA until during the next reporting period.

ACCOMPLISHMENTS *(cont'd)*

28. What do you plan to do during the next reporting period to accomplish the goals and objectives?

N/A

PRODUCTS

29. Publications, conference papers, and presentations

Nothing to Report

PRODUCTS *(cont'd)*

30. Technologies or techniques

Nothing to Report

31. Inventions, patent applications, and/or licenses

Nothing to Report

PRODUCTS *(cont'd)*

32. Other products

Nothing to Report

PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

33. What individuals have worked on this project?

Name: Chris Uraneck
Total Number of Months: (6)
Project Role: Marine Resource Scientist I
Contribution to Project: Collects and coordinates collection of samples in Maine and other states where the fisheries occur. Conducts portside bycatch studies and writes reports.

Name: Lisa Pinkham
Total Number of Months: No change
Project Role: Marine Resource Specialist I
Contribution to Project: Conducts all lab analysis of herring samples. Processes menhaden samples and sends scale samples to the NOAA lab for ageing.

Name: Matt Cieri
Total Number of Months: No Change
Project Role:
Contribution to Project: No Change
Name: Erin Summers
Total Number of Months: No Change
Project Role:
Contribution to Project:
Name: Carl Wilson
Total Number of Months: No Change
Project Role:
Contribution to Project:
Name: Amy Dumeny
Total Number of Months: No Change
Project Role:

PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS *(cont'd)*

34. Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?

Nothing to Report

35. What other organizations have been involved as partners?

The state agencies in New Hampshire, Massachusetts and Rhode Island have assisted in collecting and storing portside biological samples of herring when there has been landings in those states. These samples will be collected and then processed at the ME DMR lab when COVID travel restrictions are lifted.

NMFS combines our portside bycatch data with their at-sea observer program to estimate bycatch and discards for both the herring and mackerel quota monitoring systems. Data are also used for herring, mackerel and menhaden stock assessments.

The Atlantic Coastal Cooperative Statistics Program (ACCSP) use our herring spawn data, gathered from the commercial catch samples to overlook, monitor and administer the spawn forecast model used for the corresponding closures within the GoM.

PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS *(cont'd)*

36. Have other collaborators or contacts been involved?

Herring sample data are shared with the Gulf of Maine Research Institute (GMRI) to be applied for spawn monitoring and future regulation.

IMPACT

37. What was the impact on the development of the principal discipline(s) of the project?

The bycatch program for herring and mackerel plays a significant role in not only establishing a monitoring system to protect bycatch and incidental species but influences herring and mackerel fishing landings throughout the year. For example, when a certain amount of river herring (Alewife and Blueback herring) are landed and a set quota for these is surpassed, portions of these directed fisheries are closed until the quota resets in the following year. This protects these nontargeted species from overharvesting but impacts the revenues generated for these directed fisheries.

Also, the biological data collected via the commercial catch sampling program of herring, mackerel, and menhaden are directly used for their stock assessments and catch-at-age matrices. These data are used to estimate the size and age structure, 2020-2023 fishing quotas, recruitment, and ultimately the health of their population.

IMPACT *(cont'd)*

38. What was the impact on other disciplines?

Nothing to Report

39. What was the impact on the development of human resources?

Nothing to Report

IMPACT *(cont'd)*

40. What was the impact on teaching and educational experiences?

Nothing to Report

41. What was the impact on physical, institutional, and information resources that form infrastructure?

Nothing to Report

IMPACT *(cont'd)*

42. What was the impact on technology transfer?

Nothing to Report

43. What was the impact on society beyond science and technology?

Bycatch data collection and biological sampling have influenced fishing behaviors. With catch cap monitoring of river herring, shad and haddock in two directed fisheries, implemented partly by our sampling program, fishing locations can be chosen accordingly. To prevent closing areas of these fisheries due to choke species, the fishing spatial activity can shift to areas where the cumulative bycatch is lower and less likely to shut down landings. For example, if it is known that portside sampling is to occur on a certain herring or mackerel offload, the captain may decide to fish an area that typically contains less haddock, to prevent closing the fishery.

A similar spatial shift occurs during the rolling spawn closures within the GoM. As that herring typically spawn from north to south, harvesters move out of the areas that are approaching peak spawning as to not land significant amounts of ripening females, to halt samples that may trigger a closure. Harvesters may also fish a certain spawn closure, providing DMR with spawn samples and a real-time look at the status of the ovaries in an effort to close the area as soon as possible.

Bycatch quotas and spawn closures can reduce harvest and directly impact revenue as well as income for captain and crew. This can have indirect effects on dealers and other businesses.

IMPACT *(cont'd)*

44. What percentage of the award's budget was spent in foreign country(ies)?

0 , null

CHANGES/PROBLEMS

45. Changes in approach and reasons for change

Due to COVID related travel and health restrictions we relied on other state agencies collecting and storing samples this year when herring were landed out of state.

CHANGES/PROBLEMS *(cont'd)*

46. Actual or anticipated problems or delays and actions or plans to resolve them

Due to COVID related travel and health restrictions there has been a delay in getting some herring samples back to the ME DMR lab for processing. We plan to pick up the samples and process them as soon as we are able.

47. Changes that had a significant impact on expenditures

In a normal year there is a lot of out-of-state travel associated with this project to collect biological samples and conduct bycatch studies. There has been a significant decline in this activity due to the COVID travel and health restrictions. This directly effects expenditures.

CHANGES/PROBLEMS *(cont'd)*

48. Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents

Nothing to Report

49. Change of primary performance site location from that originally proposed

Nothing to Report

Attach a separate document if more space is needed for #6-10, or #24-50.

PROJECT OUTCOMES

50. What were the outcomes of the award?

All objectives and goals were met for this report period. The portside bycatch survey has continued to prove very successful since its inception in August of 2003. The results of this survey have revealed extremely small levels of bycatch in the directed herring fishery, and minor levels of bycatch in the mackerel and menhaden fisheries for all gear types sampled. The results of this project are useful in quantifying and understanding the extent of retained bycatch in the herring, mackerel, and menhaden fisheries. However, the species encountered as bycatch varied spatially by NMFS Statistical Area, and conclusions drawn regarding the spatial nature of the bycatch encountered should be interpreted cautiously due to the small sample sizes. It is important to remember that bycatch in these fisheries can be episodic and can be isolated to one fishing event in one specific spatial location during only handful of trips.

Herring, mackerel, and menhaden are harvested as large volume fisheries, which results in mass handling techniques like pumping the catch from the nets into the vessel holds and again into the processing facilities. Because of the nature of these fisheries, there are limited opportunities to observe and/or sample bycatch at-sea. However, vessels can discard some or all of the catch at-sea and there are some methods of sorting out large bycatch i.e. mammals before or during the pumping process. For these reasons the portside component is not designed to quantify all bycatch in these fisheries, but only retained and landed bycatch.

Since the spring of 2011, the portside bycatch sampling protocol shifted towards analyzing entire boatloads only and eliminating partial boat or lot sampling. This change in approach and the results of the co-occurring trip analyses have revealed that aligning portside data between DMR, MA DMF, and the NEFOP at-sea program offer more statistically sound estimates of bycatch and allows for the increase of sampling coverage across these fisheries. These efforts will complement and supplement, but not replace the NEFOP at-sea observer program. This bycatch survey represents a unique opportunity to collect data in an inexpensive but efficient and accurate way.

The data collected from both the Portside Bycatch Program and Commercial Catch Sampling Program were useful for the herring stock assessment update in 2020. In-particular the herring samples used for the catch-at-age matrix helped to determine spawning stock biomass, the 2019 - 2021 area fishing quotas and specifications, and spawn closure regulations. Data from Commercial Catch Sampling is also used in menhaden stock assessments to calculate the catch-at-age matrix. This is used to determine spawning stock biomass and develop fishing quotas. In addition, portside bycatch data from this project was used in conjunction with the at-sea data to calculate the river herring and haddock bycatch quotas for the 2019/2020 herring and mackerel fisheries.

DEMOGRAPHIC INFORMATION FOR SIGNIFICANT CONTRIBUTORS (VOLUNTARY)

Gender:	Ethnicity:
Male	○ Hispanic or Latina/o
Female	○ Not Hispanic or Latina/o
Do not wish to provide	○ Do not wish to provide

Attach a separate document if more space is needed for #6-10, or #24-50.

Race:	Disability Status:
American Indian or Alaska Native Asian Black or African American Native Hawaiian or other Pacific Islander White Do not wish to provide	○ Yes [ ] Deaf or serious difficulty hearing [ ] Blind or serious difficulty seeing even when wearing glasses [ ] Serious difficulty walking or climbing stairs [ ] Other serious disability related to a physical, mental, or emotional condition ○ No ○ Do not wish to provide

Attach a separate document if more space is needed for #6-10, or #24-50.

Attachment 4

Instructions for Sampling Atlantic Menhaden from the Maine Bait Fisheries

Acquiring the 'Sample'

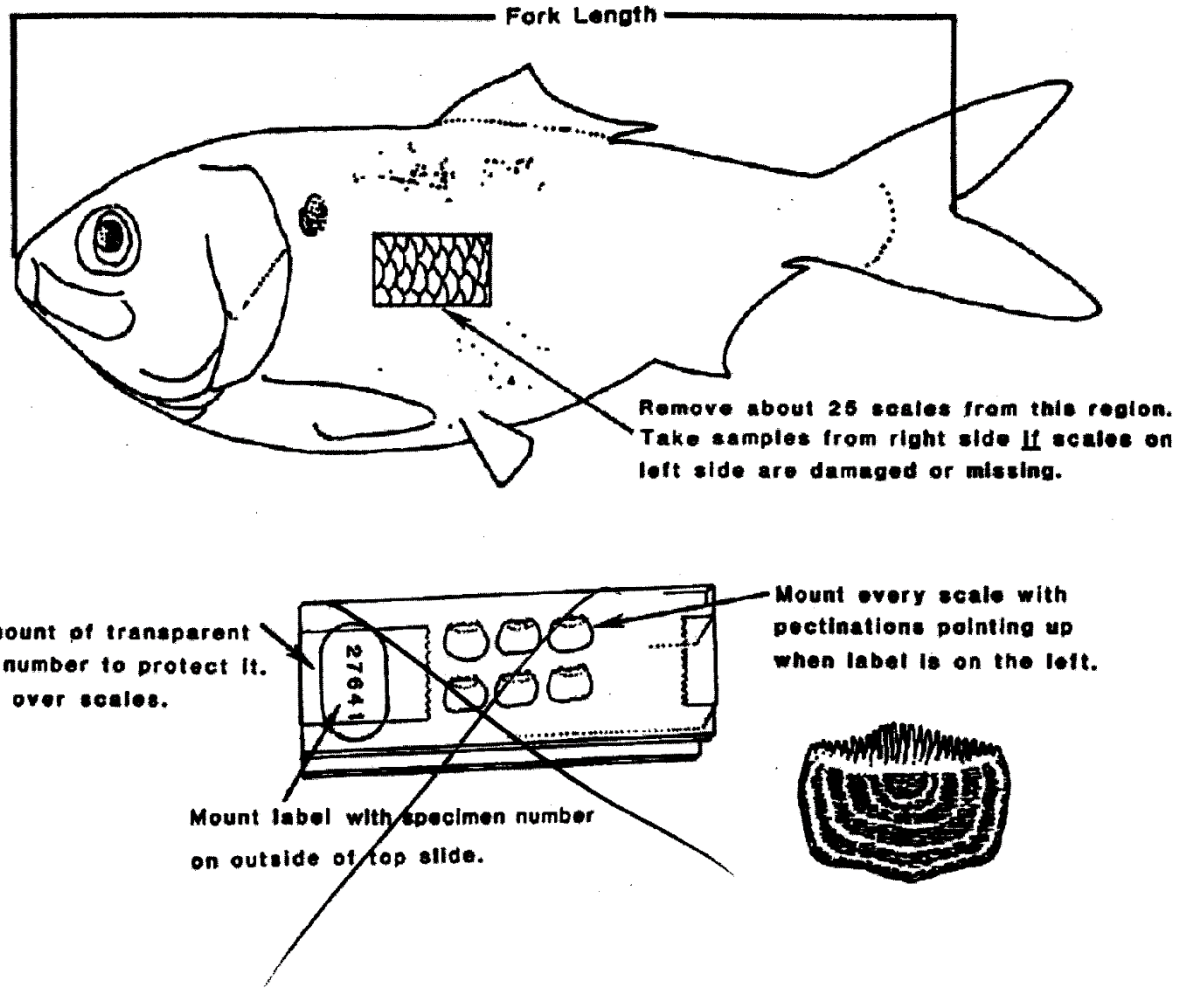
- Ideally, scoop a bucket of menhaden at random from the top of the fish hold.
- If the menhaden have already been packed out in flats or fish boxes, take 15-20 fish at random from the container.
- If available, record date of capture, location of capture, and vessel name. Usually we write this info on a waterproof tag and toss it in with the bagged menhaden sample.

Processing the 'Sample'

- Select a data sheet from the top of the pile. Write-in pertinent sample info on left half of data sheet:
  - Year Caught - last two digits
  - Vessel Name - just a name; we'll assign a vessel number at Beaufort
  - Location Caught - write location above the boxes; we'll assign a location code at Beaufort
  - Month and Day
  - LEAVE BLANK - Species and Scale Reader
  - Initial the data sheet (bottom right), and write any miscellaneous comments in the 'Remarks' box of the data sheet, eg, gear type, port of landing.
- Before you begin to handle the fish for lengths and weights, lay out ten coin envelopes on the counter-top and **label each on the back** with the unique 5-digit 'Specimen Number' found on the right side of the data sheet.
- From the plastic bag, bucket, etc. holding the menhaden sample, randomly draw out 10 fish. Process each of these 10 fish for fork length (in mm), weight (to the nearest whole gram), and remove a scale patch. Write fork lengths and weights for each of the 10 sample fish in the appropriate boxes on the right side of the data sheet.
- Scale patches are removed from mid-body, just below the start of the dorsal fin. See illustration in sampling manual.
  - Place scale patches in the appropriately labeled coin envelope, ie, scale patch from the first fish in the sample goes in the coin envelope labeled with the specimen number ending in '1'; scales from second fish go in coin envelope ending with specimen number ending in '2, etc.
- Re-bind ten coin envelopes with a rubber band. Paper-clip the coin envelopes to the top of the data sheet.
- Mail data sheets and coin envelopes to Beaufort via Dr. Matt Cieri.

Questions?? - Call Joseph W. Smith, NMFS Beaufort, 252-728-8765

FIGURE 2



Attachment 5

COMMERCIAL PORTSIDE BYCATCH SURVEY PROTOCOL

EXPLANATION:

The bycatch survey represents a unique opportunity to collect data in an inexpensive but efficient and accurate way. The program takes advantage of normal processing plant operations by quantifying bycatch that enters the facilities. Processing plants have to manually remove other species from the production line before the fish are sorted and cut or frozen. In normal operations, bycatch removed from the product is segregated into xactix bins or totes and removed from the processing floor at the end of each lot. Plants process one lot (fish caught by one vessel on a particular trip, delivered by truck or boat) at a time and then reset the plant in preparation for the next lot. Therefore, the bycatch removed from each lot can be documented and assigned to a catch location, gear type, date and a total lot amount. Additionally, the plants generally buy herring from vessels throughout the fishery and therefore cover multiple gear types, vessel sizes and individual fishing practices.

The bait industry has changed tremendously in the last five years resulting in a much more centralized distribution structure. Generally the herring used for bait goes through a large wholesale dealer to smaller dealers and lobster wharfs along the coast. The wholesale dealers generally have facilities where they sort, barrel, freeze and store bait for redistribution. It is at these sites where effective bycatch surveys can also be done, thereby including the bait sector in this study.

The sampling takes place at processing plants and bait dealers in Maine, New Hampshire, Massachusetts, Rhode Island and New Jersey. Sampling sites are selected by targeting Tier 1 locations first and then relying on Tier 2 locations to meet weekly goals. A sampling level of five percent of the entire herring fishery is targeted (Table 1). The mackerel fishery will be sampled if the target levels for the herring fishery are being reached or when herring samples are not available. This scenario is most likely to occur in the winter months when many of the herring vessels switch to the mackerel fishery. The samplers quantify bycatch from individual lots that enter the processing and bait plants according to a NMFS specified protocol. The total weight of any observed bycatch are recorded along with species identification, total species weight, individual lengths and weights of all fish or a representative sub-sample.

From 2004 thru 2008 the average annual herring landings were 91,803 metric tons. Over this five year period, April averaged the lowest landings of 2,033 metric tons, yielding about 2% of the annual landings (Figure 1). August averaged the highest landings of 13,438 metric tons, and yielded about 15% of the annual landings.

Table 1: Target sampling levels for herring

Month	5% Herring landings
January	319.82
February	270.91
March	144.92
April	101.63
May	346.8
June	355.3
July	544.18
August	671.9
September	502.18
October	646.28
November	386.65
December	299.61
Totals MT	4590.18

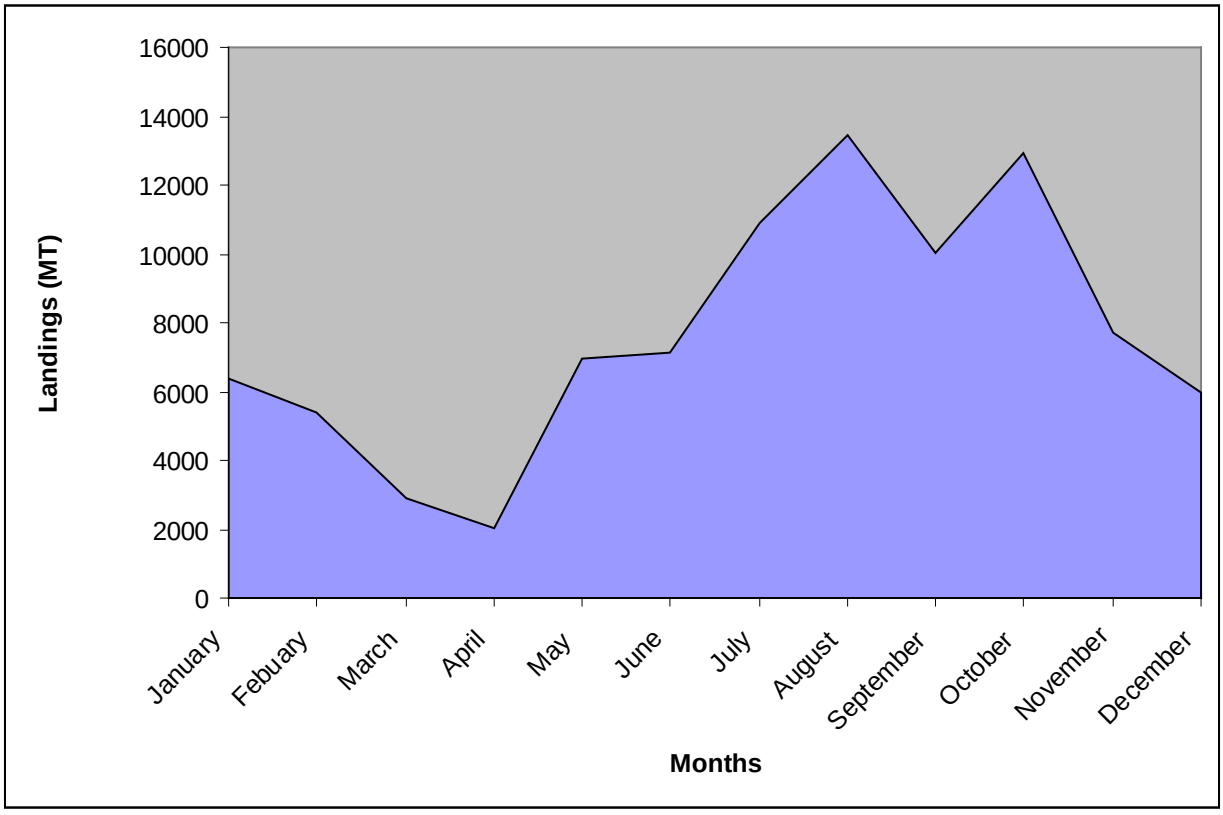


Figure 1: Five year average (2004-2008) of monthly herring landings

COMPLETE SAMPLING PROTOCOL:

The samplers collect and quantify all bycatch from individual lots of fish (transported by trucks or vessels) that enter the processing facilities. Samplers position themselves at the point of entry into the facility along an assembly line or at the base of the hoppers where the fish are unloaded. Sampling is conducted before grading or sorting of the catch occurs. All bycatch is removed from the assembly line or hopper and placed in bushel baskets or buckets specific to each species. Species identification is accomplished by examination and the use of identification keys when appropriate as outlined in NMFS and NEFOP protocols. The total weight of any observed bycatch is recorded along with species identification, total species weight, individual lengths and weights of all fish according to a NMFS and ACCSP specified protocol. If there is a large amount of one species, the total weight is recorded and then length frequencies and weight are gathered from a sub sample of n=50. The information collected for each bycatch study is recorded on the data sheets (see "Data Sheets" section of packet) and entered into the MEDMR biological database.

SUB-SAMPLING PROTOCOL:

A sub-sampling protocol is utilized when sampling a large volume of catch, determined as greater than 80,000 lbs. (~40 mt). Instances where this is likely to occur include sampling sites where vessels land an entire catch (as much as one million pounds) to a single facility. Sub-sampling is also appropriate in instances when there is an overwhelming amount of bycatch and/or non-targeted species mixed in with the lot of fish. In these cases it can be impossible to use the complete sampling protocol regardless of the amount inspected (< 80,000 lbs.). These situations are likely to occur when vessels are fishing mixed groups of herring and mackerel, some of which have a 50-50 composition.

Sub-samples are to be collected using bushel baskets at timed intervals during the pumping or unloading process following the NMFS at-sea observer sampling protocol. To accomplish this type of sub-sampling one needs to know the total lot weight and the duration of time it will take to unload the catch. After sampling the bushel basket of fish should be sorted by species, and total weight of each species and length frequencies should be recorded (sub sample n=50, for length frequencies if more than fifty of any species occurs).

Example:

Lot size = 120,000 lbs. (3 Trucks)
Pumping or unloading time = 3 hours (180 minutes)

If a sample basket is to be collected for every 10,000 lbs. of fish, then **12 sample baskets** need to be collected over the entire pumping or unloading process.

120,000 lbs./10,000 lbs. = 12

If the entire pumping or unloading process takes an estimated 180 minutes, than **a basket sample needs to be taken every 15 mins.**

If the catch composition from the bushel baskets is 99% Atlantic herring, than one can extrapolate that out of the 120,000 lbs. unloaded, then 118,800lbs is Atlantic herring.

99% Atlantic herring = 120,000 lbs. x 0.99 = 118,800lbs of Atlantic herring

If the remaining 1% of the catch composition is Atlantic mackerel, then one can extrapolate that out of the 120,000 lbs. unloaded, 1,200lbs is Atlantic mackerel

1% Atlantic mackerel = 120,000lbs x 0.01 = 1,200lbs of Atlantic mackerel

Attachment 6: Negotiated Indirect Cost Agreement

Department of Marine Resources

INTEROFFICE MEMORANDUM

TO: FILE

FROM: PATRICK KELIHER, COMMISSIONER

SUBJECT: RATE USED FOR COST ALLOCATION

DATE: 6/3/2021

In accordance with OMB Circular A-87, the Department of Marine Resources has submitted to the U.S. Department of Commerce a departmental cost allocation plan for use during state fiscal year 2019 ending June 30, 2019. The indirect cost rate proposal is 34.30%. I am authorizing the use of the lesser rate of 30% to be used during this period.

ACCSP
"Portside commercial catch sampling and comparative bycatch sampling for Atlantic herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), and Atlantic Menhaden (*Brevoortia tyrannus*) fisheries"

(July 1, 2022 – June 30, 2023)

Patrick Keliher, Commissioner 6/4/21

MATTHEW D. CIERI
Maine Department of Marine Resources
McKown Point Rd.
West Boothbay Harbor, ME 04575
(207) 215-3709
(207) 380-5016 (cell)
Matthew.cieri@maine.gov

EDUCATIONAL EXPERIENCE

B.S.	Marine Science, Stockton College of New Jersey	1993
M.S.	Biology (Marine Ecology), Rutgers University	1995
Ph.D.	Oceanography, University of Maine	1999

PROFESSIONAL EXPERIENCE

Marine Resource Scientist, Maine Department of Marine Resources 2/01-present
Post-Doctoral Scientist, The Ecosystem Center, Marine Biological Laboratory 9/99-2/01
Graduate Research Assistant, School of Marine Science, University of Maine 5/95-9/99
Research Technician, Cranberry/Blueberry Research Laboratory, Rutgers /USDA 5/95-9/95
Graduate Teaching Assistant, Department of Biology, Rutgers University 9/93-9/95
Graduate Research Assistant, Institute of Marine Sciences, Rutgers University 10/93-4/94
Animal Laboratory Technician, Department of Natural Sciences, Stockton College 10/92-9/93

CURRENT DUTIES

Atlantic Herring: New England Fishery Management Council (NEFMC) and Atlantic States Marine Fisheries Commission (ASMFC)

- Oversee catch and landings reporting. Use of VTR (Vessel Trip Reports), Dealer Reports, & IVR (Interactive Voice Reports) to analyze and report landings and catch data to NMFS (National Marine Fisheries Service) regional office, NEFMC, and ASMFC
- Monitor IVR system: Query IVR database and report landing weekly to interested parties. Design and execution of a catch and effort model to predict appropriate "Days Out" needed to extend the fishery in some areas
- Commercial and Bycatch Sampling: Oversee the collection, inventorying, processing, and ageing of herring samples, also verify data entry. Make data available to interested parties. Supervise two full-time and one part-time technician. Produce compliance reports for ASMFC
- Monitor Herring spawning condition: Analyze biological sample data to determine spawning activity status. Indicate when areas should be closed to fishing to protect spawning herring
- Herring PDT (Plan Development Team) & Stock Assessment Subcommittee member (NEFMC & ASMFC): Participate in Stock assessments and analysis of catch and landings statistics for the Herring SAFE report. Develop the catch at age matrix for use in Virtual Population Analysis (VPA) and Age Structure Assessment Program (ASAP) models. Provide technical advice to management; Current Technical Committee Chair (ASMFC)

Whiting and Small mesh Multispecies (NEFMC):

- PDT & Stock Assessment Subcommittee member (NEFMC): Participated in stock assessment activities; Revision of overfishing and biomass reference points; Analysis of catch and landings statistics; Provide technical advice to management.

Spiny Dogfish (ASMFC):

- Participated in stock assessment activities and management analysis; Revision of overfishing and biomass reference points; Analysis of catch and landings statistics; Provide technical advice to management.

Assessment Science Committee (ASMFC):

- Provide stock assessment and technical advice to ASMFC Policy board including; Sampling targets for fishery independent and dependent sampling; Workload and scheduling for ASMFC stock assessment and participating scientists; coordinate Advanced Stock assessment training workshops

Multispecies Technical Committee Chair (ASMFC):

- Provide stock assessment and technical advice to ASMFC Policy on predator/prey relationships; Update and Expand MS-VPA (Multispecies Virtual Population Analysis) model as appropriate; Assist in incorporating Predator/prey and natural mortality estimates in the Atlantic Menhaden Assessment. Current Chair

Atlantic Menhaden (ASMFC)

- **Stock Assessment Subcommittee:** Provide estimates of natural mortality and participate in general assessment activities.

Biological Review Panel (ACCSP):

- Provide recommendations of priority and scope of fishery dependent and independent sampling for East Coast Fisheries

PREVIOUS DUTIES

Monkfish

- **PDT & Stock Assessment Subcommittee member (NEFMC):** Participated in stock assessment activities; Revision of overfishing and biomass reference points; Analysis of catch and landings statistics; Provide technical advice to management.

Atlantic Menhaden (ASMFC)

- **Technical Committee Chair:** Writing consensus documentation from technical meetings; Provide analysis of catch and landings data; Analyze current assessment methods; Present findings to the Menhaden Management Board. Produced compliance reports for the state of Maine
- **Multispecies Subcommittee Chair:** Provide technical guidance on conceptualization and implementation of the Menhaden Multispecies ecosystem model; Report progress to the Menhaden Management Board.

American Eel (ASMFC)

- **Stock Assessment Subcommittee Chair:** Organized and lead meetings with both scientific and stakeholder participants. Writing consensus documentation from technical meetings. Provided analysis of catch and landings data. Analyzed assessment methods for use in the stock assessment. Presented results during ASMFC external peer review and Eel Management Board.

Erin L. Summers
Maine Department of Marine Resources
(207) 633-9556
erin.l.summers@maine.gov

Profile:

- Work collaboratively with state, federal, academic, conservation, and industry partners to reduce whale entanglements
  and mortality in marine mammals and sea turtles through bodies such as the Atlantic Large Whale Take Reduction team and Atlantic Large Whale Disentanglement Network.
- Build research programs to provide baseline data on large whale life history, ecology, and habitat use in Maine's coastal rocky bottom habitats. Design new and emerging methodologies to inform management decisions.
- Oversee research and monitoring programs within the Division of Biological Monitoring at DMR, including the lobster programs, surveys for scallops, sea urchin, shrimp, and herring, recreational fisheries program, inshore trawl survey, and the landings and reporting group.
- Represent the Department of Marine Resources in stakeholder meetings, including those for wind energy permitting, Natural Resource Damage Assessments, department wide research and priority setting, etc.
- Member of the Atlantic Scientific Review Group advising NOAA Fisheries on marine mammal stock assessments

Education:

MA Biology: Boston University Marine Program	Woods Hole, Ma.	5/02
BA Biology, Spanish minor: Truman State University	Kirksville, Mo.	5/00

Employment:

Jan 2017 – present: Marine Resource Scientist IV
Maine Department of Marine Resources
West Boothbay Harbor, Me

- Oversee Division of Biological Monitoring, including Commercial Landings Program, Benthic group (lobster, scallops, urchins), and Pelagics group (herring, groundfish, shrimp, and recreational fishing)
- Lead Scientist for DMR's Large Whale Conservation Program
- Member of the Atlantic Large Whale Take Reduction Team

Feb 2006 – Jan 2017: Marine Resource Scientist II
Maine Department of Marine Resources

- Lead scientist for DMR's Large Whale Conservation Program
- Secured grant funding, wrote reports, tracked budgets to support research projects
- Completed projects to support management decisions for the Atlantic Large Whale Take Reduction Plan, including tagging humpback whales, right whale habitat surveys, passive acoustic surveys, gear density surveys, testing alternative fishing gear, characterizing fishing practices, etc.
- Oil Spill Response Coordinator
- Assist with GIS coordination

Jan 2010 – May 2010: Adjunct Faculty
Unity College
Unity, Me

- Taught upper level course in the biology of Marine Mammals

Feb 2004 – Feb 2006: Marine Mammal Research Specialist
University of New England
Biddeford, Me

- Lead Research technician on project to track and predict right whale habitat use and distribution
- Analysis of remotely sensed data and right whale sightings in the Bay of Fundy Critical Habitat
- Assisted with report writing and budget tracking
- Completed project and published paper analyzing right baleen using stable isotope analysis
- Completed project and published papers satellite tagging and tracking baskings sharks off the coast of New England

Sept 2002 – Feb 2004: Research Technician
Cetacean and Sea Turtle Team, NOAA Fisheries Service
Beaufort, NC

- Lead technician tracking and analyzing movements of satellite tagged dolphins
- Perform field work including fishing gear and dolphin aerial surveys, boat based dolphin biopsy and photo-identification surveys, satellite tagging dolphins, responding to strandings, etc.
- Participate in necropsies as needed

Oct 2000 – June 2002: Laboratory Technician
Marine Biological Laboratories
Woods Hole, Ma

- Manage daily operations of the laboratory of marine veterinarian, Roxanna Smolowitz
- Run experiments and document methodologies and results
- Prepare media, samples, histology slides, and other lab bench work

Proposal for Funding made to:
Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22201

Advancing Fishery Dependent Data Collection for Black Sea Bass (*Centropristis striata*) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Fishing Vessel Research Fleet Approach

Submitted by:

Jason McNamee, PhD
Rhode Island Department of Environmental Management
3 Fort Wetherill Rd.
Jamestown, RI 02835
jason.mcnamee@dem.ri.gov

N. David Bethoney, PhD
Commercial Fisheries Research Foundation
P.O. Box 278
Saunderstown, RI 02874
dbethoney@cfrfoundation.org

and

Thomas Heimann, MsC
Commercial Fisheries Research Foundation
P.O. Box 278
Saunderstown, RI 02874
theimann@cfrfoundation.org

Applicant Name: Rhode Island Department of Environmental Management (RI DEM) and the Commercial Fisheries Research Foundation (CFRF)

Project Title: Advancing Fishery Dependent Data Collection for Black Sea Bass (*Centropristis striata*) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Fishing Vessel Research Fleet Approach

Project Type: Maintenance

Requested Award Amount: $132,005

Requested Award Period: August 1, 2022 – July 31, 2023

Principal Investigators: Jason McNamee, PhD, Deputy Director of Natural Resources, Rhode Island Department of Environmental Management, David Bethoney, PhD, Executive Director, Commercial Fisheries Research Foundation; Thomas Heimann, MsC, Research Biologist, Commercial Fisheries Research Foundation

Date Submitted: June 11, 2021

Objective:

This proposal is a request for financial support for an additional 12 months of biological catch, effort, and bycatch sampling by the Black Sea Bass Research Fleet, which was successfully piloted in 2016 with support from ACCSP and has been in continuous operation since. Since the first year of funding provided by the ACCSP, the Research Fleet has sampled 29,741 black sea bass from 1,949 locations throughout the inshore and offshore fishing grounds of southern New England and the Mid-Atlantic. The Research Fleet will continue data collection through July 31, 2022 (Year 5 of funding from ACCSP). All biosamples data collected by this project during previous years of funding have been communicated to and accepted by ACCSP bi-annually. The project team will continue to deliver data to ACCSP in this manner throughout Year 5 of funding, and the proposed project will allow for the continued delivery of black sea bass biosamples data to ACCSP at six-month intervals through July 31, 2023.

The goal of the proposed project is to continue the Research Fleet's sampling efforts to develop a year-round, long-term time series of black sea bass (*Centropristis striata*) catch, bycatch, and biological data for five different gear types (trawl, lobster/crab pot, fish pot, gillnet, rod and reel) throughout the Southern New England (SNE) region and reaching into the Mid-Atlantic (MAB) region. The continuation of this project is critical to the evolution of black sea bass assessment and management efforts by the Atlantic States Marine Fisheries Commission, Mid-Atlantic Fisheries Management Council, Northeast Fisheries Science Center, and Atlantic Coastal Cooperative Statistics Program as the Black Sea Bass Research Fleet produces spatially

and seasonally distinct catch data for numerous commercial and recreational gear, which is currently lacking for this species.

Project components include: 1) Continue the existing fishery dependent data collection program that utilizes fishing vessels and a custom designed sampling application to collect and relay biological catch and bycatch data (number, length, sex, disposition) and fishery characteristics (location, gear type, effort, habitat) for black sea bass from across the SNE/MAB region throughout the year; 2) Internal data analysis to address research questions about spatiotemporal patterns in black sea bass biological and fishery characteristics and gear-specific selectivity; and 3) Communication of project data and results to the Atlantic Coastal Cooperative Statistics Program (ACCSP), black sea bass stock assessment scientists, managers, and members of fishing industry.

In summary, the general goals of the proposed project are:

1) Collect and communicate critically needed fishery dependent black sea bass data (catch and effort, bycatch, and biological) in a cost-effective way using modern electronic technology and fishermen's time on the water;
2) Contribute to the evolution of the northern Atlantic black sea bass stock assessment and associated management measures;
3) Demonstrate a model for fishery dependent data collection, management, analysis, and utilization that can be duplicated in a cost-effective way in other regions of the black sea bass range and in other fisheries.

Specific objectives include the following:

- Continue the Black Sea Bass Research Fleet for an additional 12 months to further refine seasonal characterizations of northern Atlantic black sea bass biology and distribution;
- Collect fishery dependent black sea bass data from five gear types (trawl, lobster/crab pot, fish pot, gillnet, rod and reel) across the SNE/MAB region to characterize the size and sex distributions of black sea bass catch and bycatch and investigate the spatial and temporal trends of the fishery;
- Maintain and evolve the On Deck Data application to meet the data needs of scientists and the logistical needs of participant fishermen;
- Communicate black sea bass biosamples data to ACCSP every six months;
- Ensure all project data is available to Northeast Fisheries Science Center (NEFSC) scientists for inclusion in the Black Sea Bass Research Track Assessment scheduled for November 2022
- Conduct internal analyses of the project database to: 1) Assess the selectivity and CPUE of five gear types in the SNE/MAB region and explore temporal variability, and 2) Further monitor and assess spatial and temporal trends in species' catch and bycatch composition and fishery characteristics;

- Further refine gear-specific fishery dependent indices that utilize different data error structures, standardization techniques, and Bayesian applications;
- Communicate to a broad audience the benefits and inherent value in this type of collaborative data collection program.

Need:

As asserted in the ACCSP Biological Review Panel's biological sampling priority matrix, black sea bass is identified as a top priority species for data collection, receiving the highest total priority ranking for inadequate biological sampling (ACCSP 2021), and the species remains a high priority for managing stakeholders (ASMFC, NMFS, and state agencies). In recent decades, the distribution and center of biomass of black sea bass has been experiencing a northward shift, likely due to climate change (Bell et al. 2014). As a result, the lack of adequate data for northern Atlantic black sea bass in particular is an issue of regional importance, as this highly valuable stock ranges from Cape Hatteras to the Gulf of Maine (Musick & Mercer 1977, Moser & Shepherd 2009). In part due to the dearth of data throughout the black sea bass range, assessment and management efforts have been slow to react to the shifting distribution of the species and growing abundance of the northern stock (Bell et al. 2014, NEFSC 2017). As stated by ASMFC (2019), high priority data needs for black sea bass include increased sampling of commercial landings and sample size of observed charter trips. The Black Sea Bass Research Fleet has, and will continue to with additional funding, provide precisely this information. Ultimately, cost-effective sampling programs, such as the Black Sea Bass Research Fleet, are needed to collect these data on regional scales and inform and evolve the stock assessment to consider the complex life history and ever evolving spatial structure of black sea bass.

Fishery dependent data has become an important source of information that is used as a term of reference for many stock assessments, but in the case of the northern Atlantic black sea bass stock, the data generated by the Black Sea Bass Research Fleet serves as the only systematically collected fishery dependent data source with a focus on the data being used in the assessment process. Thus, this project seeks to strengthen the fishery dependent data for this population to provide better information from across the temporal and spatial distribution of the northern stock.

The limited coverage of optimal black sea bass habitat and semi-seasonal (spring/winter) sampling schedule of the NEFSC trawl survey may limit the suitability of the survey data for the stock assessment (ASMFC 2013) and require the addition of new data streams to improve the information available to assessment. Recent stock assessments for the southern Atlantic black sea bass stock have adapted sampling and analytical techniques to better fit the life history and habitat associations of black sea bass. These stock assessments rely heavily on fishery-dependent data collected from multiple commercial and recreational fleets representing multiple gear types to inform the stock assessment model using data such as annual length compositions of landings and discards, gear selectivity curves, and indices of abundance (SEFSC 2013; SEDAR 2018). Such fishery-dependent parameters, however, have not yet been developed for the northern Atlantic black sea bass stock due to insufficient data, but will

become possible if the Black Sea Bass Research Fleet is able to amass a robust time series of data. This project aims to address this need by maintaining the existing Black Sea Bass Research Fleet to conduct year-round biological sampling of black sea bass fishing effort, catch composition, and bycatch composition within the trawl, lobster/crab, fish pot, gillnet, and rod and reel fisheries in the SNE/MAB region.

Ultimately, the proposed project will help meet ACCSP's mission of improving data quality for fisheries science. In addition, this project, and its integration with the ACCSP data housing program, will lend to the other mission of the ACCSP, namely by contributing to a single data management system that will meet the needs of fishery managers, scientists, and fishermen. Collecting timely scientific data across a species range is imperative for successful fisheries management, as more robust data enables fisheries science to be as comprehensive as possible, which in turn supports informed and efficient decision making by managers. Furthermore, stock assessment scientists rely on robust biological, catch and effort, and bycatch data to help improve the quality of stock assessments. In these ways, the proposed project meets all the main elements of the mission of ACCSP.

Results and Benefits:

The results of the proposed project include:

- Improved quality, quantity, and timeliness of biological, catch and effort, and bycatch data for the northern Atlantic black sea bass, made available via the ACCSP;
- A vetted source of year-round black sea bass data that can be used to inform the stock assessment and management of this data poor species;
- Coordinated data transmission procedures with the ACCSP that follow the CFRF's existing data communication practices with ACCSP;
- A demonstrated, cost effective, method to collect data for a commercially and recreationally important species from areas and times of year not accessed by existing survey programs;
- Improved collaboration and trust between fishermen, scientists, and managers;
- Improved accuracy and credibility of the stock assessment and management plan for the northern Atlantic black sea bass stock;

The benefits of the proposed project are:

- Address priorities of ACCSP by providing critically needed black sea bass data from the SNE/MAB region to support assessment and management efforts that reflect the current state of the resource;
- Provide an efficient and constructive way for fishermen to be involved in the scientific process by using modern technology to collect quantitative black sea bass data during routine fishing practices;
- Fill black sea bass data gaps in areas, habitats, and times of year not covered by standard survey techniques;

- Evolve and improve the black sea bass stock assessment by providing expanded biological data from retained and discarded black sea bass from a variety of gear types;
- Support regional science and management agencies, including ACCSP, ASMFC, MAFMC, and state agencies in their efforts to sustainably manage the black sea bass resource;
- Support diversification and resilience of fishing communities in the many states across the Atlantic coast with a black sea bass fishery;
- Provide a model for cost-effective fishery dependent data collection efforts in other regions and fisheries.
- Build strong working partnerships between fishermen, scientists, and managers that will contribute to the sustainable management of the nation's living marine resources;
- Build confidence in the efficacy of the northern Atlantic black sea bass stock assessment and management process.

Data Delivery Plan:

An important component of the proposed project is the compilation and communication of fishery and biological data to the ACCSP, participant fishermen, stock assessment scientists, and management teams, which will allow this project to have the greatest impact on black sea bass management as possible. The CFRF will maintain the black sea bass database for internal project analyses (described below) but will also regularly share the project data with other users, regardless of any internal publication endeavors.

Copies of the black sea bass database will continue to be sent bi-annually (every six months) to the ACCSP. These data will be compiled in a format that is compatible with the ACCSP database to encourage data be readily used in the black sea bass stock assessment and other analyses. Data submissions to the ACCSP will build upon the established procedures from the first four years of the project. All data provided to the ACCSP will match ACCSP data collection standards and any requested and available metadata will be provided. At the end of the project, data will also be made available to fishery scientists at the NMFS Northeast Fisheries Science Center. A vessel ID system will be used to maintain the confidentiality of participant fishing vessels. The CFRF will maintain open communication with the ACCSP data coordinator and will remain available to provide any necessary metadata along with data submissions.

To provide regular feedback to fleet participants, the project team will compile and distribute individual data reports to vessel captains every three months (quarterly). Vessel-specific data reports will include the raw data collected by that vessel during the reporting period as well as the following summary statistics: number of catch sampling sessions, amount of effort sampled (number of trawls, hooks, traps, etc.), average depth of sampling, percentage of black sea bass catch retained for sale, percentage of black sea bass catch discarded, number of black sea bass biologically sampled, sex distribution of black sea bass sampled, minimum/maximum length of black sea bass sampled, and average length of black sea bass sampled. Additional summary statistics will be available upon request. Data reports were compiled and distributed to

Research Fleet participants following the above-mentioned quarterly time frame and content guidelines throughout the entirety of past project sampling.

Completed Data Delivery to ACCSP:

During the first funding year of the project, the CFRF and RI DEM worked with the ACCSP Data Coordinator, Julie Defilippi Simpson, to coordinate data formats, metadata, and delivery procedures for the Research Fleet's black sea bass biosamples data. In addition, in year 4 of the project, the project team worked with the ACCSP data coordinator to update the Black Sea Bass Research Fleet data submission to follow the updated ACCSP biosamples data format. As a result of these efforts, all black sea bass biosamples data collected to date through the funded project have been incorporated into the ACCSP black sea bass biosamples database. The CFRF has maintained the bi-annual data submission to the ACCSP and submits data in June and December of each sampling year. The project team will maintain a bi-annual data delivery schedule to ACCSP throughout the proposed project following the same data formats and standards previously established, as well as any requested updates from ACCSP.

Currently, the Research Fleet collects a suite of additional effort data beyond that which is included in the biosamples data Table 1). To present, this effort data has not been included with past data submissions as the biosamples database at ACCSP is not set up for its inclusion. Continued efforts will be made by the CFRF and RI DEM to incorporate and share all effort data, including retroactively, with the ACCSP.

Approach:

The proposed project seeks to collect, communicate, and analyze critically needed catch, bycatch, and biological data for incorporation into the ACCSP biosamples database and ultimate application in the northern Atlantic black sea bass stock assessment. Project components include: 1) Maintenance of the current Black Sea Bass Research Fleet; 2) Collection of fishery-dependent biological (catch and bycatch) black sea bass data and fishery characteristics for 12 months in the SNE/MAB region; 3) Internal data analysis to address research questions about spatiotemporal patterns in the black sea bass population and fishery; 4) Compilation and communication of project data and results to ACCSP, stock assessment scientists, and fisheries managers; and 5) Outreach and education activities to share findings. Methodological details are outlined below.

Maintenance of Black Sea Bass Research Fleet and Data Collection App:

During the first funding year of this project, the CFRF and RI DEM were successful in developing the Black Sea Bass Research Fleet for fishery dependent data collection, including the development of a Project Steering Committee, solicitation and selection of participant fishing vessels, development of the On Deck Data application and SQL database, refinement of sampling protocols, construction of sampling equipment, training of Research Fleet

participants, on-time initiation of data collection, data delivery to ACCSP and professional and industry outreach. The project was implemented by the PIs, CFRF staff, and a Project Steering Committee, which consists of members of the fishing industry as well as state and federal fisheries scientists and managers. Currently the project is run by the PIs and CFRF staff, and the project steering committee serves in an advisory role and provides feedback on project progress and major milestones as needed. More information about project accomplishments is available on the project website: www.cfrfoundation.org/black-sea-bass-research-fleet.

If funded, during the sixth year of the project, the CFRF and RI DEM will maintain all active fishing vessels supported through year-5 funding from ACCSP. It is important to maintain the current members of the Research Fleet for as long as possible. Ultimately, when data will be applied to the stock assessment or validated in regards to other sources of black sea bass data, having participation from the same vessels throughout the time series will allow project staff to investigate potential vessel effects evident in the data. The sampling rate of the Research Fleet is dictated by the highly seasonal variation of black sea bass catch and bycatch in various fisheries across southern New England and the Mid-Atlantic. As a result, the sampling rate by the Research Fleet fluctuates from year to year. If funds become available due to normal fluctuations in Research Fleet sampling, project Co-PIs will evaluate the possibility of expanding the Fleet to include more vessels. Thus, when possible, and if funds permit, the Research Fleet may be expanded during the proposed project through an open application call for new vessels.

The black sea bass data collection application, On Deck Data, was developed during the first year of the project to enable Research Fleet participants to collect standardized black sea bass data as well as day-to-day observations. On Deck Data prompts participant fishermen to record a suite of session data (location, depth, etc.) and biological data (length, sex, disposition) while at sea. To account for the multi-gear nature of the black sea bass fishery, On Deck Data prompts gear-specific data entry for Research Fleet participants (Table 1). On Deck Data was originally launched during the first year of the project and has received various improvements and quality of life updates in each funded year to streamline data collection.

Table 1. Summary of fishing effort data collected by the Black Sea Bass Research Fleet.

Trawl	Gillnet	Commercial Rod & Reel	Charter	Lobster/Crab Traps	Fish Pot
Mesh Size (inches)	Number of Net Panels Per String	Time Spent Fishing (hours)	Time Spent Fishing (hours)	Soak Time (days)	Soak Time (days)
Tow Time (hours.decimal)	Length of Net Panels (feet)	Number of Rods Fished	Number of Rods Fished	Number of Traps	Number of Traps
Sweep Length (feet)	Mesh Size (inches)	Humber of Hooks Used	Number of Hooks Used	Escape Vent Size (inches)	Escape Vent Size (inches)
	Soak Time (days)			Escape Vent Shape	Entrance Size (inches)
	Net Height (feet)				
	Tie Downs (inches)				

On Deck Data will be maintained throughout the proposed project to allow for efficient data collection and wireless data submission by Research Fleet participants. The CFRF and RI DEM will continue to work with an application developer to address any issues that arise and to update On Deck Data to maintain functionality. Application maintenance is a constant task, as tablets regularly receive operating system updates that may impact On Deck Data functionality. On Deck Data has to receive regular updates to specifically allow for compatibility with accessing and uploading data via wireless internet on new versions of the Android operating system. Further, as tablet models receive minor hardware changes between annual models, reformatting screens of On Deck Data to display properly across tablet models is anticipated.

The Black Sea Bass Research Fleet will continue to follow the fishery-dependent sampling protocols implemented during the first year of the project to collect catch and effort, biological, and bycatch data from the SNE/MAB region. The percentage of project effort devoted to each of these modules is as follows: Catch and Effort 25%, Biological 50%, Bycatch 25%. The estimated project effort devoted to biological sampling reflects the collection of black sea bass length and sex data by participant vessels during three trips per month for 12 months. The intention of data collection is to provide a biological characterization of the catch and discards of black sea bass from a variety of gear types in the SNE/MAB regions. The estimated effort devoted to the catch and effort module is based upon sampling during the open black sea bass fishing season, sub periods open to commercial fishery exist nearly year-round. Further due to the multi-gear nature of the Research Fleet, every vessel interacts with black sea bass as targeted catch or bycatch differently even during open periods. Finally, the project effort allocated to the bycatch module reflects sampling efforts conducted while the commercial black sea bass fishing season is closed and while participant vessels are targeting other species. Due to the low daily allocation through the summer and fall seasons in Rhode Island, there is still a large portion of bycaught black sea bass sampled after vessels have hit their daily limits.

Fishery-Dependent Data Collection:

The Black Sea Bass Research Fleet started collecting data on November 30, 2016 and, if this proposal is funded, will continue to do so utilizing the established sampling protocols and procedures through at least July 31, 2022 (through Year 6 of ACCSP funding). The Black Sea Bass Research Fleet currently consists of seventeen active fishermen based in Rhode Island and New Jersey, chosen strategically to provide data coverage from across the SNE/MAB region, throughout the year, from a variety of gear types. In 2020, two fleet members, F/V Lady Clare (lobster pot), and F/V Excalibur (offshore trawl), retired from commercial fishing as well as the Fleet. The other original vessels, F/V Johnny B (fish pot, rod & reel, lobster pot), F/V Laura Lynn (fish pot, rod & reel, lobster pot), F/V Matrix and F/V Lucy Rose (same captain; lobster/crab pot), F/V Nancy Beth (gillnet), F/V Priority Too (rod & reel, charter), F/V Second Wind (offshore trawl), F/V Sweet Misery and F/V More Misery(same captain; gillnet, lobster pot), F/V Debbie Sue (trawl), F/V Harvest Moon (fish pot, lobster pot), F/V X-Terminator (fish pot, gillnet), F/V Blue Label and Virginia Bae (fish pot, gillnet), and F/V Brooke C (Lobster/crab pot, fish pot, scallop dredge) have been maintained since previous years' funding. Despite the retirement of

two vessels, the Research Fleet expanded during the most recent project year adding the F/V Catherine Ann (fish pot, lobster pot), F/V New Hope (fish pot), F/V Ragged Edge (fish pot), F/V Savannah Paige (fish pot), and F/V Saturn (fish pot). The expansion targeted fish pot vessels based on communication with the Mid-Atlantic Fisheries Council and their priority to better understand discards by this gear type. The F/V Savannah Paige and F/V Saturn are based out of New Jersey, which has significant black sea bass fish pot effort. The vessels and port were identified with the aid of Rutgers Cooperative Extension and New Jersey Department of Environmental Protection. They represent the first inclusion of vessels based outside of Rhode Island to the Research Fleet.

The majority of samples have originated from statistical areas 537 and 539 as these two statistical areas exclusively cover the fishing grounds of the F/V Johnny B, F/V Laura Lynn, F/V Matrix, F/V Priority Too, and now F/V Catherine Ann, all of which are either seasonal fishing vessels or do not interact with black sea bass in the winter. The majority of inshore lobster, fish pot, rod and reel and gillnet samples come from the end of spring through the end of the fall when black sea bass are in highest abundances inshore in statistical areas 537 and 539. The F/V Brooke C fishes offshore and interact with black sea bass heavily in the winter and spring months, however this vessel encounters black sea bass less frequently through the summer and fall. The F/V X-Terminator and F/V Blue Label both fish seasonally and mostly inshore in stat area 537 and were brought into the Fleet to expand the number of gear replicates in the gillnet and fish pot fisheries. The F/V Debbie Sue fishes further south than most of the Rhode Island based Research Fleet members and consistently completes trips into the MAB region south of Hudson Canyon. Two new vessels, F/V Savannah Paige and F/V Saturn, are both based in New Jersey and have already begun sampling in two new statistical areas (620 and 621) not previously covered by the Black Sea Bass Research Fleet. In total, the Black Sea Bass Research Fleet has sampled black sea bass from 13 distinct statistical areas, 525, 533, 537, 538, 539, 611, 613, 615, 616, 621, 622, 626, and 632.

Participant fishermen will use Samsung Tab A tablets pre-programmed with On Deck Data, described above, to efficiently and accurately record and transmit fishery dependent data. As such, the proposed project will advance the use of electronic technology in at-sea biological data collection, management, and analysis efforts. The goal for each participant is to conduct at-sea catch sampling sessions during three fishing trips each month (Nelson 2014). Thus, across the 17 active vessels, the Black Sea Bass Research Fleet will aim to sample up to 51 trips per month, resulting in as many as 612 trips over twelve months. Given the population inferences implied in the project objectives and the aggregating nature of black sea bass, a biological sampling (length/sex) minimum of 50 black sea bass per location will be the required (Zhang & Cadrin 2012). With a goal of sampling three locations per month, the Research Fleet may sample up to 30,600 black sea bass over the course of the year.

The realized sampling frequency, however, will be dependent on a variety of factors, including weather, seasonal black sea bass distribution, and fishery closures. Further, due to the high seasonality of a large portion of the Black Sea Bass Research Fleet, fishery sampling frequency

exhibits high seasonal fluctuations. Due to the multi-gear nature of the Research Fleet, the proposed sampling targets do not adequately represent the fishing schedules for each gear type. For example, due to the low daily catch limit (50 pounds per day per vessel for most of the year) in Rhode Island for black sea bass if a fishing vessel is only targeting black sea bass on a day trip and the limit is caught, all fishing ceases. This leads to instances where sampling 50 black sea bass per location becomes unfeasible as fishing may have already stopped prior to landing 50 black sea bass. Further, many of the larger trip vessels are mainly retaining their daily or trip limits of black sea bass from bycatch while targeting other species, which again leads to instances of fishing ceasing prior to 50 black sea bass caught. However, the goal of sampling 150 black sea bass per month remains to ensure statistical power. Vessels may sample fewer fish from more than three locations to reach the 150 fish per month target. Further, the same scenario occurs in highly mobile fishing gears, such as charter and commercial rod and reel, which will often change locations prior to catching 50 black sea bass. Both instances may lead to the potential for more numerous sampling locations with fewer fish from each location. Finally, the maximum target of 27,000 black sea bass would only be achievable if all Research Fleet participants operated year-round. Since many of the gear types represented within the Research Fleet stop fishing for the winter months, the realized sampling numbers are lower.

At each sampling location, participant fishermen will use On Deck Data to record the date, time, location, statistical area, depth, habitat type, target species, gear type, effort deployed (see Table 1), total number or pounds of black sea bass retained and discarded, and length, sex, and disposition of at least 50 black sea bass. Sampling date, time, and location will be automatically recorded by the internal tablet GPS. Standardized fish measuring boards will be used across the Research Fleet to ensure a consistent measure of fish length to the nearest centimeter. Data will be wirelessly uploaded to a MySQL database once a vessel returns to port and continually monitored by the project team. This data communication, review, management, and storage process was established and vetted during the first year of the project and has been implemented in each year since.

Scientific collector's permits, issued by RI DEM, will be obtained for vessels fishing within Rhode Island state waters to allow for black sea bass collection for laboratory sampling. These permits were successfully acquired multiple times during the first funding years of the project and will be extended through subsequent years of data collection and expanded to cover new Research Fleet participants. During the 2020 sampling year, it was decided to no longer obtain an Exempted Fishing Permit for Research Fleet sampling. The exemptions allowed for recreational retention regardless of closure periods and exempted commercial rod and reel and charter vessels from minimum size limits for sampling purposes. Neither of these exemptions were necessary for Research Fleet operation as no black sea bass are retained for laboratory sampling from federal waters. They also allowed for participant to keep undersized fish onboard longer than the time needed for sampling.

Internal Data Analysis:

As described above, the Black Sea Bass Research Fleet was able to operate effectively and deliver data in an efficient manner during the first four+ years of data collection, sampling over 29,741 black sea bass from 1,949 sampling sessions conducted from coastal Rhode Island into the MAB and east to George's Bank from November 30, 2016 to May 1, 2021 (Figure 1). These data are summarized in Table 2. The ultimate application of these data will be the black sea bass stock assessment. To achieve this goal, the project team has worked directly with steering committee members and black sea bass stock assessment scientists (Gary Shephard, NEFSC; Steve Cadrin, SMAST) since the beginning of the project to ensure that Research Fleet data is of the necessary quality and structure for utilization in the stock assessment. Communication with the above listed stock assessment scientists will continue with the proposed project. Work with the stock assessment scientists will be focused on directly incorporating the Research Fleet data into the stock assessment, creating in depth gear selectivity models for the gear types represented within the Research Fleet and exploring the creation and incorporation of CPUE indices of abundance (including gear specific indices), both of which could be directly utilized in the stock assessment. Further, the proposed work will include gear specific discard characterizations describing the length frequencies of discarded black sea bass from each gear type through both time and space, with the intention of providing a more accurate black sea bass discard rate for the stock assessment.

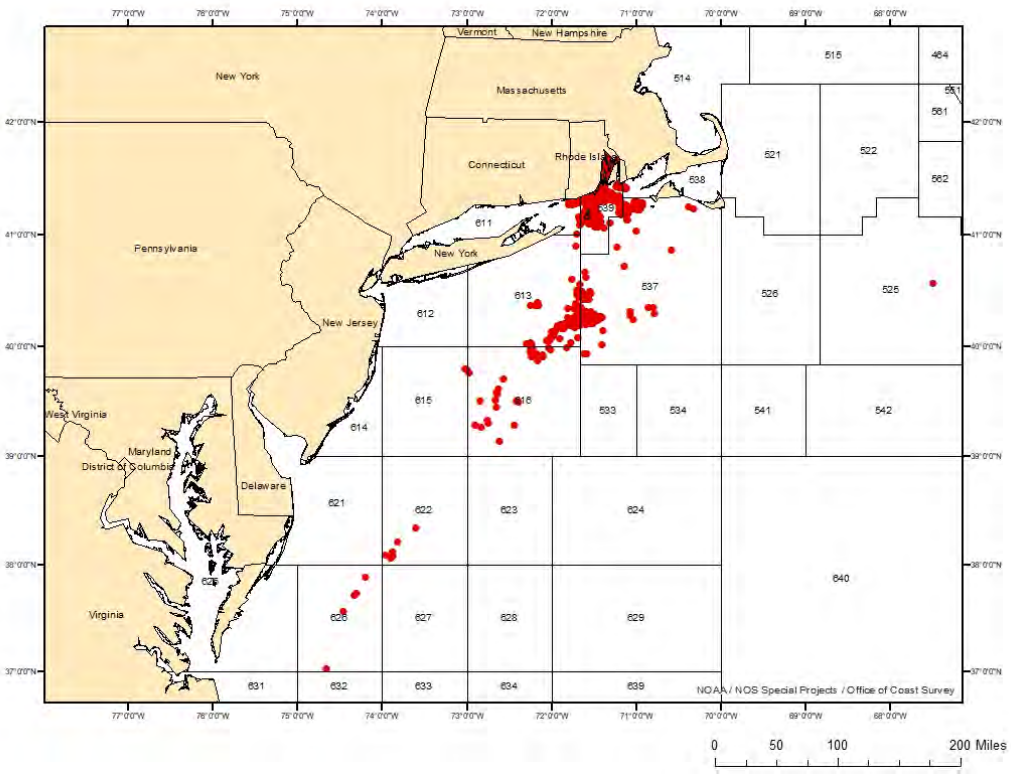


Figure 1. Black Sea Bass Research Fleet sampling locations (red dots) and associated statistical areas in the Southern New England and Mid-Atlantic region of the United States East Coast.

Table 2. Summary of data collected by the Black Sea Bass Research Fleet as of May 1, 2021.

Total Black Sea Bass Sampled	29,741
Percent Male	28%
Percent Female	44%
Percent Unknown	28%
Minimum Size (cm)	1
Maximum Size (cm)	68
Average Size (cm)	30.9
Percent Discarded	70%
Percent Retained	30%

In addition to the application of biological black sea bass data to the stock assessment, the data derived from the Black Sea Bass Research Fleet could also be used to characterize the catch, bycatch, and other characteristics of black sea bass in the SNE/MAB region, including gear selectivity and spatiotemporal patterns in catch composition. An additional 12 months of sampling by the Research Fleet will provide a better understanding of these seasonal and spatial dynamics as the data will now become the first multi-gear, multi-year, time series for the species.

The data collected during the previous funding years of the project exhibit interesting biological and fishery trends that will continue to be monitored in subsequent years of sampling for the proposed project. As expected, the average length of retained fish (39.6 cm) is larger than that of discarded fish (27.1 cm). However, the high frequency of legal-sized (>27.94 cm) discarded black sea bass suggests black sea bass are primarily being discarded due to seasonal closures and/or low daily limits, rather than the minimum size limit (Figure 2). The range of lengths of discarded fish further supports this, showing that even the largest of sampled black sea bass (receiving the highest market value) are often discarded.

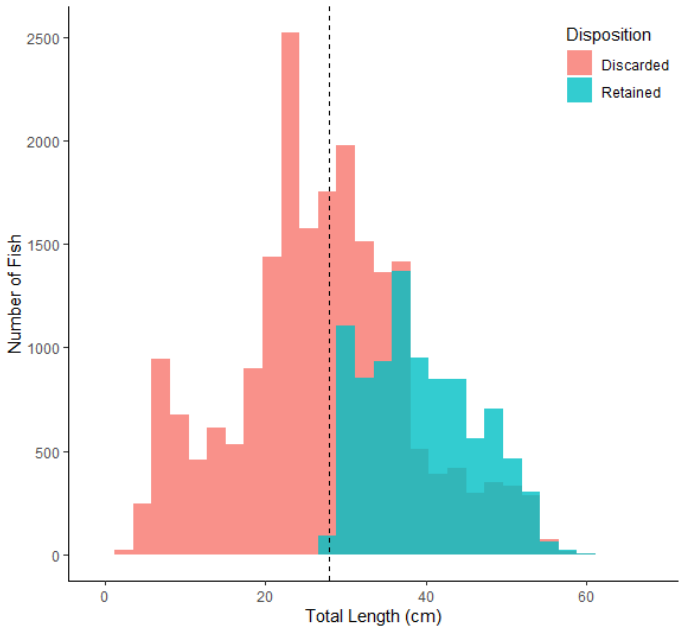


Figure 2. Size spectra of black sea bass sampled by the Research Fleet from November 30, 2016 to May 1, 2021. Red bars indicate discarded (D) fish. Blue bars indicate retained (R) fish. The black dashed line represents the Rhode Island minimum legal size of 11 inches (27.94 cm).

When comparing gear selectivity between the different gear types represented within the Research Fleet, trends between discarded and retained black sea bass are apparent (Figures 3 and 4). Trawl gear regularly interacts with the largest size range of black sea bass of all the gear types represented. Rod and reel (commercial and charter), fish pot, and lobster pot all exhibited nearly as wide a range of size interaction with black sea bass as trawl gear types, however did not interact with the smallest of size classes of black sea bass as frequently and therefore had higher mean total length. Of the three gear types previously mentioned, rod and reel exhibited less variance in size interaction due to relative lower presence of smaller size classes of black sea bass. Gillnet appears to be in a distinct grouping of its own and exhibits the highest selectivity amongst all represented target gear types, as this gear exclusively interacts with the largest size classes of black sea bass. Conch pot and oyster aquaculture are similarly selective compared to gillnet gear however interact primarily with the smallest size classes of black sea bass. Interestingly, black sea bass of legal size (>27.94 cm) are still sometimes captured in conch pots and have been retained for sale during sampling events.

These trends, which have become apparent from just the first several funding years of sampling, suggest there is gear-specific size selectivity occurring in the black sea bass fisheries in the SNE/MAB regions. The proposed project will continue to track these trends as the time series builds with subsequent years of sampling. This type of information could have important ramifications to the stock assessment as it could help inform the selection of fleets modeled within the assessment.

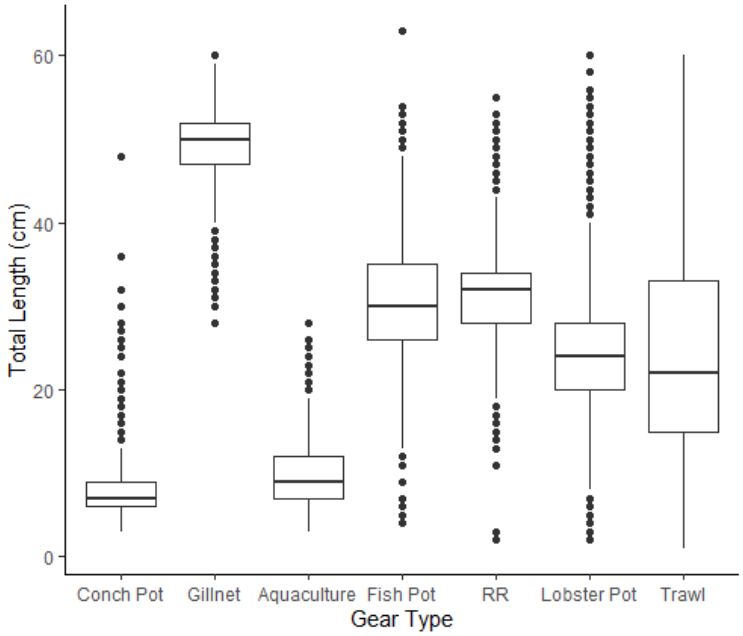


Figure 3. Size selectivity of discarded black sea bass sampled by each gear type represented within the research fleet as of May 1, 2021. From left to right, gear types are as follows: conch pot, gillnet, oyster aquaculture, fish pot, rod and reel (charter and commercial), lobster pot, and trawl.

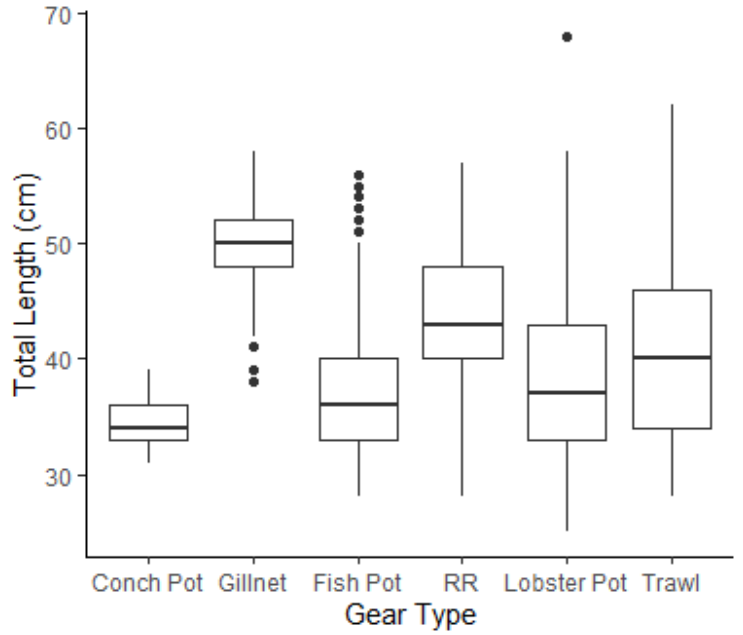


Figure 4. Size range of retained black sea bass sampled by each gear type represented within the research fleet as of May 1, 2021. Note, oyster aquaculture gear type is absent from this graph because no black sea bass have been retained from this gear type.

During the proposed year of the project, the project team will focus on the refinement and expansion of analyses previously established for application to the stock assessment including: size spectra, sex ratios, catch per unit effort (CPUE), black sea bass retention and discard structure, seasonal activity of Research Fleet, and gear selectivity. Specifically, internal data analysis questions proposed during the past funded year of the project were: 1) Are there spatial (latitudinal) patterns in the length frequency or sex ratio of black sea bass?, 2) Are there seasonal differences in black sea bass catch composition (length frequency and sex ratio)?, 3) Are different life stages of black sea bass apparent in commercial fisheries catch in specific areas or at different times of year?, and 4) What is the selectivity (min, max, mean length) of different gear types (trawl, fish pots, gillnet, lobster/crab pot, rod and reel) that harvest black sea bass? Year-6 analyses will build upon the initial results from exploration of these questions and will begin to explore temporal trends in the dataset. The project team will aim to publish a manuscript containing results from internal analyses in a peer-reviewed journal as time allows. The establishment of gear type selectivity curve models comparing different gear types as well as multiple years of Research Fleet data will serve as the potential direct input to the next black sea bass stock assessment.

The open-source statistical software package R will be used for data analysis. Length frequencies, black sea bass length gear selectivity, spatial and seasonal sex ratio regression models, and catch rate patterns will all be updated based on the protocols established in prior years of the project to further analyze seasonal trends as well as compare data from year to year. Data and code will be made available to others upon reasonable request.

In addition to further addressing the aforementioned research questions, the project team will also explore novel fishery dependent indices for the black sea bass stock assessment, as time permits. Building upon the analytical techniques established in prior years, data will continue to be standardized from the disparate gear types represented within the Research Fleet through generalized linear modeling approaches and/or hierarchical modeling techniques to allow for more direct communication into the black sea bass stock assessment.

Outreach and Education

Education, outreach, and ongoing communication are an integral part of the overall work plan for the proposed project. These components of the proposed project support the goal of fostering collaborative working partnerships among scientists, managers, and members of the fishing industry through all phases of research, from the fine-tuning of sampling strategies through the analysis and sharing of data and results.

The primary outreach/education goal of the proposed project is to share and disseminate information on two topics: 1) the lessons learned from the collaborative Research Fleet approach for fishery dependent data collection; and 2) the findings from analysis of the black sea bass catch, bycatch, and biological databases derived from this project.

A secondary goal is to share and disseminate project information to a variety of interest groups including: 1) commercial fishing industry members; 2) fisheries scientists and managers based

in various state, regional, and federal agencies; 3) outside researchers who will utilize this information to inform their own research efforts in the region; and 4) other interested parties seeking information on new data collection/ocean monitoring techniques and approaches, and/or trends in black sea bass abundance and distribution in the SNE/MAB region.

There are several work elements embedded in the project work plan that are aimed at specifically addressing outreach and education goals, including:

1. Ongoing communication with project team members, including the members of the Black Sea Bass Research Fleet through personal meetings, group meetings, e-mail briefings, and phone conversations. Annual Research Fleet meetings have been held during previous years of funding, with the exception of FY20 which was canceled due to the COVID-19 pandemic. During annual meetings, the CFRF hosts all Research Fleet members, PIs, project staff, and steering committee members to receive feedback on the data collection process and present trends and analyses of the past year's data. These Fleet meetings have been invaluable for receiving project feedback and as well as forming relationships between the fishing industry, managers, and scientists. The project team is currently planning a Fleet meeting for summer 2021, and additional annual meetings will be held for the proposed project if granted continued funding through FY22. If time and funds permit, a workshop regarding this project will also be held with the RI DEM Division of Marine Fisheries staff.
2. Periodic project briefings to key individuals outside the project team, including ASMFC, MAFMC, NMFS NEFSC, and NMFS GARFO staff, members of the black sea bass fishing fleet, and interested others through direct e-mail/mail correspondence, including periodic newsletters describing the project progress.
3. Regular postings of project information on the CFRF website, including descriptions of the fishermen involved, the equipment being used, the type of data being collected, and findings, as this information becomes available over the course of the project (www.cfrfoundation.org/black-sea-bass-research-fleet).
4. Organization of a research session at the end of the project involving managers, scientists, and members of the commercial and recreational fishing industries to share project findings and discuss experiences and results.
5. Issuance and distribution of a written summary report.
6. Participation in professional conference(s) to share project methods and results.

Geographic Location:

At-sea sampling will be conducted within the northern Atlantic black sea bass stock area (SNE/MAB region), potentially including statistical areas 521 to 631. The final distribution of at-sea data collection will depend on the fishing locations selected by participant fishermen. Project administration, and data management and analyses will be conducted at the Commercial Fisheries Research Foundation office in Kingston, Rhode Island and the RI DEM marine laboratory in Jamestown, Rhode Island.

Milestone Schedule:

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13-15
Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	Research Fleet data collection and Fleet support	
				Apply for RI DEM Permits	Distribute RI DEM Permits to Fleet							
Maintain sampling gear and buy new sets	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear	Maintain sampling gear & collect after sampling	
Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Maintain ODD, server, and database	Final report writing and submission of report and all project data to ACCSP
Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	Data QA/QC, review, and analysis	
		Quarterly reports to Fleet Members			Quarterly reports to Fleet Members			Quarterly reports to Fleet Members			Quarterly reports to Fleet Members	
				Submit data to ACCSP		Write progress report and submit to ACCSP				Submit data to ACCSP		
Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	Maintain project website and project outreach	

Project History Table:

Funding Year	Title	Original Project Dates	Funded Amount	Total Project Cost	Description
2016 New	Advancing Fishery Dependent Data Collection for Black Sea Bass (*Centropristis striata*) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Fishing Vessel Research Fleet Approach	September 1, 2016 – August 31, 2018	$137,827.00	$203,072.00	Piloted the research fleet technique for collection of fishery dependent catch, effort, bycatch, and biological data in the multi-gear black sea bass fishery
2018 New	Advancing Fishery Dependent Data Collection for Black Sea Bass (*Centropristis striata*) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Fishing Vessel Research Fleet Approach	May 1, 2018 – May 31, 2019	$135,648.00	$187,949.00	Maintained the research fleet fishery dependent data collection of catch, effort, bycatch, and biological data in black sea bass fishery and expanded Research Fleet by two fishing vessels
2019 Maintenance	Advancing Fishery Dependent Data Collection for Black Sea Bass (*Centropristis striata*) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Fishing Vessel Research Fleet Approach	June 1, 2019 – May 31, 2020	$132,749.00	$169,033.00	Maintained the Research Fleet data collection of catch, effort, bycatch, and biological data in the black sea bass fishery in the SNE/MAB region and expanded the Research Fleet by two fishing vessels
2020 Maintenance	Advancing Fishery Dependent Data Collection for Black Sea Bass (*Centropristis striata*) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Fishing Vessel Research Fleet Approach	August 1, 2020 – July 31, 2021	$132,097.00	$157,735.00	Maintained the Research Fleet data collection of catch, effort, bycatch, and biological data in the black sea bass fishery in the SNE/MAB region and expanded the Research Fleet by one fishing vessel
2021 Maintenance	Advancing Fishery Dependent Data Collection for Black Sea Bass (*Centropristis striata*) in the Southern New England and Mid-Atlantic Region Utilizing Modern Technology and a Fishing Vessel Research Fleet Approach	August 1, 2021 – July 31, 2022	$132,064.00	$154,537.00	Will maintain the Research Fleet data collection of catch, effort, bycatch, and biological data in the black sea bass fishery in the SNE/MAB region and expand the Research Fleet by two fishing vessels

Project Accomplishments Measurement (Metrics and *Achieved Goals*):

Project Goal	Metric 1	Metric 2	Metric 3	Metric 4	Metric 5	Metric 6	Metric 7
Collection & communication of biological and fishery data for BSB	Upkeep of ODD, CFRF server, and MySQL database *Achieved in Years 1-4 + In progress Year 5*	Support of 14 Research Fleet Members *Achieved in Years 1-4 + In progress Year 5*	Twelve months of biological BSB and fishery data collection by Fleet *Achieved in Years 1-4 + In progress Year 5*	Collection of up to 27,000 BSB records, 540 record of catch/discards, and 540 session/effort data by Research Fleet *Achieved in Years 1-4 + In progress Year 5*	Transfer of collected data into MySQL database *Achieved in Years 1-4 + In progress Year 5*	Distribution of quarterly reports to Fleet Members *Achieved in Years 1-4 + In progress Year 5*	Submission of biological and fishery data to ACCSP and other managers *Achieved in Years 1-4 + In progress Year 5*
Reduce uncertainties in BSB stock assessment	Increase number of gear replicates in non-trawl fishery *Achieved in Years 2-4*	Provide BSB data from areas and times of year currently under sampled *Achieved in Years 1-4 + In progress Year 5*	Distribution of project data to managing stakeholders at federal, region, and local level *Achieved in Years 1-4 + In progress Year 5*	Utilization of data by BSB stock assessment working group *In progress*	Explore fishery dependent index of abundance for BSB using Fleet data *In progress*		
Asses spatial & temporal patterns in BSB fishery and catch	Analyze catch trends between years, gear types, and locations of Fleet sampling *Achieved in Years 1-4 + In progress Year 5*	Monitor discard structure between years within Fleet sampling *Achieved in Years 1-4 + In progress Year 5*	Monitor size and sex structure of retained BSB between sampling years *Achieved in Years 1-4 + In progress Year 5*	Monitor trends in length frequencies within gear types, locations and times of year *Achieved in Years 1-4 + In progress Year 5*	Add additional years of data to explore inter annual differences in length frequency *Achieved in Years 1-4 + In progress Year 5*	Update of BSB sex ratio logistic regression models from prior years *Achieved in Years 1-4 + In progress Year 5*	Develop manuscript for publication utilizing biological or fishery data from Fleet *In progress*
Demonstrate model approach for cost efficient fishery dependent data collection	Usage of collaborative approach established in previous years *Achieved in Years 1-4 + In progress Year 5*	Presentations of Fleet design at scientific conferences *Achieved in Years 1-4 + In progress Year 5*	Develop manuscript to validate Fleet design through peer review *In progress*				

Cost Summary and Funding Transition Plan:

This proposal represents a cost reduction from Year 5's proposal of a similar scope. Although the reduction in cost is small, the Research Fleet costs outside of vessel stipends were streamlined to allow for the continued support of the two vessels originally brought into the Research Fleet through support from the Sarah K De Coizart Charitable Fund. The drop is due primarily to a reduction in CFRF personnel costs. These changes are reflected in the CFRF sub-contract (section F of the Budget Table).

The CFRF and RI DEM have pursued funding from a variety of sources for the Black Sea Bass Research Fleet and will continue to do so to ensure the longevity and utility of the data collected to the management of this data poor species. In previous funding years, the CFRF has been successful in securing partial funding from the Sarah K. de Coizart Tenth Perpetual Charitable Trust to support the Research Fleet. Further, the CFRF has been successful in the past, most recently in regards to the other collaborative Research Fleet for Lobster and Jonah crab, in securing congressional funding directly for the project. These recently awarded funds represent a willingness for the CFRF and RI DEM to search for external sources of funds to support the Research Fleet as well as an agreement by the management representatives on the steering committee and the industry collaborators that the project addresses important issues. The Senate Appropriations Committee recently announced the return of Congressionally Directed Spending which will allow for Rhode Island Senators to potentially fund Rhode Island focused projects. This could be a source of transition funding as ACCSP contributions decline. The CFRF and RI DEM will continue to look for outside, continued, sources of funding to support the Research Fleet and the valuable work it produces into the future.

The CFRF no longer has internal funds to cover research projects or issue requests for proposals, as the multi-year NOAA awards that enabled the CFRF to operate such programs expired in December 2015. Since then, the CFRF has relied exclusively on competitive research awards such as this one offered from the ACCSP to support all of its operations, collaborations, and research projects.

Budget Table:

		Year 6 (Maintenance - Year 4)		
		Proposal	**In-Kind**	**Total**
	TOTAL	**$ 132,005**	**$ 22,473**	**$ 154,478**
	% Contribution by Funding Source	**85%**	**15%**	**100%**
Object Class Category		Proposal	In-Kind	Total
A	Personnel			
	- RI DEM - Jason McNamee		$ 5,347	$ 5,347
	- RI DEM - Contractor		$ 4,547	$ 4,547
	- RI Dem - Intern		$ 2,500	$ 2,500
	Total RI DEM Personnel Costs	$ -	$ 12,394	$ 12,394
B	Fringe Benefits	$ -	$ 4,214	$ 4,214
C	Travel	$ -	$ -	$ -
D	Equipment	$ -	$ -	$ -
E	Supplies	$ -	$ -	$ -
F	Contractual - CFRF			
	a. Personnel			
	- Executive Director - N. David Bethoney	$ 12,100		$ 12,100
	- Research Scientists	$ 28,392		$ 28,392
	- Business Manager	$ 3,604		$ 3,604
	Total CFRF Personnel Costs	$ 44,096	$ -	$ 44,096
	b. Fringe Benefits	$ 3,969	$ -	$ 3,969
	c. Travel	$ 3,000	$ -	$ 3,000
	d. Equipment	$ -	$ -	$ -
	e. Supplies			
	- Research Supplies	$ 1,000		$ 1,000
	- Office Supplies	$ 1,000		$ 1,000
	Total Supplies	$ 2,000	$ -	$ 2,000
	f. Contractual			
	- Programmer for On-Deck Data database	$ 1,500	$ -	$ 1,500
	Total Contractual	$ 1,500	$ -	$ 1,500
	g. Construction	$ -	$ -	$ -
	h.Other Costs			
	- Fishing Vessel Stipends	$ 55,440	$ -	$ 55,440
	- Executive Assistance	$ -	$ 2,500	$ 2,500
	Total Other Costs	$ 55,440	$ 2,500	$ 57,940
	i. Total Direct Charges	$ 110,005	$ 2,500	$ 112,505
	j. Indirect Charges			
	- Proposed at 20% of CFRF Direct Charges	$ 22,000	$ 500	$ 22,500
	Total Indirect Charges	$ 22,000	$ 500	$ 22,500
	k. Total CFRF Costs	$ 132,005	$ 3,000	$ 135,005
G	Construction	$ -	$ -	$ -
H	Other Costs	$ -	$ -	$ -
I	Total Direct Costs	$ 132,005	$ 19,608	$ 151,613
J	Indirect Charges	$ -	$ 2,865	$ 2,865
K	Total Proposal Costs	$ 132,005	$ 22,473	$ 154,478

Budget Justification – Year 6 (Maintenance Year 4 Project, Proposed):

The total proposed federal budget requested by the Rhode Island Department of Environmental Management (RI DEM) and the Commercial Fisheries Research Foundation (CFRF) for all components of the work is $132,005 for 12 months. The voluntary non-federal match funds provided by the RI DEM and CFRF is $22,473. The total proposal value is $154,478. The proposed timeframe is August 1, 2022 to July 31, 2023.

The proposed budget justification for object class category items includes the following:

A. Personnel: $12,394 In-Kind (RI DEM). RI DEM staff will play an advisory/support role in the proposed project, providing guidance on research protocols, assisting with statistical analyses as needed, exploring gear-specific indices of abundance and alternative modeling approaches as time permits, support in the procurement and storage of samples, and communicating project results to fishery governance system via existing participation in technical committees and working groups.

B. Fringe Benefits: $4,214 In-Kind (RI DEM). Fringe costs are charged on RI DEM FTEs only.
RIDEM Annual Fringe benefit rates are:

Retirement 24%	Deferred Compensation 0.4%
FICA 6.2%	Medicare 1.45%
Health care $21,937/year	Dental $1,132/year
Vision Mercer $165/year	Assessed Fringe 4.25%
Retiree Health 6.75%	

C. Travel: There are no direct travel charges.

D. Equipment: There are no direct equipment charges.

E. Supplies: There are no direct supplies charges.

F. Contractual: The CFRF will conduct most of the work involved in this project, with administrative and technical assistance provided by RI DEM as In-Kind. These services will be charged to the grant as contractual costs and are outlined below to provide more detail as to how the funding will be used:

a) Personnel: $44,096 federal. This includes the wages for the following CFRF personnel for time spent working directly on the project:

1. Executive Director – Proposed at 10% of time for 12 months = $12,100.
D. Bethoney, CFRF Executive Director, will oversee the administration, team communication/coordination, and outreach aspects of the project. He will also assist with data analysis, report and outreach material development, and communication of project progress to the client, fishing industry and management communities.

2. Research Scientist – Proposed at 50% of time for 12 months = $28,392.
   T. Heimann and another CFRF Research Scientist will be the primary individuals responsible for fleet organization, maintenance, and support, as well as data management, communication, and analysis.
3. Business Manager – Proposed at 7.5% of time for 12 months = $3,604.
   T. Winneg, CFRF Business Manager, will carry out all the finance related aspects of the project including research budget tracking, invoice processing, and administrative support tasks, including purchasing supplies.

b) Fringe Benefits: $3,969 federal. This includes a percentage for payroll taxes and worker's compensation insurance prorated in accordance with % of salary paid from program. Benefits proposed at 9% of personnel costs based on 2020 benefits and historical analysis.

c) Travel: $3,000 federal. Travel costs include travel support (mileage) for project staff to provide support at docks to Research Fleet participants, to participate in meetings with the Research Fleet, stock assessment scientists, and managers, and to participate in one industry/professional conference for two personnel to share and disseminate project methods, findings, and conclusions.

d) Equipment: $0. There will be no equipment costs on this project.

e) Supplies: $2,000 federal. This category includes research supplies and project office supplies.
   1. Research Supplies: $1,000 - Costs of tablets, waterproof cases, stylus & fish measuring board. Proposed at $500 per set x 2 vessels for the duration of the project. The two sets of sampling equipment for existing Research Fleet vessels are replacements for equipment that is damaged or lost.
   2. Office Supplies: $1,000 – Costs to cover database storage and website fees ($50/month), project office and meeting supplies, etc.

f) Contractual: $1,500 federal. This includes costs associated with:
   1. Programmer ($1,500 - federal) - CFRF hiring an outside computer programmer to maintain the OnDeckData application and database coding for data relay and storage, to address any issues that arise, and to update the app to maintain functionality.

g) Construction: There are no construction costs.

h) Other Costs: $55,440 federal + $2,500 match = $57,940. This includes:
   1. Fishing vessel stipends ($55,440 - federal) for 14 vessels for 12 months at $600 per month. A fleet of 14 vessels will be utilized each month to obtain the proposed biological samples. The total stipend is computed at 55% due to fluctuations in

vessel sampling associated with weather, vessel maintenance, and seasonal black sea bass distribution.

2. Executive Assistance ($2,500 - in-kind match) covers the administration assistance for the project (including, review of fleet applications and invoices, work agreements, progress/final reports) by the CFRF President and Vice President, who provide these services at no cost. Costs proposed at $250 per day for 5 days for 2 people over the duration of the project.

i) Total Direct Charges: $110,005 federal + $2,500 in-kind = $112,505 total. This is the total direct charges for cost items a-h.

j) Indirect Charges: $22,000 federal + $500 in-kind = $22,500 total. Indirect general and administrative costs are calculated as 20.0% of Total Direct Charges. Indirect general and administrative costs are used to cover costs associated with the general operations of the CFRF including accounting services, legal services, maintenance of office space, liability insurance, payroll fees, phone/fax lines, internet service, board member participation, etc. The CFRF's FY2021 Indirect Cost Rate Authorization Letter dated 1/22/21 is for 22.0% based on FY2020 actual costs.

k) Total Proposal Costs: $132,005 Federal + $3,000 In-Kind = $135,005 Total.

G. Construction. There are no construction costs on this grant

H. Other Costs. There are no other costs associated with this grant.

I. Total Direct Charges: $132,005 Federal + $19,608 In-Kind = $151,613 total. This is the total direct charges for cost items A-H.

J. Indirect Charges: $3,099 In-Kind (RIDEM). Indirect charges are charged on RIDEM Salaries only. The Negotiated Indirect Cost Rate for FY2017 is 25%. (Total personnel is $12,394 x 25% = $3,099.)

K. Total Proposal Costs: $132,005 Federal + $22,473 In-Kind = $154,478 Total.

Previous Year's Budget Narrative – Year 5 (Maintenance Year 3 Project, Funded FY21):

The total proposed federal budget requested by the Rhode Island Department of Environmental Management (RI DEM) and the Commercial Fisheries Research Foundation (CFRF) for all components of the work is $132,064 for 12 months. The voluntary non-federal match funds provided by the RI DEM and CFRF is $22,473. The total proposal value is $154,537. The proposed timeframe is August 1, 2021 to July 31, 2022.
The proposed budget justification for object class category items includes the following:

A. Personnel: $12,394 In-Kind (RI DEM). RI DEM staff will play an advisory/support role in the proposed project, providing guidance on research protocols, assisting with statistical analyses as needed, exploring gear-specific indices of abundance and alternative modeling approaches as time permits, support in the procurement and storage of samples, and communicating project results to fishery governance system via existing participation in technical committees and working groups.

B. Fringe Benefits: $4,214 In-Kind (RI DEM). Fringe costs are charged on RI DEM FTEs only.
RIDEM Annual Fringe benefit rates are:

Retirement 24%	Deferred Compensation 0.4%
FICA 6.2%	Medicare 1.45%
Health care $21,937/year	Dental $1,132/year
Vision Mercer $165/year	Assessed Fringe 4.25%
Retiree Health 6.75%	

C. Travel: There are no direct travel charges.

D. Equipment: There are no direct equipment charges.

E. Supplies: There are no direct supplies charges.

F. Contractual: The CFRF will conduct most of the work involved in this project, with administrative and technical assistance provided by RI DEM as In-Kind. These services will be charged to the grant as contractual costs and are outlined below to provide more detail as to how the funding will be used:
   a) Personnel: $44,140 federal. This includes the wages for the following CFRF personnel for time spent working directly on the project:
      1. Executive Director – Proposed at 10% of time for 12 months = $11,440.
         Bethoney, CFRF Executive Director, will oversee the administration, team communication/coordination, and outreach aspects of the project. He will also assist with data analysis, report and outreach material development, and communication of project progress to the client, fishing industry and management communities.
      2. Research Scientist – Proposed at 50% of time for 12 months = $28,125.
         T. Heimann, CFRF Research Scientist, is the primary individual responsible for fleet organization, maintenance, and support, as well as data management, communication, and analysis.
      3. Business Manager – Proposed at 10% of time for 12 months = $4,575.
         T. Winneg, CFRF Business Manager, will carry out all the finance related aspects of the project including research budget tracking, invoice processing, and administrative support tasks, including purchasing supplies.
   b) Fringe Benefits: $3,973 federal. This includes a percentage for payroll taxes and worker's compensation insurance prorated in accordance with % of salary paid from program.

Benefits proposed at 9% of personnel costs based on 2019 benefits and historical analysis.

c) Travel: $3,000 federal. Travel costs include travel support (mileage) for project staff to provide support at docks to Research Fleet participants, to participate in meetings with the Research Fleet, stock assessment scientists, and managers, and to participate in one industry/professional conference for two personnel to share and disseminate project methods, findings, and conclusions.
d) Equipment: $0. There will be no equipment costs on this project.
e) Supplies: $2,000 federal. This category includes research supplies and project office supplies.
    1. Research Supplies: $1,000 - Costs of tablets, waterproof cases, stylus & fish measuring board. Proposed at $500 per set x 2 vessels for the duration of the project. The two sets of sampling equipment for existing Research Fleet vessels are replacements for equipment that is damaged or lost.
    2. Office Supplies: $1,000 – Costs to cover database storage and website fees ($50/month), project office and meeting supplies, etc.
f) Contractual: $1,500 federal. This includes costs associated with:
    1. Programmer ($1,500 - federal) - CFRF hiring an outside computer programmer to maintain the OnDeckData application and database coding for data relay and storage, to address any issues that arise, and to update the app to maintain functionality.
g) Construction: There are no construction costs.
h) Other Costs: $55,440 federal + $2,500 match = $57,940. This includes:
    1. Fishing vessel stipends ($55,440 - federal) for 14 vessels for 12 months at $600 per month. A fleet of 14 vessels will be utilized each month to obtain the proposed biological samples. The total stipend is computed at 55% due to fluctuations in vessel sampling associated with weather, vessel maintenance, and seasonal black sea bass distribution.
    2. Executive Assistance ($2,500 - in-kind match) covers the administration assistance for the project (including, review of fleet applications and invoices, work agreements, progress/final reports) by the CFRF President and Vice President, who provide these services at no cost. Costs proposed at $250 per day for 5 days for 2 people over the duration of the project.
i) Total Direct Charges: $110,053 federal + $2,500 in-kind = $112,553 total. This is the total direct charges for cost items a-h.
j) Indirect Charges: $22,011 federal + $500 in-kind = $22,511 total. Indirect general and administrative costs are calculated as 20.0% of Total Direct Charges. Indirect general and administrative costs are used to cover costs associated with the general operations of the CFRF including accounting services, legal services, maintenance of office space, liability insurance, payroll fees, phone/fax lines, internet service, board member participation, etc. The CFRF's FY2020 Indirect Cost Rate Proposal dated 12/30/19 is for 20.0% based on FY2019 actual costs.

k) Total Proposal Costs: $132,064 Federal + $3,000 In-Kind = $135,064 Total.

G. Construction. There are no construction costs on this grant

H. Other Costs. There are no other costs associated with this grant.

I. Total Direct Charges: $132,064 Federal + $19,608 In-Kind = $151,672 total. This is the total direct charges for cost items A-H.

J. Indirect Charges: $3,099 In-Kind (RIDEM). Indirect charges are charged on RIDEM Salaries only. The Negotiated Indirect Cost Rate for FY2017 is 25%. (Total personnel is $12,394 x 25% = $3,099.)

K. Total Proposal Costs: $132,064 Federal + $22,473 In-Kind = $154,537 Total.

Summary of Proposal for Ranking Purposes

Type: Maintenance

Primary Program Priorities:
This project follows fishery-dependent sampling protocols to collect black sea bass catch and effort, biological, and bycatch data from the SNE/MAB region. The percentage of project effort devoted to each of these modules is as follows: 50% Biological, 25% Catch and Effort, 25% Bycatch. Thus, Biological sampling is the primary program priority. The estimated project effort devoted to biological sampling reflects the collection of black sea bass length and sex data by participant vessels during three trips per month for twelve months (up to 504 trips and 25,200 black sea bass total).

Data Delivery Plan:
All biosamples data collected from this project to date has been bi-annually submitted to and accepted by the ACCSP biosamples database. With additional funding for the proposed project, the project team will continue to work closely with ACCSP to ensure data is in the correct format to be incorporated into the ACCSP biosamples database. Data will continue to be submitted bi-annually in June and December of the proposed project period.

Project Quality Factors

Multi-Partner/Regional impact including broad applications:
The results of the proposed project have regional impacts and broad applications, as black sea bass are expanding to inhabit, and potentially be harvested from, the majority of the US east coast. Furthermore, the social and economic implications of this work could be extensive, as project data contributes to the improvement of the northern Atlantic black sea bass stock assessment and potentially the creation of new economic opportunities. From a collaboration perspective, this project provides a unique opportunity for the RI DEM and CFRF to maintain a fisherman-based research fleet to address ACCSP priorities, drawing upon networks of partners in industry, fisheries research, and management. This project will help RI DEM and CFRF demonstrate that, with support from ACCSP, they have the ability to bring stakeholders together, outside of a contentious management environment, to collect, communicate, and analyze critically needed data to address the data needs of the data poor northern Atlantic black sea bass.

Greater than year 2 contains funding transition plan and justification for continuance:
This proposal is for a one-year study to continue an industry-based research fleet approach to biological, catch, and bycatch sampling for northern Atlantic black sea bass. The project has been successful through the first four years of funded work and has sampled over 27,000 black sea bass. Year 5 funding is expected to result in increased sampling rates and coverage as the

Research Fleet has expanded while reducing overall costs. An additional year of funding would bolster the first year-round, multi-year database for this biologically data poor species. Ultimately, long term maintenance of this project will provide invaluable data to the ACCSP, ASMFC, and MAFMC, and improve the assessment and management of the northern Atlantic black sea bass resource. The CFRF and RI DEM have continued to apply for funding for this project through external sources and have secured supplemental funding to partially support the Research Fleet as described above. Obtaining long-term funding for the Research Fleet is a top and ongoing priority for project PIs and staff.

In-kind contribution: The total project cost is $154,478. In-kind contributions provided by RI DEM and CFRF total $25,638. Thus, RI DEM and CFRF will provide 15% of total project costs.

Improvement in data quality/quantity/timeliness:
The proposed project addresses the critical need to improve the quality, quantity, and timeliness of biological, catch and effort, and bycatch data for the northern Atlantic black sea bass, which the ACCSP Biological Review Panel identified as having inadequate biological sampling and high stakeholder priority, resulting in the highest-ranking priority score. Ultimately, the proposed project will help to meet ACCSP's mission of improving data quality for fisheries science by contributing to a single data management system that will meet the needs of fishery managers, scientists, and fishermen.

Potential secondary modules as by-products:
The potential secondary modules are catch and effort (25%) and bycatch sampling (25%). The project effort allocated to the catch and effort module refer to the sampling that occurs while the fishery is open. Although the fishery is open for a large portion of the year, black sea bass is often caught and retained as a non-target species. The project effort allocated to the bycatch module reflects sampling efforts conducted while the commercial black sea bass fishing season is closed and while participant vessels are targeting other species but still interacting with black sea bass as bycatch.

Impact on stock assessment:
The northern Atlantic black sea bass stock assessment new model requires spatially and temporally comprehensive data that is currently lacking. Thus, the proposed project aims to provide critically needed biological data from retained and discarded black sea bass, and fishery data from a variety of gear types to continue to evolve and improve the black sea bass stock assessment. The project team will also explore novel fishery dependent indices for the black sea bass stock assessment, as time permits.

The Research Fleet collected data has the potential to directly improve the federal stock assessment in a number of ways including reducing the uncertainty in recruitment rates, gear type specific selectivity, and gear (and location) specific discard characterizations.

Currently, the indices of abundance relied upon in the black sea bass stock assessment come primarily from the NEFSC winter and spring trawl survey, Northeast Area Monitoring and Assessment Program (NEAMAP) survey trawls, recreational catch per effort, and is supplemented with various state trawl survey indices of abundance (NEFSC 2017). The utility of the Research Fleet data in this respect is to inform the management about catch and discard structure from a variety of gear types. Whereas the stock assessment currently only delineates between trawl and non-trawl gear types, after building a multiple-year time-series the Research Fleet data could potentially be utilized to create a variety of CPUE indices of abundance (trawl, gillnet, lobster pot, rod & reel, fish pot, and multigear). Further, the Research Fleet data has the potential to be directly used to create a discard characterization for the northern stock sub-unit and reduce uncertainties in the annual total fishery removals. Finally, due to the nature of the Research Fleet being comprised of commercial and recreational fishing vessels, from a variety of gear types, the data collected is spatially and temporally expansive across the northern black sea bass sub unit in locations and times of year not covered by any of the federal or state survey programs utilized in the stock assessment. Therefore, there is the potential to reduce the uncertainties in recruitment rates within the northern sub unit as the Research Fleet is able to record presence and absences of juvenile and young of the year black sea bass in entirely unsampled locations and times of year.

Innovative:
The innovative and cost-effective nature of the proposed project, which relies upon collaboration between a Program partner and the fishing industry, can provide an opportunity for fishermen to constructively engage in the data collection process for black sea bass and provide a model for future data collection efforts in other regions and fisheries. In addition to demonstrating a novel sampling approach, the proposed project also leverages modern technology to improve the efficiency of data collection and communication.

Properly Prepared:
This proposal follows the guidelines provided in the ACCSP Funding Decision Document.

Principal Investigators:

The co-Principal Investigators of the proposed project are: Jason McNamee (Chief, RI DEM Marine Fisheries), David Bethoney (Executive Director, CFRF), and Thomas Heimann (Research Biologist, CFRF). Curriculum vitae are provided in the following pages.

Jason McNamee will play an advisory/support role in this project, given his existing commitments at the RI DEM Division of Marine Fisheries. More specifically, Jason will provide advice for sampling protocols, act as a liaison to the existing black sea bass assessment/management infrastructure and assist with data analysis as his time permits (data review/analysis will primarily be the role of the CFRF Research Biologist). In his role as both a technical committee member, and having been a member of the contracted stock assessment

team for the MAFMC, Jason McNamee will be able to help the project with capturing the correct information and making sure this information is formatted appropriately for inclusion in future northern Atlantic black sea bass stock assessment projects.

Dr. N. David Bethoney, Executive Director of the CFRF, will serve as the lead Co-PI for the proposed project. Dr. Bethoney will be responsible for overall projection direction and progress towards completing proposed objectives. Dr. Bethoney will be primarily responsible for overseeing proposed data analysis as well as dissemination of project results to the MAFMC and ASMFC. He will also assist in at-sea related research on an as-needed basis.

Thomas Heimann, CFRF, will serve in an advisory/support role working with the CFRF Research Biologist responsible for Research Fleet maintenance and support, as well as data management, communication, and analysis. Heimann was the primary researcher for the Black Sea Bass Research Fleet since its first year of funding starting in September 2016. Heimann has gained extensive experience with the work involved in initiating and supporting an industry-based research fleet and has formed a relationship with the current Fleet Members.

Jason Earl McNamee, PhD
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WORK EXPERIENCE

RI Department of Environmental Management 12/2002 - Present
Jamestown, RI US
Chief, Marine Resource Management
Duties:

- Management of the Marine Fisheries program for the RI Dept. of Environmental Management
- Management of a staff of 20 professionals in the field of marine fisheries
- Manage operating budgets for multiple federal grants and state accounts
- Creation of grant proposals for marine fisheries projects
- Management of the Ft Wetherill Marine Laboratory building and research vessels
- Membership on several technical panels: the New England Council Science and Statistics Committee (Chair), Atlantic States Marine Fisheries Commission Menhaden (chair), Tautog (chair), and Summer Flounder/Scup/Black Sea Bass technical and stock assessment committees, Biological and Ecological Reference Point committee
- Support to the RI Marine Fisheries Council
- Creation and administration of the RI Marine Fisheries Institute
- Principal investigator (PI) on the Narragansett Bay juvenile seine survey
- PI for the Narragansett Bay Menhaden monitoring program
- Small vessel operation
- Production and review of multiple annual technical and grant completion reports
- Perform stock assessment analyses

Skills developed: Personnel and budget management experience; Supervisory experience; Good statistical and computer skills (ADMB, R, Microsoft software, ADAPT, JMP, ASAP, Oracle Discoverer, web design); Species identification experience; Experience using water quality instrumentation (DO meter, pH meter, Gas Chromatograph, Conductivity meter, flow meter); GIS Experience (Arcview and R); Field work experience; Experience in the construction and maintenance of technical research equipment; Seine, fyke net, trawl net, gillnet, fish pot, and electroshock surveying; Small boat handling (State of Rhode Island and Coast Guard certified)
Supervisor's Name: Janet Coit
Supervisor's Phone: 401-222-4700 ext. 2409

RI Department of Environmental Management 4/2000 - 12/2002
Providence US
Senior Natural Resource Specialist

Duties: My duties were to perform all tasks necessary to conduct and complete a Total Maximum Daily Load reports including field work, data collection and processing, and writing of the report. I also participated with other staff to help in the completion of their reports.

Skills developed: Good statistical and computer background (Microsoft software), Experience designing and implementing a personal research project, Experience preparing a federally approved Quality Assurance Protection Plan, Experience using water quality instrumentation (DO meter, pH meter, Conductivity meter), Experience in the collection of water samples for testing (biological and metals), GIS Experience (Arcview) Field work experience, Small boat handling (State of Rhode Island and Coast Guard certified), Experience in the preparation of a federally approved Total Maximum Daily Load report, Experience disseminating information to the public
Supervisor's Name: Christian Turner
Supervisor's Phone: unsure, no longer employed at RIDEM

EDUCATION

University of Rhode Island – Graduate School of Oceanography
Narragansett, RI US
PhD – 8/2018
Major: Biological Oceanography
Doctoral Dissertation Topic: Multispecies Statistical Catch-At-Age Model for a Mid Atlantic Species Complex

University of Connecticut
Groton, CT US
Masters of Science Degree - 6/2006
38 Semester Hours
Major: Biological Oceanography

University of Rhode Island
Kingston, RI US
Bachelor's Degree - 5/1996
136 Semester Hours
Major: Zoology

PROFESSIONAL PUBLICATIONS

- ASMFC Lobster stock assessment (2015), ASMFC Menhaden stock assessment (2004, 2012, 2015), ASMFC Tautog stock assessment (2006, 2011, 2015), NEFSC Summer flounder stock assessment (2011, 2013), NEFSC Scup stock assessment (2011, 2015), NEFSC Black sea bass stock assessment (2004, 2016), Interactions between the introduced Asian shore crab, *Hemigrapsus sanguineus*, and three common rocky intertidal littorine gastropods in Southern New England (MS Thesis).
- Taylor, DL, J McNamee, J Lake, CL Gervasi , and DG Palance. 2016. Juvenile winter flounder (*Pseudopleuronectes americanus*) and summer flounder (*Paralichthys dentatus*) utilization of Southern New England nurseries: Comparisons among estuarine, tidal river, and coastal lagoon shallow-water habitats. Estuaries and Coasts. 39:1505-1525.

Dr. NAIFF DAVID BETHONEY
Executive Director
Commercial Fisheries Research Foundation
P.O. Box 278
Saunderstown, RI
401-515-4662, dbethoney@cfrfoundation.org

EDUCATION:

University of Massachusetts at Dartmouth School for Marine Science and Technology
PhD Dissertation: Understanding and avoiding River herring and American shad bycatch in the Atlantic herring and mackerel mid-water trawl fisheries.
Cum. GPA: 3.92 PhD Received 2013

MA Thesis: Association between diet and epizootic shell disease in the American lobster (*Homarus americanus*) around Martha's Vineyard
Cum. GPA: 3.93 M.S. Received 2010

Colby College - Waterville, ME
Major: Biology with Concentration in Environmental Science
Cum. GPA: 3.41, Cum Laude B.A. Received 2008

SEA Education Association of Woods Hole, MA Study Abroad: Fall 2006
Documenting Change in the Caribbean: Designed and implemented an original biological research project with practical application while at sea. Studied at Woods Hole, and sailed from St. Croix, USVI to Key West, Florida with research stops at Montserrat, Dominican Republic, and Jamaica.

RECENT WORK EXPERIENCE:

- Commercial Fisheries Research Foundation Spring 2020-Presesent

Executive Director: Responsible for overseeing foundation business manager, scientific staff, interns, and consultants to carry out all tasks associated with ongoing projects and general administration. In addition, responsible for pursuing new partnerships and projects, including proposal development and submission, under the advisement of the foundation Board of Directors.

- UMASS-Dartmouth School for Marine Science and Technology Fall 2008-Spring 2020

Research Assistant Professor, Fall 2014-Spring 2020: All responsibilities of research associate position related to drop camera and herring work with the ability to be lead principle investigator on research proposals and serve on student committees**.** Served on the New England Fishery Management Council's Scallop Plan development team from March 2017-April 2020

Research Associate, Summer 2013-Summer 2014: All responsibilities of research assistant position described below with management and development responsibilities for scallop drop camera and groundfish video surveys. Management responsibilities include equipment purchasing and maintenance and oversight of all technical operations and student involvement.

Research Assistant, Summer 2010- Spring 2013: Major responsibilities included coordinating River Herring bycatch avoidance program, assisting the Massachusetts Division of Marine Fisheries port side sampling program, and scallop drop camera survey at-sea data collection and analysis.

JOURNAL PUBLICATIONS IN LAST 3 YEARS:

1. Chen C, Zhao L, Gallager S, Ji R, He P, Davis C, Beardsley RC, Hart D, Gentleman WC, Wang L, Li S, Lin H, Stokesbury KDE, Bethoney ND. Impact of larval behaviors on dispersal and connectivity of sea scallop larvae over the northeast U.S. shelf. Progress in Oceanography. 2021 May 11; 195. DOI: 102604

2. Harper DL, Bethoney ND, Stokesbury KDE, Lundy M, McLean MF, Stokesbury MJW. 2020. Standard Methods for the Collection of Morphometric Data for the Commercially Fished Sea Cucumber *Cucumaria frondosa* in Eastern Canada. Journal of Shellfish Research 39(2):481–489

3. Bethoney, ND. 2020. Investigating uncertainties created by camera improvement in an optical survey. Limnology and Oceanography: Methods. doi: 10.1002/lom3.10365

1. Stokesbury KDE and Bethoney ND. 2020. How many sea scallops are there and why does it matter? Frontiers in Ecology and the Environment. doi:10.1002/fee.2244.

2. Bethoney ND and Stokesbury KDE. 2019. Implications of extremely high recruitment: crowding and reduced growth within spatial closures. Marine Ecology Progress Series 611:157-165.

3. Bethoney ND, Cleaver C, Asci SC, Bayer SR, Wahle RA, Stokesbury KDE. 2019. A comparison of drop camera and diver survey methods to monitor Atlantic sea scallops (*Placopecten magellanicus*) in a small fishery closure. Journal of Shellfish Research 38(1):43-51.

4. Stokesbury KDE, Bethoney ND, Georgianna D, Inglis S, Keiley EF. 2019. Convergence of a disease and litigation leading to increased scallop discard mortality and economic loss in the Georges Bank, USA fishery. North American Journal of Fisheries Management 39(2):299-306.

RELEVANT GRANTS RECEIVED AS A PRINCIPAL INVESTIGATOR IN LAST 3 YEARS:

1. "Empowering fishermen to collect essential data; Piloting the Research Fleet approach in the Atlantic Sea scallop fishery" — April 2021
   Awarded from: National Oceanic and Atmospheric Administration
   Value: $121,260

2. "Catalyzing the restoration and conservation of the Bay scallop" — January 2021
   Awarded from: The Sarah de Coizart Charitable Trust
   Value: $52,463

3. "Supplement to Piloting a Low-Bycatch Commercial Squid Jig Fishery in Southern New England" — December 2020
   Awarded from: Mid-Atlantic Fisheries Management Council
   Value: $22,500

4. "Piloting Underwater Video to Improve Ghost Gear Removal" — November 2020
   Awarded from: 11th Hour Racing/The Schmidt Family Foundation
   Value: $32,000

5. "Piloting a Low-Bycatch Commercial Squid Jig Fishery in Southern New England" — September 2020
   Awarded from: National Oceanic and Atmospheric Administration
   Value: $196,256

6. "South Fork Wind Farm Fisheries Monitoring Plans" — August 2020
   Awarded from: Deepwater Wind South Fork LLC
   Value: $2,528,044

7. "American lobster and Jonah crab Research Fleet: A Collaborative Fishing Vessel Approach to Addressing Data Needs for the American lobster and Jonah crab fisheries" — August 2020
   Awarded from: Atlantic States Marine Fisheries Commission
   Value: $285,714

8. "Assessing Vulnerability of the Atlantic Sea Scallop Social-Ecological System in the Northeast Waters of the US" — July 2020
   Awarded from: National Oceanic and Atmospheric Administration
   Value: $159,526

9. "CFRF's Lobster and Jonah Crab Research Fleet: A Collaborative Fishing Vessel Approach to Addressing Data Needs for the American Lobster and Jonah Crab Fisheries" — June 2020
   Awarded from: National Oceanic and Atmospheric Administration
   Value: $194,983

10. "Cooperative Marine Research Projects" — May 2020
    Awarded from: The Campbell Foundation
    Value: $90,000

Thomas E. Heimann
114 Olney Street Unit 1
Providence, RI 02906
(508)728 3401
theimann@cfrfoundation.org

EDUCATION

NORTHEASTERN UNIVERSITY **Boston, MA**
Master's: Marine Biology, Jan 2016

PRESCOTT COLLEGE **Prescott, AZ**
B.A. Marine Science, May 2013

RELATED WORK EXPERIENCE

Commercial Fisheries Research Foundation **South Kingston, RI**
Research Biologist *Sep 2016 – Present*

- Research project management position working collaboratively with the Rhode Island fishing industry as well as state and federal fisheries management bodies. Responsible for management of both Black sea bass Research Fleet and Quahog Research Fleet as well as lead at-sea sampler for the Southern New England Cooperative Ventless Trap Survey. Duties include Fleet support and training, sampling protocol development, database management, data manipulation and statistical analysis, report writing, at-sea sampling on lobster vessels, grant writing, and outreach.

Northeastern University **Nahant, MA**
Diving Research Methods Teaching Assistant *Sep 2015 – Oct 2015*

- Employed by Northeastern University to be a teacher's assistant for an intensive American Academy of Underwater Sciences diving research methods course. Duties included demonstrating underwater research and diving skills, minor SCUBA gear maintenance and repair, and supervision of student divers.

Mote Marine Laboratory **Sarasota, FL**
Research Experience for Undergrads, National Science Foundation Intern *May 2012 – Jul 2012*

- Highly competitive National Science Foundation funded internship at Mote Marine Laboratory in Florida. Worked closely with a postdoctoral fellow on an independent research project in sensory biology and behavior of the common snook, a local sportfish. Project dealt specifically with the impacts of the hatchery rearing environment on the survival of released fish in the wild. Worked extensively with Microsoft Excel for data analysis.

Sheriff's Meadow Foundation **Vineyard Haven, MA**
Ecological Stewardship Intern *May 2010 – Aug 2010*

- Summer Intern position on Martha's Vineyard. Responsibilities included property management, boundary mapping, invasive species control, vegetation identification, and tour guide.

SCIENTIFIC PUBLICATIONS

Malek Mercer, A.J., Ellertson, A., Spencer, D., and **Heimann, T**. 2018. Fishermen fill data gaps for American lobster (*Homarus americanus*) and Jonah crab (*Cancer borealis*) in the Northeast USA. Bulletin of Marine Science, 94:3, pp 1121-1135.

SELECTED PRESENTATIONS

Heimann, T., McManus, C., Leavitt, D., Malek Mercer, A.J. 2018. Methods for Establishing a Quahog (*Mercenaria mercenaria)* Industry-Based Research Fleet for expansion of Fishery Dependent Data Sources. National Shellfisheries Association Annual Meeting. Seattle, Washington.

Heimann, T., McManus, C., Leavitt, D., Malek Mercer, A.J. 2018. Engaging Fishermen to Address Data Gaps and Evolve Management of the Quahog in Narragansett Bay. Southern New England Chapter of the American Fisheries Society Winter Meeting. New Bedford, MA.

Heimann, T., Malek Mercer, A.J., and McNamee, J. 2018. Advancing Fishery Dependent Data Collection for Black Sea Bass (*Centropristis striata)* in Southern New England and Mid-Atlantic Region Using a Fishing Vessel Research Fleet Approach. American Fisheries Society 148th Annual Meeting. Atlantic City, New Jersey.*

Heimann, T., Malek Mercer, A.J., and McNamee, J. 2019. Using Fishermen-Collected Data to Explore the Black Sea Bass (*Centropristis striata)* Population and Construct Gear-Specific Discard Characterizations. Southern New England Chapter of the American Fisheries Society Winter Meeting. Storrs, Connecticut.

Heimann, T., McManus, C., Leavitt, D., Malek Mercer, A.J. 2019. Quantifying Quahogs (*Mercenaria mercenaria)* in Narragansett Bay: Insights from a Collaborative Sampling Program. Southern New England Chapter of the American Fishery Society Winter Meeting. Storrs, Connecticut.

Heimann, T., Malek Mercer, A.J., and McNamee, J. 2019. Using Industry Collaboration to Improve Black Sea Bass Management. Wakefield Fisheries Symposium. Anchorage, Alaska.

CERTIFICATIONS AND SKILLS

- Statistical Language R (Commonly used packages; ggplot, shiny, sp)
- MySQL
- ArcGIS
- American Academy of Underwater Sciences Scientific Diver Certificate
- PADI Rescue Diver Certificate
- At-Sea Safety Training Certificate
- Experienced in Small Boat Operations

References:

Atlantic Coastal Cooperative Statistics Program (ACCSP). 2021. Biological Sampling Priority Matrix. 4 p.

Atlantic States Marine Fisheries Commission (ASMFC). 2013. Research Priorities and Recommendations to Support Interjurisdictional Fisheries Management. Special Report # 89. ASMFC, Arlington, VA. 58pp.

Bell, R. J., Richardson, D.E., Hare, J.A., Lynch, P.D., and Fratantoni, P.S. 2014. Disentangling the effects of climate, abundance, and size on the distribution of marine fish: an example based on four stocks from the Northeast US shelf. ICES Journal of Marine Science: fsu217.

Drohan, A. F., J. P. Manderson, and D. B. Packer. 2007. Essential fish habitat source document: Black sea bass, *Centropristis striata*, life history and habitat characteristics. 2nd Edition. NOAA Technical Memo. NMFS-NE-200, 78 p.

Moser, J., and G. R. Shepherd. 2009. Seasonal distribution and movement of black sea bass (*Centropristis striata*) in the Northwest Atlantic as determined from a mark-recapture experiment. Journal of Northwest Atlantic Fishery Science 40: 17-28.

Nelson, G.A. 2014. Cluster Sampling: A Pervasive, Yet Little Recognized Survey Design in Fisheries Research. Transactions of the American Fisheries Society 143 (4): 926-938.

Northeast Fisheries Science Center (NEFSC). 2011. 53rd Northeast Regional Stock Assessment Workshop (53rd SAW) Assessment Report. US Department of Commerce, Northeast Fish Science Center Reference Document 12-05; 559 p.

Northeast Fisheries Science Center (NEFSC). 2017. 62nd Northeast Regional Stock Assessment Workshop (62nd SAW). Assessment Summary Report. US Department of Commerce, Northeast Fish Science Center Reference Document 17-01; 37 p.

Musick, J. A., and L. P. Mercer. 1977. Seasonal distribution of black sea bass, *Centropristis striata*, in the Mid-Atlantic Bight with comments on the ecology of fisheries of the species. Transactions of the American Fisheries Society. 106: 12-25.

Southeast Fisheries Science Center (SEFSC). 2013. Stock Assessment of Black Sea Bass off the Southeastern United States: SEDAR Update Assessment. 102 p.

SEDAR. 2018. SEDAR 56 – South Atlantic Black Seabass Assessment Report. SEDAR, North Charleston SC. 164 pp.

Steimle, F. W., C. A. Zetlin, P. L. Berrien, and S. Chang. 1999. Essential fish habitat source document: Black sea bass, *Centropristis striata*, life history and habitat characters. NOAA Technical Memorandum NMFS-NE-143: 1-42.

Waltz, W., Roumillat, W.A., and P. K. Ashe. 1979. Distribution, age structure, and sex composition of the black sea bass, *Centropristis striata*, sampled along the southeastern coast of the United States. Marine Resources Research Institute, South Carolina Wildlife and Marine Resources Department. Technical Report Number 43, December 1979.

Zhang, Y. and S.X. Cadrin .2013. Estimating Effective Sample Size for Monitoring Length Distributions: A Comparative Study of Georges Bank Groundfish, Transactions of the American Fisheries Society 142 (1): 59-67.

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

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Melvin Bell, Chair | Stephen J. Poland, Vice Chair
John T. Carmichael, Executive Director

August 13, 2021

Atlantic Coastal Cooperative Statistics Program
1050 N. Highland St. Ste. 200 A-N
Arlington, VA 22201

We are pleased to submit the proposal titled, "FY22: SAFIS Expansion of the SciFish Customizable Fisheries Citizen Science Data Collection Application." This proposal is being submitted as a Year 2 maintenance proposal. It was initially funded as a new project in FY20: SAFIS Expansion of "SAFMC Release" and "NC DMF Catch U Later" Discard Reporting Applications". In FY21 it was then funded as a Year 1 maintenance project: SAFIS Expansion of Customizable Fisheries Citizen Science Data Collection Application.

The FY22 proposal builds on work that will be completed through the FY20 and FY21 projects but also incorporates new objectives. Additionally, a new objective was added to the proposal since the initial submission in June 2021 that incorporates the addition of two new projects in SciFish to help pilot the policy and procedure development and serve as prototypes for the expandability of the platform. A summary of the FY22 proposal objectives is below, highlighting the changes in scope of work and the new objective added since the proposal's initial submission:

- Continue data collection under the ACCSP citizen science application, SciFish, via the *SAFMC Release* and NCDMF *Catch U Later* projects and expand the species that can be reported.
- Continue the development and construction of SciFish, a customizable ACCSP fisheries data collection application. This application will standardize data collection, increase data availability, and reduce the need for future and existing projects to invest additional costs in individual applications. The FY22 project will move the SciFish platform prototype (application and project builder interface) developed in the FY21 project into production and explore the incorporation of features that could help with participant recruitment and retention.
- Include a new objective to develop policies and procedures needed for partners to build and support projects within the SciFish mobile application.
- Include a new objective to add two new projects, NCDMF *Tagging Program* and University of New England's (UNE) *Mail-A-Scale*, to the SciFish platform to pilot the policy and procedure development and serve as prototypes for the expandability of the platform. The project managers for these programs will be augmenting existing citizen science programs by moving from paper data collection to electronic data collection.
- The FY22 proposal's primary program priority remains biological sampling (90%). However, the secondary module has changed back to catch and effort (10%) like the initial FY20 proposal.
- The FY22 proposal is being submitted by SAFMC and NCDMF like the initial FY20 proposal.

This proposal has been revised based on the reviewers' questions and recommendations. In the original proposal, committee members asked that we address the following questions and recommendations. We have addressed them below (see red text) and within the proposal where applicable.

Questions

- *Are there any results since this project started, would like to see the value added.*
  The initial FY20 project is wrapping up now and the FY21 project will begin in late summer 2021. A summary of FY20 project results and the FY21 project objectives are below and can be found within the proposal in Table 3. Additional details on the FY20 project results will be included in the final grant report available in September 2021.

  The FY20 project combined two similar released fish reporting applications (SAFMC *Release* and NCDMF's *Catch U Later*) into a new ACCSP customizable citizen science application, SciFish, that will be available to other partners. It also expanded the application to increase the species that can be reported through the *SAFMC Release* project. Beta testing for both projects in SciFish is wrapping up now and SciFish production will launch in August 2021.

  Additionally, a series of scoping meetings were held in Spring 2021 to outline a framework for the continued development of the ACCSP customizable citizen science data collection application (SciFish) that can support multiple project types. The scoping meetings consisted of an online questionnaire, two virtual town hall meetings, and three half day microlab workshops. Just under 200 individuals completed the questionnaire and just under 60 people attended the town halls. There was a total of 46 microlab participants representing fishermen, scientists, and managers from 23 organizations across 15 states. The microlabs focused on identifying data gaps and deficiencies that could be addressed through a citizen science approach; the data needed to fill these gaps that could be reasonably collected; and app or platform usability.

  Using the information gained through the FY20 scoping meetings, the FY21 project will focus on building the customizable citizen science app prototype which will include the expansion of the app to support the project types and data fields prioritized through the FY20 scoping meetings, as well as the development of a project builder interface. Additionally, it will continue data collection in SAFMC *Release* on shallow water grouper releases and flounder releases in NCDMF *Catch U Later*. The FY21 project will begin in late summer 2021.

- *Applying for 3rd year, wasn't this originally a 1-year proposal?*
  New objectives have been added within each proposal submission that build on the work done the previous year. The FY21 project will use the information gained through the FY20 scoping meetings to build the customizable citizen science app prototype and project builder interface which will allow ACCSP partners to develop projects within the SciFish platform at little to no cost. The FY22 project will move the SciFish platform into production; develop policies and procedures for project creation; add two projects into SciFish to pilot the policy development and serve as prototypes for the expandability of the platform; and expand species included in *SAFMC Release* and NCDMF *Catch U Later*. The project PIs anticipate that SciFish will transition to ACCSP ownership and be available to all partners at the end of this FY22 project.

Please let us know if you have any questions or would like any additional information.

Best,

Julia Byrd
South Atlantic Fishery Management Council
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North Charleston, SC 20405
julia.byrd@safmc.net
843-302-8439

Dr. Drew Cathey
North Carolina Division of Marine Fisheries
934 Washington Square Mall
Washington, NC 27889
Andrew.Cathey@ncdenr.gov
252-948-3876

Applicant Name: South Atlantic Fishery Management Council (SAFMC)
North Carolina Division of Marine Fisheries (NCDMF)

Project Title: **FY22: SAFIS Expansion of the SciFish Customizable Fisheries Citizen Science Data Collection Application**

Project Type: Maintenance

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Requested Award Amount: **$116,182**

Requested Award Period: One year upon receipt of funds

Submission Date: August 13, 2021

FY22 Atlantic Coastal Cooperative Statistics Program (ACCSP) Proposal for the SAFMC and NCDMF

OBJECTIVES:

- Continue data collection under the ACCSP citizen science app, SciFish, via the *SAFMC Release* and NCDMF *Catch U Later* projects and expand the species that can be reported.
- Continue development and construction of SciFish, a customizable fisheries data application, to standardize data collection, increase data availability, and reduce the need for future and existing projects to invest additional costs in individual applications.
- Develop policies and procedures needed for partners to build and support projects within the SciFish mobile application.
- Pilot policy and procedure development with two additional projects: 1) the North Carolina Division of Marine Fisheries *Tagging Program* which seeks to better evaluate the migration, growth, habitat use, and population status of multiple species and 2) University of New England (UNE) *Mail-a-Scale* which seeks to expand current data collection of recreationally caught striped bass in Maine.

NEED:

Fishery managers often consider the biology and sustainability of a fish stock alongside socio-economic values of the resource and fishery when developing fishery management plans. Despite substantial efforts there are long-standing data gaps which, if addressed, could be useful in developing improved management strategies. Data that are self-reported by fishermen show great promise to alleviate these data limitations and citizen science approaches are currently being investigated to address state and federal management needs. Examples of this can be seen in recent efforts by the South Atlantic Fishery Management Council's (SAFMC) *SAFMC Release* project and North Carolina Division of Marine Fisheries' (NCDMF) *Catch U Later* project. These projects work with recreational and commercial fishermen to collect information to better characterize Scamp Grouper and flounder discards, respectively, via the use of mobile applications.

Discard mortality has been an increasing component of the total mortality experienced by many stocks and is a major source of mortality for Red Drum (SEDAR 44[1]) and Red Snapper (SEDAR 73[2]). Released fish are not available for sampling by typical dockside monitoring programs and observer coverage ranges from limited in commercial and for-hire fisheries to non-existent in private recreational fisheries in the South Atlantic region. As such, there is often no or limited information available to characterize these losses for stock assessment modeling. Improving information on released fish is a common stock assessment research recommendation

[1] SEDAR. 2015. SEDAR 44 – Atlantic Red Drum Stock Assessment Report. SEDAR, North Charleston SC. 890 pp. available online at: http://sedarweb.org/sedar-44.

[2] SEDAR. 2021. SEDAR 73 – South Atlantic Red Snapper Assessment Report. SEDAR, North Charleston SC. 194 pp. available online at: http://sedarweb.org/sedar-73.

Yellow highlighted comments indicate sections that help with the ranking process.
Green highlighted text indicates changes from initial submission.

and is often a top priority in agency research plans. In the ACCSP request for 2022 proposals, information on releases and discards as well as APAIS/MRIP independent biological sampling for recreational fisheries are the #2 and #4 priorities, respectively. During the August 2022 ACCSP Coordinating Council meeting, "Citizen Science" was one of three additional suggested recreational priorities for the 2022-2026 implementation period. Discard characterization and information on discard reduction practices are priorities in the South Atlantic Fishery Management Council's (SAFMC) Research and Monitoring Plan for 2021-2025 and for the SAFMC's Citizen Science Program.

In North Carolina, flounders, Red Drum, Spotted Seatrout, and Weakfish are among the most targeted recreational species. As fisheries management implements creel and size limits, as well as seasonal closures, the ratio of discarded fish to legal harvest has continued to grow. Indeed, between 2012 and 2017 discard ratios have ranged between 84-90% for flounder species, 77-97% for Red Drum, 77-95% for Spotted Seatrout, and 77-93% for Weakfish. Despite high angler preference for flounder and trout, ambiguity exists concerning correct identification within both genera. This confusion presents a unique challenge for fisheries management because discard information provided by the recreational angling community may be inadvertently errant. To date, the partitioning of discarded catch for these species is accomplished by applying the ratio of species within the observed harvest. However, this methodology is not ideal due to the assumption that discarded individuals share the same spatiotemporal distribution as those harvested. The ability to characterize ambiguous discarded fish (e.g. flounders) to species and obtain associated biological data is perennially highlighted as a research priority by the NCDMF Biological Review Team Research Priority Subcommittee.

The SAFMC developed the reporting application *SAFMC Release* through its Citizen Science Program to provide information on released Scamp Grouper to be considered for use in an upcoming stock assessment and future management. *SAFMC Release* provides a streamlined approach for fishermen to provide a picture of discarded fish along with additional details such as length, release location and depth, condition, and use of barotrauma mitigation techniques. Because there is a severe lack of details on discarded fish across all fishery sectors, this app was developed for and is being promoted to all sectors - commercial, for-hire, and private recreational fisheries. The NCDMF has developed *Catch U Later,* a reporting app for recreational discards to enable the separation of generic flounder discards into individual species, to collect information on the size of released fish, and information on capture location. Data collected from the *Catch U Later* application will be used to determine the ratio of constituent flounder species within generic flounder discards thereby increasing the reliability of discard information used in stock assessment models.

ACCSP and Harbor Light Software have been key partners in the development of both projects. ACCSP provides a portal for data submission and warehousing, and Harbor Light Software developed programming for both applications. While both the SAFMC and NCDMF projects are quite different, there is a strong similarity in the tools – the apps – used by each. The **FY20 ACCSP project combined these two apps under a new ACCSP citizen science mobile**

application, SciFish, providing a single discard reporting tool that can be adapted by other partners in the future. It also expanded the species that can be reported through the application to all shallow-water grouper (Red, Gag, Black, Scamp, Yellowfin and Yellowmouth Groupers; Red Hind; Rock Hind; Coney and Graysby) for the *SAFMC Release* project. This proposal will continue data collection under the *SAFMC Release* and *Catch U Later* projects expanding the species collected within each project. *SAFMC Release* will begin collecting data on Red Snapper in addition to all shallow water grouper. NCDMF's *Catch U Later* will begin collecting data for Red Drum, kingfish, Spotted Seatrout, and Weakfish in addition to flounder.

Importantly, the implementation of NCDMF's *Catch U Later* was substantially delayed due to the COVID-19 pandemic. Specifically, the original methodology had budgeted for a series of in-person workshops to train participants on using the mobile application and identification of flounder. This COVID-related delay realigned the timeline to better coincide with the merger of both applications into SciFish. The *SAFMC Release* and NCDMF *Catch U Later* projects in the SciFish application are nearing completion of beta testing. SciFish will move into the production phase in August 2021, and data collection will begin in NCDMF *Catch U Later* and expand to include all shallow water groupers for *SAFMC Release*. One focus of the FY22 proposal will be on the expansion of the application to include the aforementioned species that were not completed in FY2020. The *Catch U Later* funding earmarked in the FY20 proposal for a temporary data QA/QC technician was reallocated to assist in paying for an outside facilitator for the customizable citizen science app scoping meetings held in spring 2021.

Collecting information on released fish is just one of the challenges ACCSP partners face that can be addressed through innovative electronic tools. The astounding proliferation of smartphone applications impacts nearly all aspects of people's lives. The willingness of the public to openly share information and experiences supports smartphone applications as a promising approach for collecting fisheries data. Electronic applications offer obvious benefits to the challenge of collecting fisheries data not available to traditional sampling efforts and can be customized to address nearly any fisheries data collection need. Additionally, applications reduce data entry errors, improve timeliness, and lower labor demands as has been demonstrated in the transition of MRIP APAIS from paper to electronic data collection. The relative ease with which applications can be developed may be good for finding innovative solutions to gather data, but it carries the risk of excessive "stovepiping" that results in unique data streams that are difficult to coordinate with other data streams. There is also the risk that a multitude of highly specific applications will impose excessive maintenance costs and lead to confusion amongst the fishing and scientific communities. Therefore, oversight and intentional design are required to ensure that applications collect valid information and that the data collected can be used in management, both of which are core elements in the SAFMC's Citizen Science Program. The SAFMC Citizen Science Program is uniquely situated to address design and data quality concerns through its existing structure to review and support citizen science project development, and to provide coordination through its regional partnerships and infrastructure.

The SAFMC's Citizen Science Program was developed over the course of several years with guidance from a wide array of stakeholders and partners. The program's overall approach is to support projects that fill data gaps and address research needs; to complement existing programs and partnerships; to foster fishermen and scientist collaboration; and to implement intentional project design so there is a direct application of the data for use in management or stock assessments. As part of this intentional design, projects supported by the program are encouraged to form a design team of diverse stakeholders (e.g. fishermen, scientists, managers, etc.) to provide guidance throughout the development and implementation of a project. Scientific input is critical to ensure projects are designed so that data collected can meet its intended use. Fishermen and other stakeholders' input helps ground projects in reality to ensure data collection methods are feasible. Through the development of its Citizen Science Program, the Council worked with stakeholder driven action teams to create Standard Operating Policies and Procedures (SOPPS), which include program and project support resources available through the SAFMC's website.

Funding for citizen science is often limited and developing a comprehensive and flexible app that can be used to collect information from a variety of sources would be extremely helpful in reducing costs for different projects, reducing time needed to create an app from the ground up, and increasing consistency in data fields and structure. The SAFMC and NCDMF's FY20 ACCSP project began planning for the development of a comprehensive and flexible reporting tool that could be applied to a variety of fisheries data issues. **The long-term goal is to develop a menu-driven tool administered through ACCSP that partners could use to easily create a customized app or 'project' by selecting specific data fields, without the need to develop stand-alone apps for each new project or data challenge**.

Through FY20 project funding, a series of scoping meetings was held in spring 2021 bringing together fishermen, scientists, and managers along the Atlantic coast to share their knowledge and perspectives on the development of a customizable citizen science application. An organizing committee with representatives from SAFMC, NCDMF, ACCSP, Harbor Light Software, Georgia Department of Natural Resources (GADNR), and Rhode Island Department of Environmental Management (RIDEM) helped plan, coordinate and conduct these meetings. The scoping meetings initially explored the needs of the broader fisheries community by gathering information through an online questionnaire and two town hall meetings. Next a series of three half-day workshops was held with a core group of individuals who participated in the questionnaire or town halls or were identified through earlier outreach efforts. There was a total of 46 microlab participants representing fishermen, scientists, and managers from 23 organizations across 15 different states. The workshops focused on identifying data gaps and deficiencies that could be addressed through a citizen science approach; the data needed to fill these gaps that could be reasonably collected; and app usability (i.e. how to make the app as user friendly as possible and what positive feedback loops could help with recruitment and retention). Using the information gained through these scoping meetings, SAFMC's FY21 ACCSP project will focus on building the customizable citizen science app prototype which will

include the expansion of the app to support the project types and data fields prioritized through the FY20 scoping meetings, as well as the development of a project builder interface.

Through this proposal, the SciFish platform prototype (application and project builder) developed during the FY21 project will move from beta testing into production, making it available to all ACCSP partners. A secondary focus will be to incorporate features into the application identified through the FY20 scoping meetings that could help with participant recruitment and retention (e.g. weather, regulations, etc.). Additionally, it became clear through the FY20 scoping meetings that more work would be needed to develop policies and procedures for project managers who want to utilize the SciFish platform. To address these issues, this proposal will work with ACCSP leadership and partners to develop guidelines for the SciFish platform which will include:

- Standards for the development of projects within SciFish
- Processes for project managers to build and test projects before launching
- Processes for adding new data fields into the application and project builder
- Standards for SciFish branding, accessibility, transparency, confidentiality and privacy, and create template user agreements
- Training materials for the project builder interface and resources to assist with citizen science project development
- Clarifying next steps as the SciFish app transitions to ACCSP ownership and becomes available to all partners

This proposal will also pilot the policy and procedure development by collaborating with two additional project managers through the NCDMF *Tagging Program* and the UNE *Mail-A-Scale* program to build two new projects within the SciFish app. Project managers for these programs requested to be part of the SciFish beta testing, helping provide further 'proof of concept' that the application can be adapted to fit different partners' projects and data collection needs. The primary objective of the project managers for NCDMF *Tagging Program* and UNE *Mail-a-Scale* is to augment existing citizen science data collection programs. The NCDMF *Tagging Program* seeks to allow fishermen to report tag returns more quickly than current protocols (i.e. filling out paper forms, reporting tags physically at NCDMF offices) as well as collect additional biological data (i.e. length). Similarly, the UNE *Mail-a-Scale* project seeks to expand and enhance the Gulf of Maine Research Institute's (GMRI) *Snap-a-Striper* Project. Currently, the GMRI *Snap-a-Striper* protocol involves recreational anglers submitting a photograph of recreationally harvested striped bass that includes a paper reporting card as well as biological data (i.e. otoliths) from legally harvested fish. Importantly, UNE *Mail-a-Scale* uses the same reporting card as GRMI *Snap-a-Striper* and seeks to develop an electronic reporting application in lieu of the paper reporting card. Additionally, UNE *Mail-a-Scale* seeks to collect non-lethal biological data (scales) from recreationally discarded Striped Bass. Advantages of developing a reporting application through the SciFish project builder interface will allow anglers to report data more quickly and accurately, allow staff to QA/QC and process data more efficiently, and archive data into the database sooner. These benefits serve to streamline data collection while

simultaneously reducing associated costs. More details on the NCDMF *Tagging Program* and UNE *Mail-A-Scale* projects can be found in Appendix 1.

The SAFMC's Citizen Science Program and NCDMF are in a position to lead and coordinate efforts with other partners in the continued development of this flexible fisheries citizen science application. The SAFMC's Citizen Science Program has experience working with stakeholders as well as state and federal partners in developing programmatic level policies and procedures through the development of its own SOPPS which can be used as a starting point and adapted when developing policies for the SciFish platform.

RESULTS AND BENEFITS:
This project will continue developing the ACCSP customizable citizen science app, SciFish, moving the platform into production and enhancing the features available in the app and project builder; developing the policies and procedures needed to guide and support partners' use of this innovative platform; and expanding data collection within the *SAFMC Release* and NCDMF *Catch U Later* projects.

The role of citizen science is an evolving and potentially powerful tool that can be used to better understand marine fish populations and fisheries along the Atlantic coast. The SciFish platform is flexible and scalable to meet different partner and management needs and will be able to support multiple projects that can be configured to address specific questions across fisheries sectors and jurisdictions. This approach is similar to the Cornell Lab of Ornithology's eBird that supports multiple projects to collect information on bird distribution and abundance through one platform. Although the individual projects in eBird may appear different, they feed into one database and use consistent data fields. This will reduce costs and the time needed to develop a new app to collect important data, will improve consistency across apps from multiple agencies for data fields, and enable researchers to focus on recruitment and retention of project participants. The diverse participation in and success of the FY20 customizable app scoping meetings demonstrate the interest of ACCSP partners in the continued development of the SciFish platform. Project partners are also engaging with other groups who have developed similar citizen science data collection platforms, like eBird and citsci.org, to learn from their experiences. Rick Bonney, Director Emeritus of the Public Engagement in Science Program at the Cornell Lab of Ornithology and a co-founder of eBird, participated in one of the FY20 scoping meetings giving a presentation which shared insights on the development of eBird. Additionally, SAFMC and ACCSP staff had a call with a co-founder of citsci.org, a platform that supports data collection for a variety of citizen science projects. Developing a customizable platform with ACCSP, an established data management leader on the Atlantic coast, will help increase accessibility to the data for a variety of partners.

This proposal will build on the work done in the FY20 and FY21 projects. The FY20 project was envisioned as the first step in the development of the customized data collection tool. It built an innovative released fish information platform (SciFish), consisting of a core application used by anglers with iOS and Android functionality for both phones and tablets, and specific profiles, created by the Project Builder interface, tailored to two unique projects (*SAFMC*

Release and NCDMF's *Catch U Later).* Additionally it worked with ACCSP partners and other interested parties through a series of scoping meetings to outline a framework for the continued development of the application by identifying key data gaps that could be addressed through a citizen science approach and the corresponding data fields that would help meet those gaps. The FY21 project will create a project builder application prototype that works with the expanded list of data collection fields identified and prioritized through the FY20 scoping meetings to build partner project-specific data collection interfaces. The intent of this project will be to move the SciFish prototype developed into production, to work towards incorporating features that could help with recruitment and retention, and to develop the corresponding policies and procedures needed to guide and support use of the SciFish platform. The development of these policies is critical to help ensure projects are designed to answer specific research questions and meet identified data gaps; are developed with intentional design so data collected are fit for purpose and meet their intended use; and to provide general oversight for use of the platform. The ability to identify and communicate these policies to potential users will increase the efficacy of subsequent SciFish projects by mitigating potential limitations and deficiencies on the front end. Importantly, onboarding the NCDMF *Tagging Program* and UNE *Mail-A-Scale* projects will better inform the development of these procedures and policies while simultaneously addressing two of the data needs, "Fish Distribution and Movement" and "Life History", identified during the scoping meetings conducted during the FY20 project.

Additionally, this project would continue the collection of data on released fish via *SAFMC Release* and *Catch U Later* and expand the species that can be reported through each project. Observer funding across most fisheries along the Atlantic Coast has never been adequate. Many fisheries, such as the private recreational or the commercial snapper grouper hook and line, are challenging to sample through conventional observer techniques due to their sheer volume of participants and small vessels which could present safety concerns. Although a few specific fisheries are highlighted in this project, the proportion of catch attributed to releases is increasing in many popular fisheries along the Atlantic Coast, indicating that other ACCSP partners likely share the needs and could benefit from the SciFish platform developed through this project. For example, the Atlantic States Marine Fisheries Commission's Bluefish Technical Committee recently received a presentation on the *SAFMC Release* and *Catch U Later* projects to explore whether a project like this could be developed for Bluefish to help meet data gaps to characterize the size of released fish.

Partners would benefit by being able to create and use an electronic tool without incurring extensive development costs which hinders citizen science or other voluntary data collection programs where resources are often limited. Reducing the development cost means more of the limited funds would be available for volunteer engagement which is critical for project success and is labor intensive. It would also give partners more flexibility in responding to timely research and management needs by allowing them to build and deploy project specific apps quickly with standardized data fields. ACCSP would benefit by reducing the need for continual Application Programming Interface (API) and report development. A generic tool of this type could prove particularly useful as ACCSP moves from the traditional catch and effort data

sources and into warehousing the next tier of fisheries data - biological and socio-economic. Project partners anticipate this platform will be further improved and expanded through future projects. Developing the SciFish platform within the SAFIS system will ensure it meets ACCSP data quality and accessibility standards, is compatible with existing data collection programs, available to all partners, and kept up to date. ACCSP staff were involved in the development of this proposal. If funded, database structures will be built or modified in SAFIS and the Data Warehouse, as needed, and adequate storage is available to support this project. See Appendix 2 for a memo describing the ACCSP staff workload for this proposed project.

Primary Program Priority Addressed by this Project

The SciFish customizable reporting application and the supporting project builder developed as part of this project will continue to further expand a tool to collect biological information on the component of catch that is released, addressing the ACCSP FY22 Request for Proposal priority 1b and Recreational Technical Committee priority 2. The *SAFMC Release* and NCDMF *Catch U Later* projects within SciFish will continue to collect biological and fishery data that is independent of APAIS/MRIP, addressing Recreational Technical Committee priority 4. The onboarding of the NCDMF *Tagging Program* and UNE *Mail-A-Scale* projects will also address ACCSP FY22 Request for Proposal priority 1b and Recreational Technical Committee priority 2.

The specific benefits to each data type and the rank of the target species within priority matrices included in the app are addressed below for each project.

Primary Program Priority: Biological Sampling: 90%

For the SAFMC portion, biological information from both the commercial and recreational fisheries will continue to be collected on released shallow-water groupers (Red, Gag, Black, Scamp, Yellowfin and Yellowmouth Groupers; Red Hind; Rock Hind; Coney and Graysby) and expanded to include Red Snapper. Scamp, Gag, Red Grouper, and Red Snapper are in the top 25% of the ACCSP biological sampling priority matrix. The commercial snapper-grouper hook and line fleet is #5 in the ACCSP bycatch priority matrix. The SAFMC *Release* portion includes:

- Data collected for each trip: trip type (commercial, recreational, headboat, charter), date, user (ACCSP ID)
- Data collected for each fish released: species (user's determination), length (based on ACCSP standards), location, depth, time, fate (dead or alive release), hook type, hook location, use of barotrauma mitigation (descending device, venting, line cut), shark predation, and photograph (to validate and evaluate user IDs and lengths)
- Users may also file a 'no fish released' report

For the NCDMF *Catch U Later* portion, biological information will continue to be collected on recreational releases for three species of flounder (Summer, Gulf, and Southern) and be expanded to include Red Drum, Kingfish, Spotted Seatrout, and Weakfish. The NCDMF *Catch U Later* portion includes:

- Data collected for each trip: trip type (private boat, headboat, charter, manmade structure, bank/shore), date, user (ACCSP ID)
- Data collected for each fish released: species (user's determination), area fished, length (based on ACCSP standards), location, fate (dead or alive release), hook type, hook location, and photograph (to validate and evaluate user IDs and lengths)

For the NCDMF *Tagging Program* portion biological information will be collected for a variety of species including Cobia, Spotted Seatrout, Striped Bass, Southern Flounder, and Red Drum. Cobia is in the top 25% of the ACCSP biological priority matrix.

- Data collected for each trip: trip type (private boat, headboat, charter, manmade structure, bank/shore), date, user (ACCSP ID)
- Data collected for each fish: species, area fished, length (based on ACCSP standards), location, fate (dead or alive release), hook type, hook location, and photograph(s) (tag ID and fish).

For the UNE *Mail-A-Scale* portion biological information will be collected on recreationally caught Striped Bass.

Secondary Module as a by-product: Catch and Effort: 10%

A ratio of Southern, Summer, and Gulf flounder to total flounder by year, wave, and area fished will be determined from a statistically drawn and trained panel of NC *Catch U Later* users. These proportions will be applied to the estimates of left-eyed flounder released catch to produce estimates of discards for each of the specific flounder species. Similar data limitations and associated methodologies are applied to other ambiguous species including kingfish (Northern, Southern, Gulf) as well as Spotted Seatrout and Weakfish. As the application is expanded to include these species, their specific contributions to unobserved catch records will be evaluated.

Stock Assessment and Management Benefits and Impact:

By continuing data collection on released fish through the *SAFMC Release* and *Catch U Later* projects, as well as expanding the opportunity for other partners to collect data on released fish, the positive impact of this project to stock assessments could be substantial and realized by many ACCSP partners. Stock assessments rely upon accurate information on total catch and removals from the stock and accurately allocating those removals to year classes. For fish that are landed, these requirements can be addressed through straightforward methods such as catch reporting or creel surveys to estimate removals and dockside sampling to collect length measurements and age samples. Surveying and dockside sampling approaches cannot work when the fish are released on the water. Using the South Atlantic as an example that is in no way unique, very limited information is available to classify the size composition of released fish in the commercial snapper grouper hook and line fleet, the private recreational fleet, or the charter fleet. In some areas, fisheries observers are used to collect information on released fish. Observer coverage is limited due to high cost. Moreover, even if funding were available, logistics and liabilities remain a concern for some fisheries. Examples include the commercial

hook and line snapper grouper fishery, which is prosecuted mostly by small vessels, and private recreational fisheries. Limited observer coverage is available for the headboat fleet, but changes in fleet size and behavior raise concerns about the validity of such data to characterize removals from other fishery sectors. This lack of information is a major source of stock assessment uncertainty, as assumptions must be made to assign released and discarded fish into length and thus age classes.

In years past the lack of accurate information on discarded fish was not a major assessment concern or source of uncertainty as landed fish generally accounted for the majority of stock removals. However, this is changing as regulations and fishing behavior are leading to increased discarding. For example, in the recent assessment of Red Drum (SEDAR 44[3]), the Review Panel noted catch and release fishing was increasing and as a result estimated total removals from the stock was increasingly sensitive to discard mortality rates and discard losses. The Panel also questioned the validity of an assumption that the length frequency of discarded fish was similar to tagged fish. The assumption was necessary due to the lack of any data on the size of released fish that could be used to assign mortalities from release to appropriate length classes. There are several reasons why such an assumption may be invalid and a source of bias in the assessment results, but the total lack of data precludes even an effort to determine the direction of bias or magnitude of uncertainty. The Review Panel considered this data lack significant and an important issue in the Red Drum assessment. The addition of the NCDMF *Tagging Program* will provide critical Red Drum data including migration patterns, growth, and habitat use. Finally, the expansion of NCDMF *Catch U Later* to include Red Drum can be used in concert with the NCDMF *Tagging Program* to address the aforementioned data limitations thereby increasing the reliability of stock assessment models and associated management measures.

Consider other examples of the target fish in this study. The most recent assessment (SEDAR 53[4]) indicated that over fifty percent of the fishing mortality experienced by Red Grouper is due to discard losses. Given that this stock was found to be overfished and overfishing was occurring, these discard removals are significant, and therefore the assumptions made regarding their size and composition are critical. In this instance, the length composition and selectivity for the discard losses was based on observer records from the headboat fishery and it was assumed these data were representative of all fishery sectors. As noted above, there is no data to test this assumption so its impact on assessment uncertainty and bias is unknown. In SEDAR 73, the most recent South Atlantic Red Snapper assessment, the stock was found to be overfished and undergoing overfishing. In recent years, discards have accounted for over 90% of removals so characterizing their size is critical. Length compositions and selectivity for discards were based on limited commercial, headboat, and charter (Florida only) observer data. Sampling recommendations in the report noted that it remains important to monitor discards year-round

[3] SEDAR. 2015. SEDAR 44 – Atlantic Red Drum Stock Assessment Report. SEDAR, North Charleston SC. 890 pp. available online at: http://sedarweb.org/sedar-44.

[4] SEDAR. 2017. SEDAR 53 – South Atlantic Red Grouper Assessment Report. SEDAR, North Charleston SC. 159 pp. available online at: http://sedarweb.org/sedar-53.

and any potential methodological or sampling improvements should be implemented if possible. Having additional information to help characterize the substantial discards could help meet this critical need.

A similar lack of information exists to classify the depth where fish are captured and released and the use of barotrauma reducing actions such as venting or descending. Fishing depth and barotrauma are positively correlated with release mortality rates for most species. However, it is difficult to incorporate depth and barotrauma into the overall release mortality rate applied for a stock assessment without additional information on released fish.

Small improvements in estimates of discard mortality, based on data rather than assumption, can result in large changes in the estimated removals from a fish stock. Based on the results of ACCSP-funded headboat observer studies, as cited in the 2019 Recreational Technical Committee proposal, the Red Snapper release mortality was reduced from 37% to 28.5% due to the use of circle hooks. Applying this percentage change to the estimated 2018 MRIP discards reduced the discard losses to the population by 274,000 fish. This is quite a difference when compared to the 2018 recreational annual catch limit of 29,656 fish. This is also relevant for species such as flounder, kingfish, Spotted Seatrout, and Weakfish given the current method applies a ratio of observed landings, which may not be an accurate representation of released fish. The ability to accurately characterize discards could substantially improve stock assessments and management decisions.

The SAFMC's Snapper Grouper Regulatory Amendment 29, which requires descending devices on-board vessels fishing for or possessing snapper grouper species, was recently implemented in July 2020. Federal law requires comparing the No Action alternative (not requiring) with proposed management actions. Having information on usage of descending devices would have benefited the analysis for impacts of requiring a descending device both in the cost to anglers and for estimating changes in the estimate of discard mortality. Luckily, most stakeholders regarded this as a positive management action. But quantitative information on fishing practices that can be collected through a flexible data collection app could be used to make more informed decisions on the impact of management actions. When reviewing the SEDAR 73 (South Atlantic Red Snapper) assessment at their April 2021 meeting, the SAFMC's Science and Statistical Committee raised concerns about the level of descender device usage due to the lack of information on how widespread usage is in the fishery. This is of note since the assumed level does have an impact on management quantities - highlighting the need for this type of information.

In 2019, stock assessments determined that North Carolina's Southern Flounder stock is overfished, and overfishing is occurring. State law requires management actions be taken to end overfishing within 2 years and recover the stock from an overfished condition within 10 years. To meet these legal requirements, the NCDMF determined that significant reductions in harvest were necessary. As such the North Carolina Marine Fisheries Commission adopted Amendment 2 to the Southern Flounder Fishery Management Plan and included a 62% reduction in total

removals in 2019 and 72% reduction in total removals in 2020 across recreational and commercial fishing sectors. To achieve these management measures, no flounder can be harvested outside of the open season and gears targeting Southern Flounder are removed from waters outside of the season. The adoption of Amendment 2 was predicated on the immediate development of Amendment 3 which would include better characterizing the fishery and exploring alternate management strategies. Information collected through the *Catch U Later* app will be invaluable for the development of Amendment 3 by providing species specific discard length data to better inform stock assessment models. Additionally, the application will help researchers evaluate self-reported discard data from dockside interviews and help educate the angling public on flounder identification.

Data Delivery Plan:
Data collection projects will be defined by the project builder application and will be stored in SAFIS, where they can be downloaded and interpreted by the fisherman application to a phone or tablet. The fisherman application for all projects will collect and deliver data directly to ACCSP through an API, building on the existing API that currently accepts data from *SAFMC Release* and *Catch U Later*. Data can be entered by fishermen when no internet connection is available and later uploaded to SAFIS when a connection exists.

APPROACH:

Task A: Move the SciFish platform prototype (application and project builder interface) developed from the FY21 project from beta test into production. Explore the incorporation of additional features identified during FY20 project scoping meetings that could help with participant recruitment and retention (e.g. weather).

Harbor Light Software

- Productize the technology incorporated into the Project Builder application development during the FY21 project into a package which can be distributed as a fully supported Production-level application. This will include the creation of project templates and documentation to assist new project developers. Additional work is expected to address feedback from users during both the FY21 and FY22 timeframes to improve the performance, usability, and functionality of the application, including incorporating support for participant recruitment and retention features.
- Continue to update the client angler application as needed to support new features for application functionality, project management and reporting based on feedback from end users and project creators/managers.
- Add additional identified species and data fields that were not supported during the FY21 project.
- Incorporate analytics data to gain insights into usage patterns of the application such as geographic usage or ease of use of particular features. Similarly, incorporate error reporting

features to proactively be alerted to reliability issues with the application after it has been deployed.
- QA/QC the application before release.
- Manage the deployment of the application directly to beta users, maintaining a presence in the Google Play Store and Apple App Store.
- Provide second-tier technical support for issues found with the application, including correcting errors found in the implementation of the required feature.
- Investigate features and or modifications which increase the continued use of the application by the citizen science community.

SAFMC, NCDMF, & UNE
- Add additional species to the *SAFMC Release* (Red Snapper) and NCDMF *Catch U Later* (Red Drum, kingfish, Spotted Seatrout, and Weakfish) projects via the Project Builder.
- Develop new projects within SciFish via the Project Builder for the NCDMF *Tagging Program* (Cobia, Red Drum, Spotted Seatrout, Striped Bass, and Southern Flounder) and UNE *Mail-A-Scale* (Striped Bass).
- QA/QC and test application.

ACCSP
- Build appropriate API or modify existing API as needed.
- Update and/or build procedures, database objects, and reports as needed, and allow easy access to photos that are linked to the trip records.

Task B: Public Outreach (SAFMC and NCDMF)
- Recruit new participants in the existing projects, *SAFMC Release* and NCDMF's *Catch U Later* and expand participation for the new species.
- Apply engagement strategies to retain current participants in both projects.
- Notify ACCSP partners when new versions of SciFish are available.

Task C: SAFIS Application Deployment (ACCSP)
- SAFIS SciFish application will be deployed by this time.
- Reports are currently available in Data Warehouse to view/download data.

Task D: Data collection, QA/QC, and analysis (SAFMC, NCDMF, & UNE)
- Data successfully submitted via app to SAFIS/Data Warehouse.
- SAFMC, NCDMF, & UNE provide QA/QC for data collected through their projects; edit/correct as necessary.
- Data made available for assessment and management, as necessary.
- Continue to explore long term solutions for addressing QA/QC and validation needs of the data (e.g. photographic and species identification), considering volunteers and citizen science approaches.

Task E: Development of policies and procedures for use of the ACCSP SciFish Platform

- Engage ACCSP leadership to outline a process to develop policies and procedures for partners who want to utilize the SciFish platform.
- Organize a design team including SAFMC, NCDMF, UNE, ACCSP, Harbor Light Software, ACCSP committee representatives, and other interested parties to develop policies and procedures via a series of virtual meetings. The NCDMF *Tagging Program* and UNE *Mail-A-Scale* projects will be used to inform and pilot the procedures developed.

GEOGRAPHIC LOCATION:

The SAFIS application will collect data in NC inshore and coastal waters via the NCDMF *Catch U Later* and *Tagging Program* projects and collect data in coastal South Atlantic waters from North Carolina through the East Coast of FL to the FL Keys via the SAFMC *Release* project. The UNE *Mail-A-Scale* project will collect data in ME inshore and coastal waters. The geographic scope of the proposal includes all ACCSP partners in all regions, as they will be able to use or modify the SciFish application to meet specific project needs. The Rhode Island Division of Marine Fisheries has provided a letter for support for this proposal (see Appendix 3).

FUNDING TRANSITION PLAN:

Project contains a defined end point. This is a one-year project. PIs anticipate that SciFish will transition to ACCSP ownership and be available to all partners at the end of this FY22 project.

MILESTONE SCHEDULE:

Table 1. Milestone Schedule

Task	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Create app enhancements to existing base code and project builder	x	x	x	x	x	x	x	x	x	x	x	x
Update API and reports	x	x	x	x	x	x						
Testing & feedback from users; incorporating changes/fixes in application				x	x	x	x	x	x	x	x	x
Development of new test projects in SciFish			x	x	x	x	x	x	x	x		
Public/Partner Outreach	x	x	x	x	x	x	x	x	x	x		
SAFIS Application Deployment								x				
Data Collection, QA/QC & Analysis	x	x	x	x	x	x	x	x	x	x		
Development of SciFish policies and procedures		x	x	x	x	x	x	x	x	x		
Semi and Annual Report Writing						x				x	x	x

Yellow highlighted comments indicate sections that help with the ranking process.
Green highlighted text indicates changes from initial submission.

PROJECT ACCOMPLISHMENTS MEASUREMENTS:

Table 2. Project Accomplishments Measurements

Project Component	Goal	Measurement
Add enhancements to SciFish application and project builder	Migrate prototyped functionality into a fully supportable production status	SciFish application and project builder modified to incorporate additional features not addressed in FY21 project; updated application tested and ready for deployment
Public Outreach	Continue to promote *SAFMC Release* and NCDMF *Catch U Later* projects	New users recruited and current users retained for *SAFMC Release* and NCDMF *Catch U Later* projects
SAFIS Application Deployment	Have application easily accessible and available	Application accessible through app stores
Data Collection, QA/QC, and Analysis	Users continue to submit data on the targeted species using the application	QA/QC completed; data available for management and stock assessment, as needed
Development of SciFish platform policies and procedures	Describe the standards and processes needed to support the use of the SciFish platform by ACCSP partners	Policies and procedures document created for the SciFish platform
New projects created in SciFish platform	SciFish platform supports development of new projects by ACCSP partners	NCDMF *Tagging Program* and UNE *Mail-A-Scale* projects built and deployed within the SciFish platform

Yellow highlighted comments indicate sections that help with the ranking process.
Green highlighted text indicates changes from initial submission.

FY22 COST SUMMARY (BUDGET):

Item	ACCSP Share	Partner Share	Total
PERSONNEL COSTS			
SAFMC Personnel Julia Byrd, Citizen Science Program (15%) Chip Collier, Deputy Director (5%)		$12,357 $5,713	$18,070
SAFMC Project Coordinator	$45,760		$45,760
NCDMF Personnel Ami Staples, Biologist II (15%) Drew Cathey, Biologist Supervisor (5%)		$7,426 $3,000	$7,951
UNE Personnel John Mohan, Assistant Professor (3.7%)		$3,683	$3,683
CONTRACT			
Contractor Software Development	$55,000		$55,000
TRAVEL			
Support for travel to support outreach and promotional opportunities for *SAFMC Release*	$3,500		$3,500
SUPPLIES			
Recruitment/Retention Promotional Items	$6,000		$6,000
Virtual meeting facilitation tools	$360		$360
Indirect Costs (10% of non-contract costs)	$5,562		$5,562
TOTAL	**$116,182**	**$32,179**	**$148,361**
Percentage	**78%**	**22%**	**100%**

Yellow highlighted comments indicate sections that help with the ranking process.
Green highlighted text indicates changes from initial submission.

FY22 BUDGET NARRATIVE:

Personnel ($45,760): Personnel funds of $45,760 will be used by SAFMC to hire a Project Coordinator to help oversee the *SAFMC Release* project and help coordinate the continued development of the SciFish platform and the creation of SciFish policies and procedures. Personnel cost is estimated at $22/hour for a year (2080 hours).

Contractual ($55,000): Harbor Light Software will provide software development services to enhance the *Release + Catch U Later* application developed in FY20, and to build a "Project Builder" application. The latter app allows project owners to create customizable data collection applications. Harbor Light Software will test the software prior to release and manage the applications in the app stores. Costs are based on estimates of 270 hours of software development at $170/hour and 180 hours of QA/QC at $50/hour.

Travel ($3,500): Travel by the project coordinator will be used to promote SciFish and recruit users to participate in *SAFMC Release* by visiting tackle shops, fishing clubs, fish houses, charter operations, and other related venues to allow for distribution of outreach and promotional materials.

Supplies ($6,360): Partners will utilize funds to print promotional materials (e.g. wallet cards, postcards, rack cards, etc.) to promote SciFish and its existing projects (*SAFMC Release* and *Catch U Later*), as well as to recruit *SAFMC Release* users. Cost for print materials range from wallet cards (~$0.05 each) to rack cards (~$0.30 each). Using an average cost of ~$0.23 per item, $1000 will allow us to print ~4,400 items for distribution. Funds will also be used to purchase small promotional items (e.g. fishing towels, measuring tapes, stickers, etc.) to help increase recruitment and retention of participants. Cost for promotional items range between stickers (~$1.50 each) to towels (~$4.50 each). Using an average cost of $3.00 per item, $5,000 will allow us to distribute ~1,665 items to participants.

Virtual meeting facilitation tools will be used for the series of meetings held to develop SciFish policies and procedures. Costs are estimated at $30/month for 12 months for a total of $360.

Indirect charges of 10% are applied to the non-contract budget items for a total of $5,562. The Harbor Light Software contract will be administered through ACCSP, so was excluded from the indirect calculations.

FY21 COST SUMMARY (BUDGET):

Item	ACCSP Share	Partner Share	Total
PERSONNEL COSTS			
SAFMC Personnel Julia Byrd, Citizen Science Program (10%) Chip Collier, Deputy Director (5%)		 $8,156 $5,656	 $8,156 $5,656
SAFMC Project Coordinator	$45,760		$45,760
Graduate student to conduct survey work	$2,400		$2,400
CONTRACT			
Contractor Software Development	$55,000		$55,000
TRAVEL			
Support for travel to support outreach and promotional opportunities for SAFMC Release	$4,200		$4,200
SUPPLIES			
Recruitment/Retention Promotional Items	$2,000		$2,000
Indirect – 10% of non-contract costs	$5,432		$5,432
TOTAL	**$114,792**	**$13,812**	**$128,604**
Percentage	**89.3%**	**10.7%**	**100%**

Yellow highlighted comments indicate sections that help with the ranking process.
Green highlighted text indicates changes from initial submission.

FY21 BUDGET NARRATIVE:

Personnel ($48,160): Personnel funds of $45,760 will be used by SAFMC to hire a Project Coordinator to help oversee the *SAFMC Release* project and help develop and implement the new project identified during the FY20 scoping meetings. Personnel cost is estimated at $22/hour for a year (2080 hours).

Additionally, $2,400 will be used to contract with a graduate student to conduct a survey of *SAFMC Release* participants to get their feedback on the overall app and the transition to the customizable ACCSP release app. Survey results will help inform the expansion of the customizable app in this proposal and be used to better design the app and improve volunteer engagement. Costs are estimated for 120 hours of work at $20/hour.

Travel ($4,200): Travel by both the project coordinator and the graduate student will be used to educate the public, partners, and meeting attendees about the *SAFMC Release* project. Promoting the program by visiting tackle shops, fish houses, charter operations and other related venues that will allow for the distribution of outreach and promotional materials will also be used to raise awareness of the project.

Contractual ($55,000): Harbor Light Software will provide software development services to enhance the *Release + Catch U Later* application developed in FY20, and to build a "Project Builder" application, which allows project owners to create customizable data collection applications. Harbor Light Software will test the software prior to release and manage the applications in the app stores. Costs are based on estimates of 270 hours of software development at $170/hour and 180 hours of QA/QC at $50/hour.

Supplies ($2,000): SAFMC will utilize supply funds to print promotional materials (e.g. wallet cards, postcards) to recruit users for the *SAFMC Release* project and the new project identified during the FY20 scoping meetings. Funds will also be used to purchase small promotional items (e.g. fishing towels, measuring tapes) to help increase recruitment and retention of participants.

Indirect charges of 10% are applied to non-contract charges for a total of $5,432.

Yellow highlighted comments indicate sections that help with the ranking process.
Green highlighted text indicates changes from initial submission.

FY20 COST SUMMARY (BUDGET):

Item	ACCSP Share	Partner Share	Total
PERSONNEL COSTS			
SAFMC Personnel Julia Byrd, Citizen Science Program (10%) John Carmichael, Deputy Director (5%)		 $7,800.00 $6,961.20	 $14,761.20
SAFMC QA/QC process part time position	$24,000		$24,000.00
NC DMF Personnel Drew Cathey, Biologist II (10%) Chris Wilson, Biologist Supervisor (5%)		 $4,710.10 $3,277.80	 $7,987.90
NC DMF QA/QC process part time position	$24,000		
CONTRACT			
Contractor Software Development	$45,000		$45,000
SUPPLIES			
Recruitment/Retention Promotional Items	$500	$1000	$1500
TRAVEL			
In-person meeting	$25,000		$25,000
TOTAL	**$118,500**	**$23,749**	**$142,249**
Percentage	**83%**	**17%**	**100%**

Yellow highlighted comments indicate sections that help with the ranking process.
Green highlighted text indicates changes from initial submission.

FY20 BUDGET NARRATIVE:

Personnel ($48,000): Personnel funds will be used by SAFMC and NC DMF to each hire QA/QC process part time position. Personnel cost is estimated at $20/hour for a total of 1200 hours for each position. The positions will assist with Task D: Data Collection, QA/QC, and Data Analysis. Job duties will include assisting with QA/QC and exploring long term solutions for addressing QA/QC and validation needs of the photographic and species identification data, considering volunteers and citizen science approaches.

Supplies ($500): SAFMC will utilize supply funds to print promotional materials (e.g. wallet cards, postcards) to inform users of transition to new SAFIS application and recruit new users. Funds will also be used to purchase small promotion items (e.g. fishing towels, measuring tapes, etc.) to help increase recruitment and retention rates of participants.

Contractual ($45,000): Harbor Light Software will develop the application software, using the software written for the existing *SAFMC Release* and NC DMF *Catch U Later* applications as core reference with enhancements for branding, additional species, modifications to the ACCSP API and flexibility for supporting different data collection profiles. Harbor Light will also provide second-tier technical support, management of the deployment of the application through respective app stores, perform technical feasibility analysis of image-based length determination technologies and identify architectural enhancements to support a wider range of data collection applications.

Travel ($25,000): Travel funds will be used for the in-person workshop associated with Task E to develop needs and objectives for an integrated, flexible application. Workshop will be two days with approximately 20 participants. Estimated costs include meeting space ($5000), participant travel ($10,000) and lodging, per diem, and miscellaneous participant costs ($10,000).

Yellow highlighted comments indicate sections that help with the ranking process.
Green highlighted text indicates changes from initial submission.

Table 3. Maintenance Project History

Fiscal Year	Title	Cost	Results
2020	SAFIS Expansion of "*SAFMC Release*" and "*NC DMF Catch U Later*" Discard Reporting Applications	$118,500	This project combined two similar released fish reporting applications (*SAFMC Release* and NC DMF's *Catch U Later*) into a new ACCSP customizable citizen science application, SciFish, that will be available to other partners and expanded the application to increase the species that can be reported through the *SAFMC Release* project. Beta testing for both projects in SciFish is wrapping up now and SciFish production will launch in August 2021. Additionally, a series of scoping meetings were held in Spring 2021 to outline a framework for the continued development of the ACCSP customizable citizen science data collection application that can support multiple project types. The scoping meetings consisted of an online questionnaire, two virtual town hall meetings, and 3 half day microlab workshops. Just under 200 individuals completed the questionnaire and just under 60 people attended the town halls. There was a total of 46 microlab participants representing fishermen, scientists, and managers from 23 organizations across 15 states. The microlabs focused on identifying data gaps and deficiencies that could be addressed through a citizen science approach; the data needed to fill these gaps that could be reasonably collected; and app or platform usability. Additional details on the FY20 project results will be included in the final grant report available in September2021.
2021	SAFIS Expansion of Customizable Fisheries Citizen Science Data Collection Application	$114,792	Using the information gained through the FY20 scoping meetings, the FY21 project will focus on building the customizable citizen science app prototype which will include the expansion of the app to support the project types and data fields prioritized through the FY20 scoping meetings, as well as the development of a project builder interface. Additionally it will continue data collection in *SAFMC Release* on shallow water grouper releases. The FY21 project will begin in late summer 2021.

Summary of Proposal for Ranking

Proposal Type: Maintenance

Primary Program Priority: Biological Sampling - 90%

- The released fish reporting application incorporated in SAFIS will provide a tool for collecting biological information on the component of catch that is released, addressing ACCSP FY22 Request for Proposals priority 1b and Recreational Technical Committee priority 2. The application will collect biological and fishery data that is independent of APAIS/MRIP, addressing Recreational Technical Committee priority 4.
- For the SAFMC portion, biological information will be collected on released shallow water groupers and expanded to collect data on Red Snapper, in both commercial and recreational fisheries. Scamp, Gag, Red Grouper, and Red Snapper are in the top 25% of the biological sampling priority matrix. The commercial snapper-grouper hook and line fleet is #5 in the bycatch priority matrix.
- For the NCDMF *Catch U Later* portion, biological information will be collected on recreational releases for three species of flounder (Summer, Gulf, and Southern) and expanded to collect data on Kingfish, Spotted Seatrout, Weakfish, and Red Drum.
- For the NCDMF *Tagging Program* portion, biological information will be collected on tagged fish including Cobia, Red Drum, Spotted Seatrout, Striped Bass, and Southern Flounder. Cobia is in the top 25% of the biological sampling matrix.
- For the UNE *Mail-A-Scale* portion, biological information will be collected on recreational Striped Bass.

Data Delivery Plan:

- Data collection projects will be defined by the project builder application and will be stored in SAFIS, where they can be downloaded to a phone or tablet. The fisherman application for all projects will collect and deliver data directly to ACCSP through an API, building on the existing API that currently accepts data from *SAFMC Release* and NCDMF *Catch U Later*. Data can be entered by fishermen when no internet connection is available and later uploaded to SAFIS when a connection exists.

Project Quality Factors:

- **Multi-partner/Regional impact including broad applications:** This project will continue the development of the ACCSP customizable citizen science application, SciFish, moving the platform into production and enhancing the features available in the app and project builder, as well as, developing the policies and procedures needed to guide and support partners' use of this platform into the future. The geographic scope of the project includes all ACCSP partners in all regions, as they will be able to modify the application to meet specific project needs. The *SAFMC Release* component collects data through the South Atlantic and across all sectors for species with significant release mortality concerns. The NCDMF *Catch U Later* component collects data from North Carolina's recreational sector for species with acute data needs. Two additional projects, NCDMF *Tagging Program* and

UNE *Mail-A-Scale*, will be built in SciFish to pilot the policy and procedure development. The NCDMF *Tagging Program* component collects life history and movement data for a variety of state and federally managed species. The UNE *Mail-A-Scale* component collects data from Maine's recreational sector. The Rhode Island Division of Marine Fisheries provided a letter of support for this proposal (see Appendix 3).

- **Contains funding transition plan:** Project contains a defined end point. This is a one-year project. PIs anticipate that SciFish will transition to ACCSP ownership and be available to all partners at the end of this FY22 project.

- **In-kind contribution:** 22%

- **Improvement in data quality/quantity/timeliness**
  - Provides improvement in data quality and quantity.
  - There are currently no data available to assign released shallow water groupers to length classes other than limited commercial and for-hire observer effort. *SAFMC Release* collects data on the length of released shallow-water grouper for commercial, for-hire, and recreational fishermen.
  - There is limited information available to classify the depth where fish are captured and released and the use of barotrauma reducing actions such as venting or descending. Depth and barotrauma reduction are significantly correlated with release mortality rates. The data collected through *SAFMC Release* provides finer scale information on released fish which can help refine the overall release mortality rate applied for a stock assessment.
  - There are currently no data available to assign recreational generic left-eye flounder discards to species (Summer, Southern, Gulf). NCMDF *Catch U Later* collects species-specific discard data as well as associated biological data (e.g. length). These data will better characterize North Carolina's recreational flounder fishery and improve the reliability of stock assessment models.
  - Significant data gaps exist in characterizing migration, growth, and habitat use for multiple commercially and recreationally valuable species. The NCDMF *Tagging Program* will collect these critical data for Cobia, Red Drum, Spotted Seatrout, Striped Bass, and Southern Flounder to better inform stock assessment models and associated management actions.
  - The continued development of the SciFish platform would allow partners to create and use an electronic tool without extensive development costs which would be helpful for citizen science or other voluntary data collection programs where resources are often limited. It would allow more funds to be available for volunteer engagement which can improve data quality and is critical for project success.

- **Potential secondary module as a by-product: Catch and Effort - 10%.** A ratio of Southern, Summer, and Gulf flounder to total flounder by year, wave, and area fished will be determined from a statistically drawn and trained panel of NC *Catch U Later* users. These proportions will be applied to the estimates of left-eyed flounder discarded catch to

produce estimates of discards for each of the specific flounder species. Similar data limitations and associated methodologies are applied to other ambiguous species including kingfish (Northern, Southern, Gulf) as well as Spotted Seatrout and Weakfish. As the application is expanded to include these species, their specific contributions to unobserved catch records will be evaluated.

- **Impact on stock assessment**

  Stock assessment impacts are significant. Assessments rely upon accurate catch data for individual species, accurate assignment of catches to length and thus age classes, and accurate accounting of total population removals including release mortality. Additionally, assessments incorporate a variety of life history data including growth, migration, habitat use, and natural mortality among others. This project will help provide such information for multiple fisheries that are currently lacking.

Other Factors:

- **Properly prepared**

  This proposal follows the guidelines under the ACCSP Funding Decision Process Document.

- **Merit**

  The project is continuing the development of an ACCSP innovative, customizable citizen science platform, SciFish. This proposal will move the SciFish platform from beta testing into production, making it available to all ACCSP partners and will develop the policies and procedures needed to guide and support partners' use of the platform into the future. Partners would benefit from being able to create and use an electronic tool without incurring extensive development costs, and it would give partners more flexibility in responding to timely research and management needs by allowing them to build and deploy project specific apps quickly.

Summary of Proposal for Ranking – Abridged Version

- **Achieved Goals:** The FY20 project will: combine two similar released fish reporting applications (*SAFMC Release* and NC DMF *Catch U Later*) into a new ACCSP citizen science application, SciFish, and expand the *SAFMC Release* project to all shallow water grouper species. Currently, the *SAFMC Release* and *Catch U Later* projects in the SciFish application are nearing completion of beta testing. SciFish will move into the production phase in August 2021, and data collection will begin in *Catch U Later* and expand to include all shallow water grouper for *SAFMC Release*. Additionally, a series of scoping meetings was held in Spring 2021 bringing together fishermen, scientists, and managers along the Atlantic coast to share their knowledge and perspectives on the development of a customizable citizen science application. An organizing committee with representatives from SAFMC, NCDMF, ACCSP, Harbor Light Software, Georgia Department of Natural Resources (GADNR), and Rhode Island Department of Environmental Management (RIDEM) helped plan, coordinate and conduct these meetings. The scoping meetings initially explored the needs of the broader fisheries community by gathering information through an online questionnaire and two town hall meetings. Next a series of three half-day workshops was held with a group of 46 core group members representing fishermen, scientists, and managers from 23 organizations across 15 different states. The workshops focused on identifying data gaps and deficiencies that could be addressed through a citizen science approach; the data needed to fill these gaps that could be reasonably collected; and app usability (e.g. how to make the app as user friendly as possible and what positive feedback loops could help with recruitment and retention). A report synthesizing the information gathered through the scoping meetings is in progress. Additional details on the FY20 project results will be included in the final grant report available in September 2021.

  Using the information gained through the FY20 scoping meetings, the FY21 project will focus on building the customizable citizen science app prototype which will include the expansion of the app to support project types and data fields prioritized through the FY20 scoping meetings, as well as the development of a project builder interface. Additionally, it will continue data collection in *SAFMC Release* on shallow water grouper releases. The FY21 project will begin in late summer 2021.

  The FY22 project will continue the development of the customizable citizen science app, SciFish, moving the platform into production and enhancing the features available in the app and project builder; develop the policies and procedures needed to guide and support partners' use of this platform. Two new projects will be onboarded to provide perspective on the development of policies and procedures. These projects are the NCDMF *Tagging Program* and UNE *Mail-A-Scale*. There will be continued and expanded data collection within the *SAFMC Release* and NCDMF *Catch U Later* projects.

- **Data Delivery Plan:** Data collection projects will be defined by the project builder application and will be stored in SAFIS, where they can be downloaded to a phone or tablet. The fisherman application for all projects will collect and deliver data directly to ACCSP

through an API, building on the existing API that currently accepts data from *SAFMC Release* and NCDMF *Catch U Later*. Data can be entered by fishermen when no internet connection is available and later uploaded to SAFIS when a connection exists.

- **Level of Funding:** This is a Year 2 maintenance proposal. Funding for the FY22 proposal increased from the FY21 proposal by 1% but remains below the initial FY20 proposal by 2%.

- **Properly Prepared:** This proposal follows the guidelines under the ACCSP Funding Decision Process Document.

- **Merit:** The project is continuing the development of an innovative, customizable citizen science platform, SciFish. This proposal will move the SciFish platform from beta testing into production, making it available to all ACCSP partners and will develop the policies and procedures needed to guide and support partners' use of the platform into the future. Partners would benefit from being able to create and use an electronic tool without incurring extensive development costs, and it would give partners more flexibility in responding to timely research and management needs by allowing them to build and deploy project specific apps quickly.

Appendix 1: NCDMF's Tagging Program and UNE's Mail-A-Scale Objectives

UNE *Mail-a-Scale* objectives:

- Engage Maine's recreational anglers as citizen scientists to expand collection of biological data on striped bass through digital images as part of the ongoing *Snap-a-Striper* project and support a proposed project in review with Maine Sea Grant called *Mail-a-Scale* that incorporates non-lethal scale sample collection of released stripers and otolith collection of legally harvested stripers.
- Build upon existing user-friendly mobile applications that were developed with support from ACCSP to be customizable (*SAFMC Release* and *NC DMF Catch U Later*) to expand data collection of recreational caught striped bass in Maine. Currently, *Snap-a-Striper* and the proposed *Mail-a-Scale*, use paper data cards, so a digital application could expand angler participation and data collection.
- Utilize scale chemistry and digital images provided from the application to assess morphological features that could distinguish if striped bass captured in recreational fisheries are from Maine (Kennebec River) or sourced from outside stocks (i.e. Hudson, Delaware, Chesapeake).

NCDMF Multi-species *Tagging Program*

- The North Carolina Division of Marine Fisheries Multi-Species Tagging Program is seeking ways to increase angler tag return reporting and accuracy of data through novel approaches. Currently, anglers can report their tagged fish by calling our 1-800 phone number, filling out a tag return form on our website, or visiting one of our six Division offices. Information collected from tag returns is very similar to data collected through the Catch U Later (CUL) Flounder Discard application.
- Through this grant, we would like to create an easy-to-use tagged fish reporting application based on CUL. Modifications to CUL would include the addition of data collection fields (e.g., fish species, tag color, tag number, type of angler, angler contact information, reward, etc.) and new branding of the tagged fish reporting application.
- The tagged fish reporting application allows anglers to report tag returns more quickly (in the boat while fishing), report more accurate data (reporting the fish right after it is caught instead of multiple day or week-long delays), allows Division staff to process tag returns more efficiently, and enter data into the Division's database sooner.
- Development of the tagged fish reporting application provides a framework for the Division to pursue additional citizen science research initiatives related to the Multi-species Tagging Program. These initiatives include volunteer tagger reporting, verification of species identification and capture location, and citizen science projects that address data gaps (e.g., discard lengths, effort and catch from private docks, etc.).
- Promotion of the application allows for increased public outreach for the Multi-species Tagging Program and a modernized method to distribute educational materials to the public.
- The Division is willing to give in-kind support through staff time to develop and test the application, and to assist in the development of the policies and procedures for the customizable SciFish mobile application.

Appendix 2

Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street, Suite 200A-N | Arlington, VA 22201
703.842.0780 | 703.842.0779 (fax) | www.accsp.org

TO: ACCSP Operations and Advisors Committee Members

FROM: Julie DeFilippi Simpson, ACCSP Deputy Director

DATE: June 10, 2021

SUBJECT: ACCSP Staff Workload for Proposed Project

Project Title:
FY22: SAFIS Expansion of the SciFish Customizable Fisheries Citizen Science Data Collection Application

Project Type: Maintenance Project

Principal Investigators: Julia Byrd (SAFMC), Dr. Andrew M. Cathey (NCDMF)

ACCSP Staff Workload Comments: *
In order to achieve the project objectives listed below, ACCSP staff will be need to be dedicated to these tasks.

- Continue development and construction of SciFish, a customizable fisheries data application, to standardize provide more efficient data collection, increase data availability, and reduce future needs for future and existing projects to invest additional costs in individual applications.
- Develop policies and procedures needed for partners to build and support projects within the SciFish mobile application.
- Continue data collection under the ACCSP citizen science app, SciFish, via the SAFMC Release and NCDMF Catch U Later projects and expand the species that can be reported.

Tasks A and E, outlined in the proposal and associated with these objectives, would require ACCSP staff time. Specifically, ACCSP staff would be responsible for building/modifying an API and updating and/or build procedures, database objects, and reports as needed to allow easy access to trip records and linked photos. Additionally, ACCSP staff would be actively involved in scoping exercises and the development of policies and procedures. This workload would be assumed by the Software Team and Deputy Director. Much of the technical work will build on existing APIs and database procedures and objects. As such the overall workload to the ACCSP is expected to be moderate (~200 person-hours). It is the opinion of the ACCSP leadership that this project is feasible.

* Comments and opinions are based on evaluation of this project individually as opposed to all proposed projects as all projects have yet to be submitted.

Our vision is to produce dependable and timely marine fishery statistics for Atlantic coast fisheries that are collected, processed, and disseminated according to common standards agreed upon by all program partners.

Appendix 3

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF MARINE FISHERIES
Three Fort Wetherill Road
Jamestown, Rhode Island 02835

Julia Byrd
4055 Faber Place Dr. Suite 201.
North Charleston, SC 29405

Dear Ms. Byrd,

Please accept this letter of support from the Rhode Island Division of Marine Fisheries for your proposal entitled "FY22: SAFIS Expansion of the SciFish Customizable Fisheries Citizen Science Data Collection Application" The creation of a smart device modular application for citizen science is a great approach and will foster more engagement with citizen scientists in all partner states including Rhode Island.

Rhode Island has always valued projects promoting electronic data reporting. Rhode Island's recreational community is very supportive of initiatives that aim to improve data collection and collaboration with fisheries managers. As of this year, we are partnering with our large recreational fishing organization, the Rhode Island Saltwater Angler Association (RISAA) to develop a volunteer angler data collection application. This application will collect fishery dependent data from recreational anglers which will be shared with managers to contribute to stock assessment. When complete RIDMF wants to make this data available to other entities as well as foster other ways to further our understanding of recreational fishing. Our application is being developed by the same software company (Harbor Light Software) as the proposed citizen science application and should be compatible with this project. This proposal represents a potential avenue for the data from our app to be disseminated into a broader community as well as create a platform to initiate other citizen science projects with participating anglers.

Industry buy in to electronic reporting is essential to its success. The outreach already conducted in the first phase of this project is a sound approach for promoting buy in and sustained use by recreational anglers and should lead to a successful project.

We look forward to continued collaboration with you on the project.

Sincerely,

Conor McManus
Chief RIDEM, Division of Marine Fisheries

Telephone 401.423.1923 | www.dem.ri.gov | Rhode Island Relay 711

JULIA ISOBEL BYRD

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EDUCATION: UNIVERSITY OF CHARLESTON, SC, Charleston, SC
-**Masters of Environmental Studies**, focus on environmental and marine biology, December 2004

WAKE FOREST UNIVERSITY, Winston-Salem, NC
-**Bachelor of Science** in **Biology**, Minor in **Environmental Studies**, Cum Laude, May 2000

WORK EXPERIENCE:

Citizen Science Program Manager, South Atlantic Fishery Management Council (SAFMC; March 2019 – present)

- Provide programmatic leadership and support for the SAFMC's Citizen Science Program. Duties include project development and management, strategic planning, problem solving, brainstorming strategies, and facilitation.
- Foster collaboration between researchers, scientists, and fishermen to support citizen science projects
- Develop grant proposals for citizen science projects and assist program partners in developing grants
- Serve as PI or co-PI on grant supported citizen science projects addressing SAFMC research priorities
- Assist in developing and delivering outreach materials and training related to the Citizen Science Program and projects
- Work with partners and advisory committees to develop and implement strategic plan for Citizen Science Program, including development of goals, objectives, strategies, indicators, and evaluation plan.
- Conduct presentations for advisory committees, the general public, fishermen, and scientists on the SAFMC's Citizen Science Program and projects
- Communicate scientific, technical issues to a variety of audiences
- Build relationships with fishery professionals and stakeholders throughout the Southeast U.S. to develop program partnerships and help engage more people in the SAFMC's Citizen Science Program
- Staff lead for Citizen Science Projects Advisory Committee and Operations Committee
- Supervise Citizen Science personnel (staff and students) working on citizen science projects
- SAFMC Outreach Team member providing input and participating in Council related outreach activities
- Represent the SAFMC on various citizen science related working groups

Southeast Data Assessment and Review (SEDAR) / SAFMC SEDAR Coordinator (August 2012 – February 2019)

- Plan, coordinate and manage SEDAR stock assessment projects and procedural workshops. Duties include project management, work planning, timeline development, brainstorming strategies, problem solving, event planning, and facilitation.
- Chair and/or facilitate SEDAR stock identification, data, assessment and procedural workshops. Experience includes facilitating variety of group discussions engaging scientists, managers, fishermen, and other stakeholders in order to lead groups through productive discussions and explore different points of view.
- Build relationships with fishery professionals and stakeholders throughout the Southeast U.S. to help engage more people in the SEDAR Stock Assessment Program.

- Communicate scientific, technical issues to a variety of audiences
- Lead re-design of the SEDAR website and serve as SEDAR webmaster.
- Assist with coordination and facilitation of SAFMC's Snapper Grouper Visioning Project
- Assist with the development of the SAFMC's Citizen Science Program. Duties included helping coordinate and facilitate SAFMC's Citizen Science Workshop, helping develop SAFMC's Citizen Science Blueprint, and assisting the Citizen Science Program Manager in developing infrastructure for the Program.
- Atlantic Coastal Cooperative Statistics Program Operations Committee
- Instructor for Marine Recreational Education Program, Southeast – Science Workshop 2017
- Participate in SCDNR's in-water sea turtle regional abundance and health assessment survey as Chief Scientist or Scientific Crew

TRAINING:

- Management Assistance Team (MAT) Leader as Communicator Training
- Smithsonian's Communication & Facilitation Skills for Conservation Managers Course
- Technology of Participation (TOP) Facilitation Methods
- NOAA Coastal Service Center Planning and Facilitating Collaborative Meetings
- NOAA Coastal Service Center Project Design and Evaluation Workshop
- NOAA Coastal Service Center Public Issues and Conflict Management Workshop
- University of Maryland's Communicating Science Effectively Workshop
- Atlantic States Marine Fisheries Commission Stock Assessment Training Workshop Series

PROFESSIONAL MEMBERSHIPS:

- Citizen Science Association
- American Fisheries Society
- ACCSP Operations Committee (2015-present)

SELECTED PUBLICATIONS AND PRESENTATIONS:

- Bonney, R., J. Byrd, J. T. Carmichael, L. Cunningham, L. Oremland, J. Shirk, and A. Von Harten. 2021. Sea Change: Using Citizen Science to Inform Fisheries Management. BioScience: 71(5): 519-530.
- Byrd, J. C. Collier, and A. Iberle. 2020. The SAFMC's Citizen Science Program: Designing a program to support fisheries science and management decision making. American Fisheries Society Annual Meeting (held virtually). (Oral presentation)
- Brown, S.K., M. Shivani, R. Koeneke, D. Agnew, J. Byrd, M. Cryer, C. Dichmont, D. Die, W. Michaels, J. Rive, H. Sparholt, and J. Weiberg. 2020. Patterns and practices in fisheries assessment peer review systems. Marine Policy: 117,103880.
- Byrd, J., J. Carmichael, and J. Neer. 2017. The Importance of Peer Review in SEDAR Stock Assessments. American Fisheries Society Annual Meeting, Tampa, FL. (Oral presentation)
- VonHarten, A. and J. Byrd. 2016. Building a Fishery Citizen Science Program in the U.S. South Atlantic to Improve Management and Policy. 4th International Marine Conservation Congress. (Oral presentation and helped facilitate focus group.)
- Carmichael, J., A. VonHarten, and J. Byrd. 2016. Efforts to Develop a South Atlantic Fishery Management Council Citizen Science Program. NOAA Fisheries Quantitative Ecology and Socioeconomics Training Program Webinar Series. (webinar presentation)
- SEDAR. 2015. SEDAR Procedural Workshop 7: Data Best Practices. SEDAR, North Charleston, SC. 151pp. (editor)

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Personal:

Birth date: 30 May, 1981
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Citizenship: United States of America

Professional Preparation:

East Carolina University, PhD, Interdisciplinary Biological Sciences, 2013
Appalachian State University, BS, Ecology and Environmental Biology, 2004

Professional Experience:

Program Supervisor, Coastal Angling Program, North Carolina Division of Marine Fisheries: Jan 2021-present
Chief Data Analyst/Coastal Angling Program, North Carolina Division of Marine Fisheries: Nov 2017-Dec 2020
Statistician/Coastal Angling Program, North Carolina Division of Marine Fisheries: Jul 2014-Nov 2017
PhD Candidate, East Carolina University: Oct 2011-Dec 2013
Graduate Research Assistant, East Carolina University: June 2007-Oct 2011
Research Specialist, Brody School of Medicine, East Carolina University: 2005-2007

Research:
Area of professional expertise:

Recreational Fisheries, Statistics, Fisheries Management, Bivalve Larval Ecology, Benthic Ecology

Awards:

"Best Graduate Student Oral Presentation" Southeastern Estuarine Research Society; Semiannual Meeting, Morehead City and Beaufort, North Carolina. April 11-13, 2012.

"National Shellfisheries Association Sandra Shumway Best Student Paper in the Journal of Shellfish Research Award" In Volume 33: Spatiotemporal Stability of Trace and Minor Elemental Signatures in Early Larval Shell of the Northern Quahog (Hard Clam) Mercenaria mercenaria.

Publications and Technical Reports:

Cathey AM (2016). Evaluating an Ongoing Recreational Flounder Gigging Mail Survey using Dockside Intercepts. North Carolina Division of Marine Fisheries Final Project Report. Grant Number 2007-F206

Cathey AM (2015). Assessing Electronic Mobile Devices for the Collection of Recreational Fishing Data. NOAA Final Project Report, Task Title: Assessing the Use of Electronic Mobile Devices in Recreational Angling Data, Grant Number EA-133F-12-BA-0034

Cathey AM, Miller NR, Kimmel DG (2014). Spatiotemporal Stability of Trace and Minor Elemental Signatures in Early Larval Shell of the Northern Quahog (Hard Clam) Mercenaria mercenaria. Journal of Shellfish Research 33(1):247-255

Cathey AM, Miller NR, Kimmel DG (2012) Microchemistry of Juvenile Mercenaria mercenaria shell: Implications for Modeling Larval Dispersal. Marine Ecology Progress Series 465:155-168

Contracts and Grants Awarded:

$118,500. Standard Atlantic Fisheries Information System (SAFIS) Expansion of "SAFMC Release" and "NC DMF Catch U Later" Discard Reporting Applications. National Marine Fisheries Service/Atlantic Coast Cooperative Statistics Program. 10/30/2019 Co-PI: Cathey AM, Co-PI: Julia Byrd

$199,340. Annual surveys of recreational license holders. North Carolina Division of Marine Fisheries Coastal Recreational Fishing License Grant. 07/01/2018 06/30/2023. PI: Cathey AM

$72,500. Determination of species specific size compositions of recreationally discarded finfish species. North Carolina Division of Marine Fisheries Coastal Recreational Fishing License Grant. 07/01/2018 06/30/2020. PI: Cathey AM.

$142,000. Evaluating an Ongoing Recreational Flounder Gigging Mail Survey using Dockside Intercepts. North Carolina Division of Marine Fisheries Coastal Recreational Fishing License Grant. 01/01/2016 11/30/2016. PI: Cathey AM

$29,042. Assessing Electronic Mobile Devices for the Collection of Recreational Fishing Data. National Marine Fisheries Service. 08/01/2013 12/15/2014. PI: Cathey AM

Presentations:

Cape Hatteras Surf Fishing Heritage Celebration - Cape Hatteras National Seashore (U.S. National Park Service), November 2, 2019. Oral Presentation: Trends in Recreational Surf Fishing on the Northern Outer Banks.

American Fisheries Society, 145th Annual Meeting. Portland Oregon, August 16-20, 2015.
Oral Presentation: Assessing Electronic Mobile Devices for the Collection of Recreational Fishing Data.

Coastal and Estuarine Research Federation, The Changing Coastal and Estuarine Environment a Comparative Approach. Mar Del Plata Argentina, November 11-14, 2012.
Oral Presentation: Shell Microchemistry of Juvenile and Larval Mercenaria mercenaria: Implications for modeling Larval Dispersal.

South Eastern Estuarine Research Society. Morehead City and Beaufort North Carolina, April 11-13, 2012.
Oral Presentation: Shell Microchemistry of Juvenile Mercenaria mercenaria: Spatiotemporal Patterns and Implications for Modeling Larval Dispersal.

Coastal and Estuarine Research Federation, Society, Estuaries, and Coasts: Adapting to Change. Daytona Beach Florida, November 6-10, 2011.
Poster Presentation: Shell Microchemistry of Juvenile Mercenaria mercenaria: Spatiotemporal Patterns and Implications for Modeling Larval Dispersal.

Professional Memberships:

Coastal and Estuarine Research Federation
South Eastern Estuarine Research Society
American Fisheries Society
Sigma Xi

Teaching:

08/01/12-05/06/13	Instructor of Record-East Carolina University, Greenville, North Carolina, Ecology
08/01/08-05/06/11	Teaching Assistant-East Carolina University, Greenville, North Carolina, Introduction to Biology Laboratory

Geoff White, Director
Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

June 12, 2021

Dear Mr. White,

The Rhode Island Division of Marine Fisheries and the Georgia Department of Natural Resources Law Enforcement Divisions, through partnership with Harbor Light Software, are pleased to submit the proposal titled *"Continued development of a mobile application to assist Maritime Law Enforcement personnel with Fisheries Enforcement tasks"* for your review. We believe this proposal is an important next step in bringing much needed technology to the Marine Resource Officers. The FY22 proposal builds upon work that was completed in FY19 and FY20 projects by incorporating additional modules at the request of Living Marine Resource Officers.

Please address questions jointly to John Mercer of the Rhode Island Division of Marine Fisheries and Sgt. Cindy Miller of the Georgia Department of Natural Resources Enforcement Division.

Sincerely,

Sgt. Cindy Miller	Officer Jeff Mercer
GADNRLE	RIDEM Fish and Wildlife Division
1 Conservation Way	235 Promenade Street
Brunswick, GA 31520	Providence, RI 02908
404-695-6767	401-222-2284
cindy.miller@dnr.ga.gov	jeff.mercer@dem.ri.gov

Enclosures:
ACCSP Proposal: *"Continued development of a mobile application to assist Maritime Law Enforcement personnel with Fisheries Enforcement tasks"*

Proposal for Funding made to:
Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

Continued development of a mobile application to assist maritime law enforcement personnel with fisheries enforcement tasks

Submitted by:

Officer Jeff Mercer
Rhode Island Department of Environmental Management
Fish and Wildlife Enforcement Division
235 Promenade Street
Providence, RI 02908

Sergeant Cindy Miller
Georgia Department of Natural Resources

Sections of the proposal identified to help with the ranking process are highlighted in green with a summary on pages 29 & 30.
Changes made to the proposal are highlighted in yellow.

Law Enforcement Division
1 Conversation Way
Brunswick, GA 31520

ACCSP Funding Proposal: Continued development of a mobile application to assist Maritime Law Enforcement Personnel with fisheries enforcement tasks.
Sections of the proposal identified to help with the ranking process are highlighted in green with a summary on pages 29 & 30.
Changes made to the proposal are highlighted in yellow.

Applicant Name:	Rhode Island Department of Environmental Management Fish Wildlife Enforcement Division and Georgia Department of Natural Resources Law Enforcement Division
Project Title:	**Continued development of a mobile application to assist Maritime Law Enforcement Personnel with fisheries enforcement tasks.**
Project Type:	Maintenance
Principal Investigators:	Officer Jeff Mercer, RI DEM LE Sgt. Cindy Miller, GADNRLE Lt. James Bruce, USCG
Requested Award Amount:	**$ 50,000**
Requested Award Period:	One year upon receipt of funds
Date Submitted:	August 15, 2021

FY22 Atlantic Coastal Cooperative Statistics Program (ACCSP) Proposal for the Rhode Island Department of Environmental Management Fish Wildlife Enforcement Division and Georgia Department of Natural Resources Law Enforcement Division

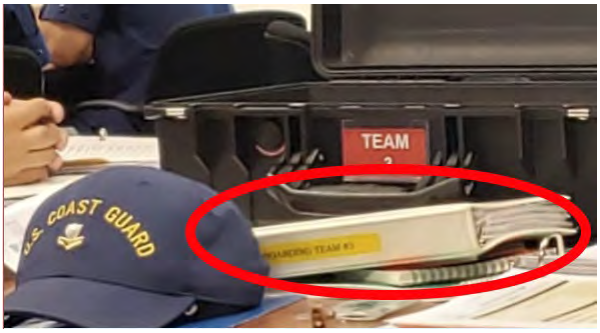
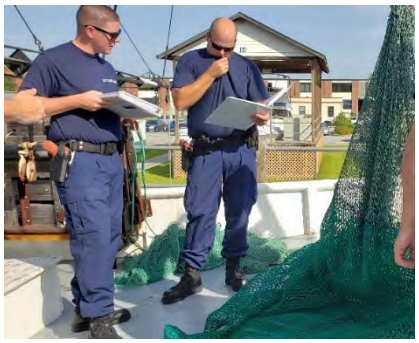
OBJECTIVES:

This proposal is a request for continued support to modify and enhance the existing Fisheries Enforcement compliance applications, named "Fisheries Enforcement" developed for shrimp enforcement in the Southeast and "Scallops Enforcement" for scallop fisheries in the Northeast. The original project was funded through a FY19 proposal entitled "*Development of a mobile application to assist Maritime Law Enforcement Personnel with fisheries enforcement tasks"*. Specifically, this FY22 proposal seeks to fund:

- Continued development and maintenance of Fisheries Enforcement, an interactive mobile application to assist Living Marine Resource Officers while boarding shrimp vessels in the Southeast.
- Extend the functionality of the Scallops Enforcement application by adding support for Monkfish and American Lobster/Jonah Crab in the Northeast.
- Testing of applications in the field and receiving feedback from Living Marine Resource Officers (LMROs).
- Research feasibility and demand for merging both the Scallops Enforcement and Fisheries Enforcement applications into a single application that contains regulatory guidelines for multiple FMPs.
- Continue to research the cost effectiveness of building a backend application to allow updates to the applications as additional FMPs are supported.

NEED:

Living Marine Resource (LMR) enforcement is a highly dynamic and ever-changing mission. LMROs are responsible for enforcing multiple FMPs, each of which can be very detailed. FMP rules factor in a variety of variables such as location, time of year, vessel configuration, gear types and permit types. LMROs must board a vessel and confidently enforce rules in a potentially contentious environment. Lack of confidence in being able to interpret FMP rules using a bulky paper-bound binder in this environment, when the LMRO might only board to investigate the FMP a couple times a year, can be a hurdle to effective enforcement activities. To get an understanding of the differences between FMPs, and to view to the actual documents used by the LRMOs while boarding please review Figure Sets 3 and 4 on pages 17-31.

BOJAK MANUAL	Using the BOJAK during a sample vessel boarding
	

Currently, both State and Federal LMROs receive in-depth training to understand the rules and regulations of fisheries law enforcement. Under the currently methodology used in Federal LMR enforcement activities, each student attends a five- or eight-day training course to learn the major objectives of the LMR mission. These regulations are published in a Boarding Officer Job Aid Kit or (BOJAK). Students are taught how to navigate through the 500+ page BOJAK, to be able to determine compliance with every Fishery Management Plan (FMP) for that specific region. Upon graduation, students are required to update the BOJAK when they receive specific paper update notifications mailed to them from the regional training center. However, with other mission critical demands placed on the officer, the BOJAK may not always be updated in a timely manner. Additionally, these updates may be mailed well after changes to the FMP are made.

State enforcement officers receive a one-day training class while in the academy for the state regulated fisheries. Some state officers have been through the USCG training described above, but it has been several years since the state of Georgia has been able to offer this training. Currently, the officer must be diligent enough to review and study the laws on his or her own.

State law enforcement agencies, such as the Georgia Department of Natural Resources Law Enforcement, GADNRLE, rely on state law books supplemented by federal websites which list federal laws and regulations. State law enforcement personnel, when determining applicable federal regulations, must reference different websites for different species or classes of species such as the snapper grouper complex, HMS species, and coastal migratory species.

Under today's compliance, tracking procedures and encounters with vessels are managed separately by every agency. Fisheries management plan compliance is difficult to coordinate between the separate tracking systems. Accessing this data is cumbersome and difficult to locate.

Although there may be applications available for fishermen to provide minimal catch regulation data, these apps to not provide information about other items that the officer must identify, such as allowable gear types, closed locations or reefs, aggregate species rules, turtle mitigation gear rules etc.

The FY19 Initial Proposal entitled: Development of a mobile application to assist Maritime Law Enforcement Personnel with fisheries enforcement tasks, was funded as a 100% Catch and Effort project.

Under the initial FY19 proposal and project scope, the following objectives were met and completed in 2019 and 2020:

- Evaluated the efficiency of a mobile application compared to the current paper-training manuals while out at sea for determining compliance.
- Provided state and federal marine enforcement officers with current regulatory information for an initial-project-manageable subset of species in an easy-to-use application.
- Where possible, explored the concepts, approaches and usability/accuracy/timeliness issues of current consumer apps used by anglers to obtain current fishing regulations.

A few initial objectives of the project were changed based on feedback from the LMROs and their administrative staff. The LMRO's decided not to collect boarding data due to questions on data retention outside of LMRO systems. Additional efforts to sort through any policy and procedure changes needed to collect and retain boarding data were tabled. The current law enforcement applications are built as reference tools and do not save or transmit boarding data to the ACCSP, therefore no API work was needed on the part of the ACCSP.

Also, after researching the FMPs for Scallops and Shrimp, it was decided that due to the extreme differences between the two, it was more cost effective and intuitive if the interfaces for each were configured within their own apps.

The FMPs chosen as part of the 2019 funded project, Shrimp and Scallops, are expected to have regulation changes estimated at 1-2 changes per year. Designing and building a separate application for the officers to make these updates proved not to be cost effective at this time. The cost to build a "backend" to make these minor changes to the two current applications was estimated to equal approximately twenty-five years of support. For example: Estimated support for the two apps at $1,000/year vs. building a $25,000 backend application.

Instead, the LMROs/PIs of the project will send an email with the regulation update to the ACCSP, requesting the change to the application. Any change to the existing parameters of the FMP in the application should require very minor application changes and could have turnaround time as quick as same day as the request. The app would then be deployed to the mobile

application stores for download as an app update. This FY22 proposal would further evaluate the need for a backend as two additional FMPs are added to the Scallops Enforcement Application.

Testing of the initial applications in the field was delayed. Due to Covid 19, officers did not have a boarding schedule that they have in the past and therefore, full testing of the app was not completed during the initial project. Testing and feedback will continue the 2021 fishing season, and this project is designed to react to that feedback with updates and modifications during the FY22 timeframe.

After reviewing the current Scallops Enforcement application, LMROs in Rhode Island believe officers would benefit by the addition of two FMPs to the current tool. Monkfish and American Lobster / Jonah Crab FMPs were cited as FMPs that would be very useful to add to the app under the FY22 proposal.

The LMRO's in Rhode Island perform approximately 100 boardings of vessels holding Monkfish or Lobster Jonah Crab permits each year. Different officers may be assigned to these details so that officers may not board vessels often. Officers are admittedly weak on knowing and understanding the current in-depth regulations of the fisheries. Officers tend to shy away from these boardings due to being unconfident in the current regulations and or actions to take for violations. LMRO's stated having an electronic tool to walk them through the boarding process would greatly improve their confidence while on a vessel.

LMRO's in RI do not access a paper BOJAK while boarding the vessel. Instead, one officer may download the BOJAK onto a laptop so that they may review the regulations prior to the boardings. The laptop is not taken onto the vessel, but is left inside a vehicle at the dock. The FMPs can be complicated and may require math skills. Photos in the BOJAK guide assist officers with the regulations and not having access to these photos in the field may further complicate boardings.

The additional FMPs have been reviewed by development contractors and both seem to fit within the current structure and update timeline of the current Scallops application. It is anticipated the work of adding the additional FMPs of Monkfish and Lobster/Jonah Crab would be similar enough to the FY19 Scallops Enforcement project to warrant this a Maintenance Project.

RESULTS AND BENEFITS:

The form factor of a smart phone or tablet device, holding the regulatory information, versus using a large paper binder to flip back and forth to find regulation information will be easier for an officer to use. Allowing officers to focus on their interaction with personnel on a vessel provides safety benefits, as the officer is less distracted in what can be a contentious situation. The intelligence of mobile devices can be leveraged to simplify the boarding investigation process, utilizing features such as GPS to assist in determining if state or federal jurisdiction applies for any given encounter.

It is expected that officers, confident in possessing the latest regulatory information, will investigate an increased number of vessels, generating more boarding data to greater understand fisheries management plan compliance.

Currently, there is a three-to-four month lead time to get the federal BOJAKs printed at a cost of approximately $10,000 per year, not including the time and costs of distributing the books to the officers. The mobile application can be updated quickly, more cost effectively than printing new BOJAKs, and new rules and inspection parameters can easily and quickly be delivered to officers via automatic application updates. By providing for consistent updates of regulatory information and status to the mobile application, enforcement personnel would have access to updated information while investigating vessels out on the water.

The Northeast, Mid-Atlantic and Southeast Fisheries Management Councils work closely with both state and federal law enforcement agencies when considering the implementation of fisheries regulations. An application that provides law enforcement with an improved method to determine compliance will provide the Councils with better data in which to make decisions.

This application would serve both State and Federal LMROs and give them access to current rules and regulations for both state and federal waters. This project addresses the ACCSP's catch and effort priority by providing marine enforcement officers with an electronic tool to determine catch compliance.

By utilizing new technology on the market to assist with compliance encounters and vessel boardings, this project will help LRMOs determine catch and effort compliance. This tool would be available for use by both state and federal partners and their law enforcement divisions.

Primary Program Priority: Catch and Effort: 100%

Providing LMROs with a tool to utilize while boarding a vessel, helps determination of compliance within a particular FMP, and helps to insure accurate enforcement of the rules and regulations currently in place in both State and Federal waters.

LMROs board a vessel with the intentions of enforcing the current catch and effort regulations. The application helps them quickly determine the correct regulations. For example, a LMRO would want to know how the species were harvested, i.e.: gear used, turtle mitigation devices in place, or bycatch reduction devices needed for a particular FMP. This information is clearly spelled out within the app, offering pictures for the officers to use as reference. Although the app does not collect data on the actual catch, it does provide the officer with up-to-date information on regulations during the boarding process. The LMROs will use the app to help determine if the vessel is in compliance with catch and effort regulations. The LMROs original proposal from FY19 was funded as a 100% Catch and Effort project.

Data Delivery Plan:

The applications do not currently collect information on a boarding, but act as resource tools only. There is no additional API work needed on behalf of the ACCSP. The Scallops Enforcement application is freely available in the Apple AppStore and Google PlayStore, and can be downloaded and deployed to any compatible smartphone or tablet. The Fisheries Enforcement application is currently being tested with the USCG and GA DNR law enforcement division.

APPROACH:

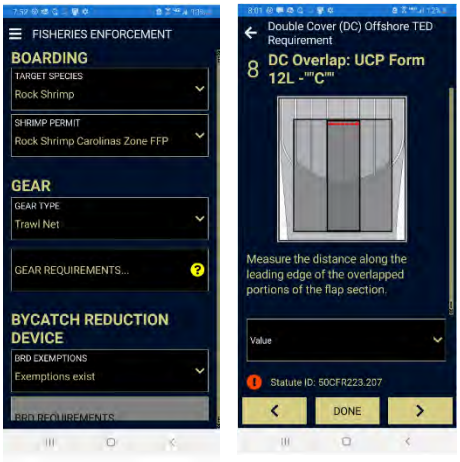
A mobile application compatible with iOS and Android, capable of running on either smart phones or tablets, was created for officers to use in the field to manage their encounters with vessels and assist them in determining current regulation and compliance of those regulations. The application prompts the officer to gather specific data for selected species that the officer is examining. The input gathered by the officer is processed to determine if the vessel and/or captain complies with relevant regulations or not.

Each FMP is unique in many ways. Through the FY19 project it was determined that the ability to build a generic platform for all FMPs is not feasible. For example, within each FMP there are many areas in the data collection flow that will be custom or involve dependencies on prior input. In Shrimp, a lot of time and effort is spent examining various aspects of Turtle Excluder Devices (TEDs), which is primarily a task for just shrimp vessels.

The current applications will not be used on a daily basis by the LRMO's. It is estimated each officer will use the application a handful of times throughout the year. Because of this, it is not assumed that the users will come to understand the application through repetitive use. Some may have difficulty with reading or math skills, so the application must complete any mathematical equations for the user. The BOJAK contains additional photos to guide the officers and these photos differ between the FMPs.

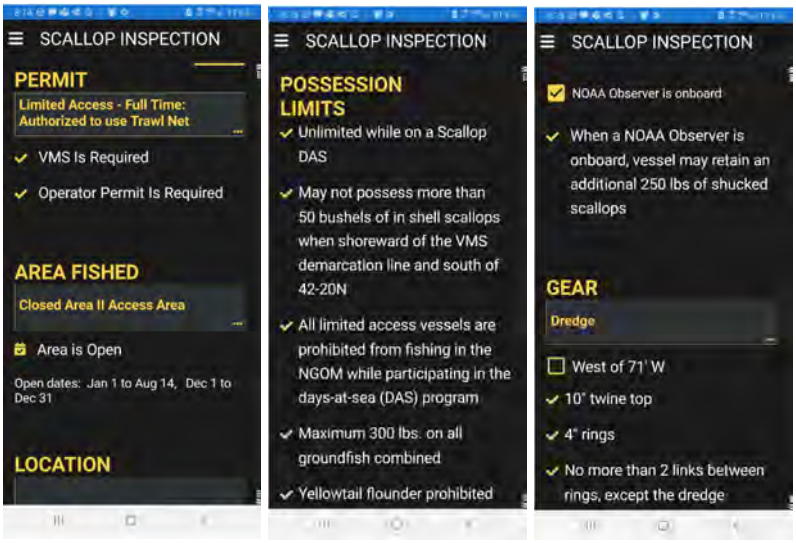
Enhancements will address requested modifications and updates already identified by users, and additional feedback gained through ongoing field testing, to make the existing applications more flexible, accurate and intuitive to use. Rules and logic for determining compliance with the additional FMPs of Monkfish and American Lobster/Jonah Crab will be added into the Scallops Enforcement application. Technical feasibility research will be performed, along with feedback from LMROs, to gauge demand for integrating functionality of both Scallops Enforcement and Fisheries Enforcement applications into a single law enforcement-targeted regulations application. This FY22 project will explore the possibility of multiple FMPs having enough similarities to utilize a generic view within an existing application.

Sample screenshots of enforcement applications:



Fisheries Enforcement (Shrimp)

Fisheries Enforcement is a compliance application tool for boarding shrimp vessels in the southeast.



Scallops Enforcement is a compliance application tool for boarding scallop vessels in the northeast.

Scallops Enforcement

Geographic Location:

It is expected that application field testing will take place primarily in Rhode Island and Georgia, along with adjacent state waters fished by Rhode Island and Georgia Captains. Utilizing State marine enforcement officers along with US Coast Guard marine enforcement, the potential geographic location and scope of this project would cover most of the East Coast waters.

Table 1. FY22 Milestone Schedule (start date dependent upon time of grant award)

Month	1	2	3	4	5	6	7	8	9	10	11	12
Task												
Complete requirements gathering	X	X										
Application enhancements and development			X	X	X	X	X					
Field testing of application	X	X	X	X	X	X	X	X	X	X	X	X
Software application modification based on end user feedback						X	X	X	X	X	X	X
Report writing						X						X

Table 2. Project History:

Funding Year	Title	Original Project Dates	Funded Amount	Total Project Cost	Description
2019 New	Development of a mobile application to assist Maritime Law Enforcement Personnel with fisheries enforcement tasks	June 1, 2019-December 31, 2020	$59,875	$80,078	Developed two applications to assist LMROs with regulations when boarding commercial vessels.

Project Accomplishments Measurement (Metrics and Achieved Goals)**:**

Project Goal	**Metric**
Mirror the existing Job Aid manual on a mobile device	Breakdown of the BOJAK information to present the information on a mobile device *Achieved in Years 1 -2*
Breakdown and understand the technical needs of the boarding officers in the field.	Analyze the uses and needs of boarding officers *Achieved in Years 1-2*
Side by side sea trials of vessel boardings, utilizing current method of paper manual lookup, contrasted with the smart phone application.	Conduct boardings during training classes and on live vessels to compare paper to electronic device. *Ongoing 2021*
Test the utility of the application with groups of law enforcement officers, gain feedback from in-field testing, and incorporate revisions based on end user feedback.	Limited, delayed testing was done due to Covid impact on boarding schedules. Feedback was received, and a subset of suggestions were able to be implemented. *Ongoing 2021*

FY22 Cost Summary and Funding Transition Plan:

This proposal represents a 12% ($9,875) cost reduction from the originally funded proposal of a similar scope in FY19. The reduction is due primarily because the core elements of the application are already in place.

Project contains a defined endpoint and is a one-year project. At the end of the project the applications will be available to all partners to use.

After the FMPs are completed, upkeep and changes are minimal and are expected to be funded as part of a current maintenance contract or funded through regular ACCSP application maintenance agreements.

Table 3. FY22 Cost Summary

Description	Calculation	**ACCSP Request**	**Partner-in-Kind**
Personnel (a)			**$20,203**
RIDEM LEO	12.5% of LEO staff time		$11,765
GA DNR LEO	12.5% of LEO staff time		$8,438
Contractual (b)			
Contract Software Development	225 hrs@ $175/hr	$39,375	
Contractor Testing, Project Management and Onsite Support/Training/Outreach.	73 hrs @$145/hr	$10,625	
	Total Direct Charges	**$50,000**	
	Total in-kind		**20,203**
	Total for Project	**$70,203**	

FY22 Budget Narrative

a. **Personnel ($0 Requested; $20,203 in-kind 28.5%)** RI DEM will use a small portion of co-PI, Jeff Mercer's salary as match for this application. Jeff Mercer is an officer for RI DEM, Fish and Wildlife Enforcement Division. He will be working with the software architect and project manager to provide input and testing of the application throughout the project. In-kind funding is derived from the calculation of 5 hours per week or 12.5% of J. Mercer's full-time salary that will be spent in support of the project.

   GA DNR will use a small portion of co-PI, Sgt. Cindy Miller's salary as match for this application. Sgt. Miller is a Sergeant with the GA DNR, Office of Marine Fisheries. She will be working with the software architect and project manager to make certain the Job Aid manual she has put together is properly reflected by the application. She will also be

closely involved in testing the application with other officers in the field. In-kind funding is derived from the calculation of 5 hours per week or 12.5% of Sgt. Miller's full-time salary that will be spent in support of the project.

b. **Contractor Personnel ($50,000):**

Harbor Light Software Inc. has an existing working relationship with ACCSP staff members and built the Fisheries Enforcement and Scallops Enforcement applications.

Software Development: 225 total development hours will be required to resolve known issues with the existing Fisheries Enforcement and Scallops Enforcement applications, and to add support for Monkfish and American Lobster/Jonah Crab FMPs.

Contractor Testing and Onsite Support/Training and Outreach: a total of 75 hours of testing and outreach will be required.

FY19 COST SUMMARY (BUDGET)

Table 4. FY 19 Cost Summary

Description	Calculation	**ACCSP Request**	**Partner-in-Kind**
Personnel (a)			**$20,203**
RIDEM LEO	12.5% of LEO staff time		$11,765
GA DNR LEO	12.5% of LEO staff time		$8,438
Contractual (b)			
Contract Software Development	280 hrs@ $175/hr	$49,000	
Contractor Testing and Onsite Support/Training/Outreach. (Includes travel costs)	75 hrs @$145/hr	$10,875	
	Total Direct Charges	**$59,875**	
	Total for Project	**$80,078**	

FY19 BUDGET NARRATIVE:

Cost Details:

a. **Personnel Partner in kind ($20,203)** RI DEM will use a small portion of co-PI, Jeff Mercer's salary as match for this application. Jeff Mercer is an officer for RI DEM, Office of Marine Fisheries. He will be working with the software architect and project manager to provide input and testing of the application throughout the project. In kind funding is derived from the calculation of 5 hrs per week at a rate of $45.25 per hour, or 12.5% of J. Mercer's full-time salary that will be spent in support of the project.

GA DNR will use a small portion of co-PI, Sgt. Cindy Miller's salary as match for this application. Sgt. Miller is a Sergeant with the GA DNR, Office of Marine Fisheries. She will be working with the software architect and project manager to make certain the Job Aid manual she has put together is properly reflected by the application. She will also be closely involved in testing the application. In kind funding is derived from the calculation of 5 hours per week at t rate of $36.36 per hour, or 12. 5% of Sgt. Millers full time salary that will be spent in support of the project.

b. **Contractor Personnel- ($59,875)**

Harbor Light Software Inc. has an existing working relationship with ACCSP staff members and the Fisheries Enforcement Compliance application. Using Harbor Light will reduce startup and training time associated with the project, allowing more effort to be focused on the development of the requested software and support of the product rollout.

Software Development - 280 total development hours will be required to create the applications to meet the needs of the project.

Contractor Testing and Onsite Support/Training and Outreach.- A total of 75 hrs of testing and outreach will be required along with a minimum of three onsite visits to each location, Rhode Island and Georgia. Travel costs are included in this figure.

Maintenance Project History

Fiscal Year	Title	Cost	Results
2019	Development of a mobile application to assist maritime law enforcement personnel with fisheries enforcement tasks	$80,078	• Evaluated the efficiency of a mobile application compared to the current paper-training manuals while out at sea for determining compliance. • Provided state and federal marine enforcement officers with current regulatory information for an initial-project-manageable subset of species in an easy-to-use application. • Where possible, explored the concepts, approaches and usability/accuracy/timeliness issues of current consumer apps used by anglers to obtain current fishing regulations

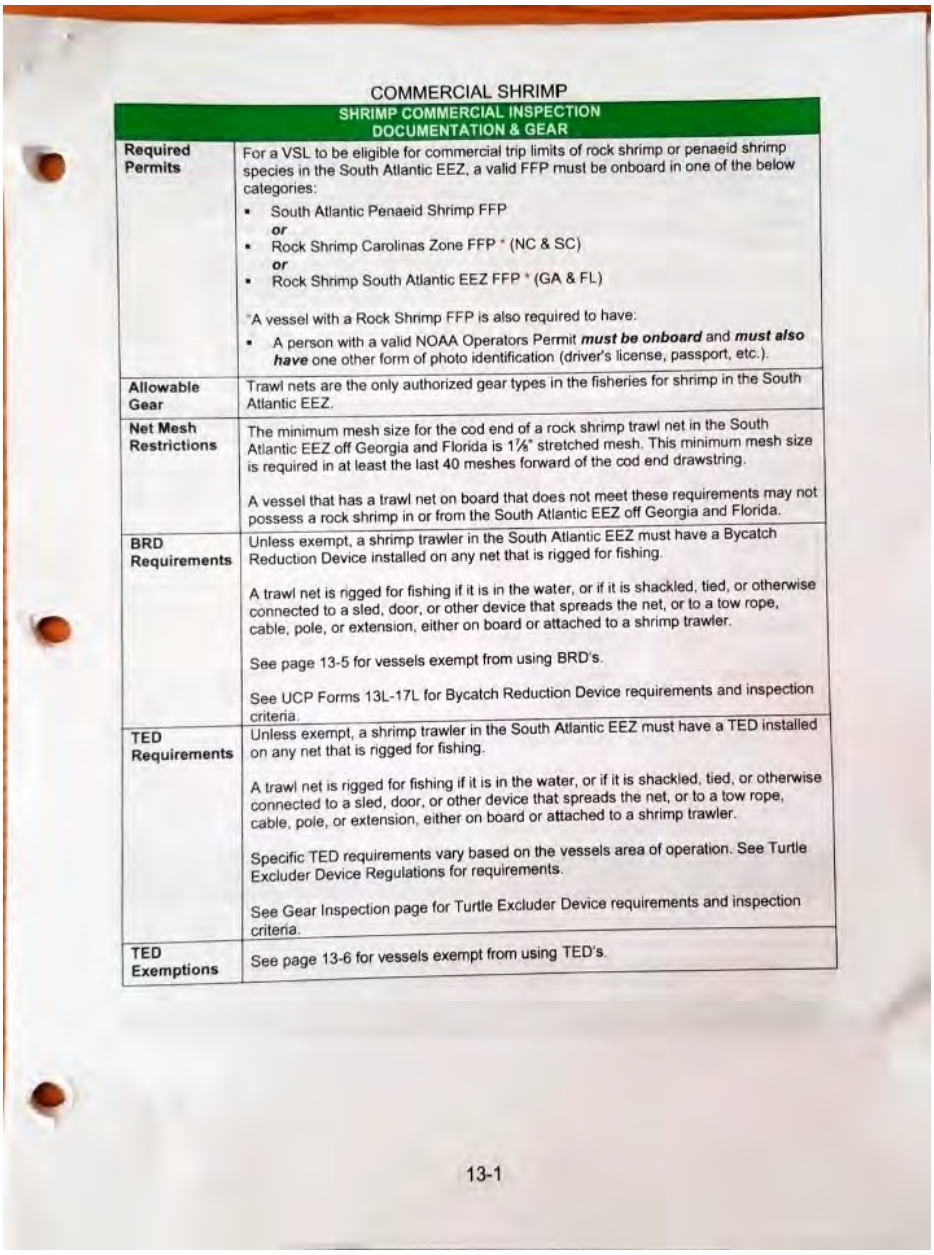
Figure 1. Example of a TED used in training

The plastic float on the left is too small and in violation.

Figure 2. While one or more officers are measuring items, one officer is preoccupied with reading a checklist, interpreting it and recording measurements.

Figure 3. BOJAK for shrimp. ***(Note: There are nine additional pages to the shrimp FMP that consist of approximately forty-five different pictures, each with helper texts and measurements. One of these pages is included to give the reader an understanding of the complexity of the FMPs)***

Page1

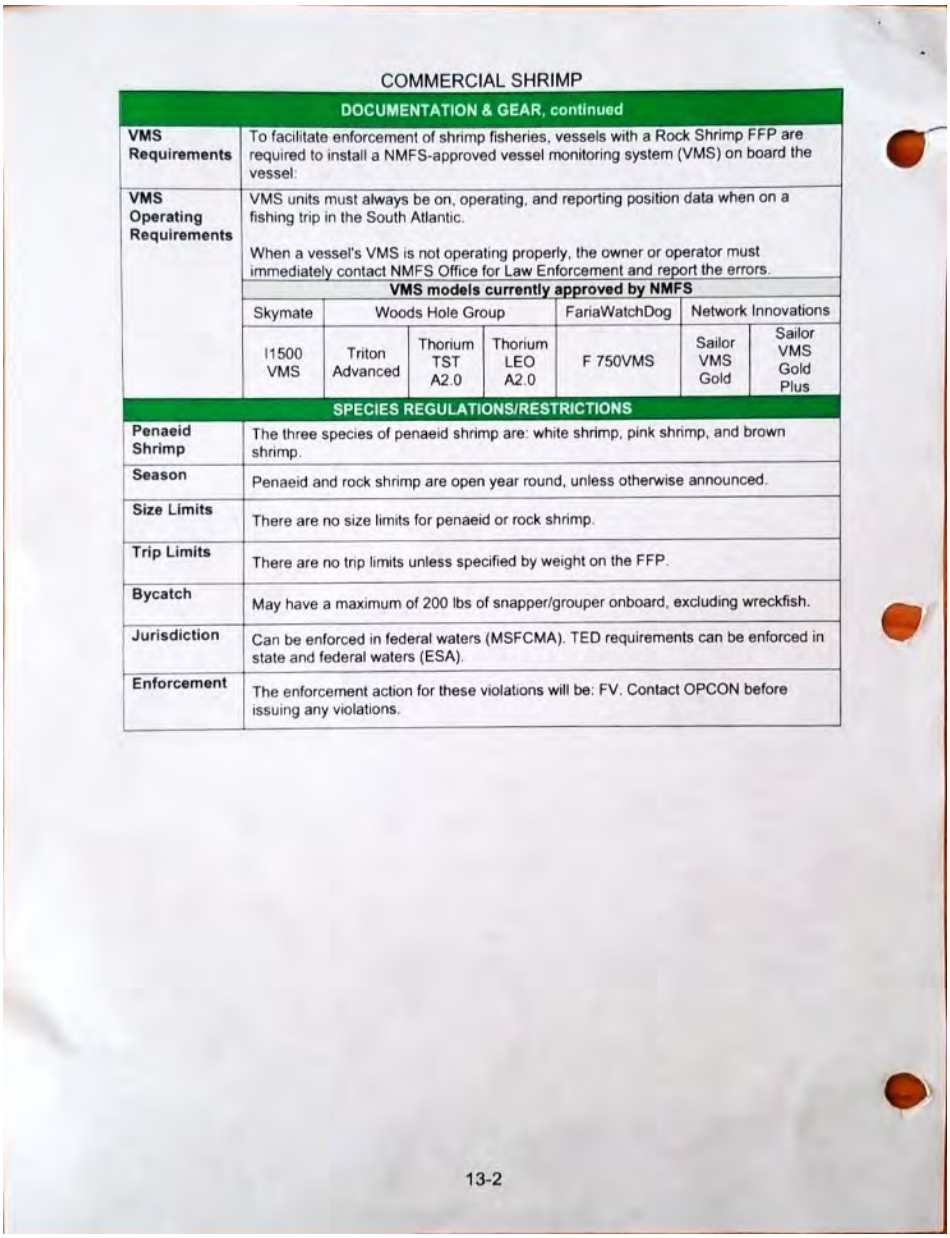


COMMERCIAL SHRIMP

SHRIMP COMMERCIAL INSPECTION DOCUMENTATION & GEAR	
Required Permits	For a VSL to be eligible for commercial trip limits of rock shrimp or penaeid shrimp species in the South Atlantic EEZ, a valid FFP must be onboard in one of the below categories: ▪ South Atlantic Penaeid Shrimp FFP ***or*** ▪ Rock Shrimp Carolinas Zone FFP * (NC & SC) ***or*** ▪ Rock Shrimp South Atlantic EEZ FFP * (GA & FL) *A vessel with a Rock Shrimp FFP is also required to have: ▪ A person with a valid NOAA Operators Permit ***must be onboard*** and ***must also have*** one other form of photo identification (driver's license, passport, etc.).
Allowable Gear	Trawl nets are the only authorized gear types in the fisheries for shrimp in the South Atlantic EEZ.
Net Mesh Restrictions	The minimum mesh size for the cod end of a rock shrimp trawl net in the South Atlantic EEZ off Georgia and Florida is 1⅞" stretched mesh. This minimum mesh size is required in at least the last 40 meshes forward of the cod end drawstring. A vessel that has a trawl net on board that does not meet these requirements may not possess a rock shrimp in or from the South Atlantic EEZ off Georgia and Florida.
BRD Requirements	Unless exempt, a shrimp trawler in the South Atlantic EEZ must have a Bycatch Reduction Device installed on any net that is rigged for fishing. A trawl net is rigged for fishing if it is in the water, or if it is shackled, tied, or otherwise connected to a sled, door, or other device that spreads the net, or to a tow rope, cable, pole, or extension, either on board or attached to a shrimp trawler. See page 13-5 for vessels exempt from using BRD's. See UCP Forms 13L-17L for Bycatch Reduction Device requirements and inspection criteria.
TED Requirements	Unless exempt, a shrimp trawler in the South Atlantic EEZ must have a TED installed on any net that is rigged for fishing. A trawl net is rigged for fishing if it is in the water, or if it is shackled, tied, or otherwise connected to a sled, door, or other device that spreads the net, or to a tow rope, cable, pole, or extension, either on board or attached to a shrimp trawler. Specific TED requirements vary based on the vessels area of operation. See Turtle Excluder Device Regulations for requirements. See Gear Inspection page for Turtle Excluder Device requirements and inspection criteria.
TED Exemptions	See page 13-6 for vessels exempt from using TED's.

13-1

Page 2



COMMERCIAL SHRIMP

DOCUMENTATION & GEAR, continued							
VMS Requirements	To facilitate enforcement of shrimp fisheries, vessels with a Rock Shrimp FFP are required to install a NMFS-approved vessel monitoring system (VMS) on board the vessel.						
VMS Operating Requirements	VMS units must always be on, operating, and reporting position data when on a fishing trip in the South Atlantic. When a vessel's VMS is not operating properly, the owner or operator must immediately contact NMFS Office for Law Enforcement and report the errors.						
	VMS models currently approved by NMFS						
	Skymate	Woods Hole Group			FariaWatchDog	Network Innovations	
	I1500 VMS	Triton Advanced	Thorium TST A2.0	Thorium LEO A2.0	F 750VMS	Sailor VMS Gold	Sailor VMS Gold Plus
SPECIES REGULATIONS/RESTRICTIONS							
Penaeid Shrimp	The three species of penaeid shrimp are: white shrimp, pink shrimp, and brown shrimp.						
Season	Penaeid and rock shrimp are open year round, unless otherwise announced.						
Size Limits	There are no size limits for penaeid or rock shrimp.						
Trip Limits	There are no trip limits unless specified by weight on the FFP.						
Bycatch	May have a maximum of 200 lbs of snapper/grouper onboard, excluding wreckfish.						
Jurisdiction	Can be enforced in federal waters (MSFCMA). TED requirements can be enforced in state and federal waters (ESA).						
Enforcement	The enforcement action for these violations will be: FV. Contact OPCON before issuing any violations.						

13-2

ACCSP Funding Proposal: Continued development of a mobile application to assist Maritime Law Enforcement Personnel with fisheries enforcement tasks.

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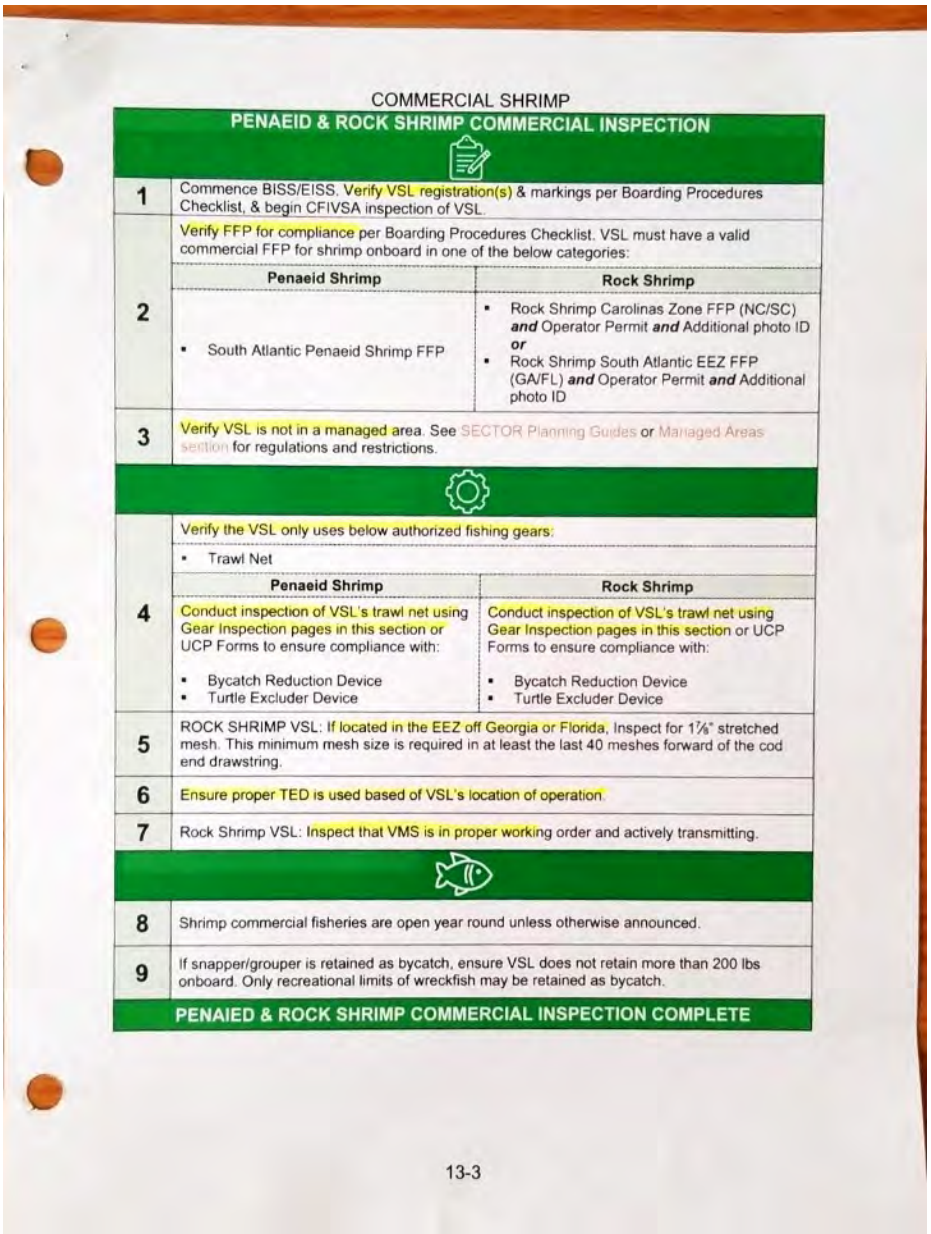
Page 3



COMMERCIAL SHRIMP

PENAEID & ROCK SHRIMP COMMERCIAL INSPECTION

1	Commence BISS/EISS. Verify VSL registration(s) & markings per Boarding Procedures Checklist, & begin CFIVSA inspection of VSL.	
2	Verify FFP for compliance per Boarding Procedures Checklist. VSL must have a valid commercial FFP for shrimp onboard in one of the below categories:	
	Penaeid Shrimp	**Rock Shrimp**
	▪ South Atlantic Penaeid Shrimp FFP	▪ Rock Shrimp Carolinas Zone FFP (NC/SC) ***and*** Operator Permit ***and*** Additional photo ID ***or*** ▪ Rock Shrimp South Atlantic EEZ FFP (GA/FL) ***and*** Operator Permit ***and*** Additional photo ID
3	Verify VSL is not in a managed area. See SECTOR Planning Guides or Managed Areas section for regulations and restrictions.	
4	Verify the VSL only uses below authorized fishing gears: ▪ Trawl Net	
	Penaeid Shrimp	**Rock Shrimp**
	Conduct inspection of VSL's trawl net using Gear Inspection pages in this section or UCP Forms to ensure compliance with: ▪ Bycatch Reduction Device ▪ Turtle Excluder Device	Conduct inspection of VSL's trawl net using Gear Inspection pages in this section or UCP Forms to ensure compliance with: ▪ Bycatch Reduction Device ▪ Turtle Excluder Device
5	ROCK SHRIMP VSL: If located in the EEZ off Georgia or Florida, Inspect for 1⅞" stretched mesh. This minimum mesh size is required in at least the last 40 meshes forward of the cod end drawstring.	
6	Ensure proper TED is used based of VSL's location of operation.	
7	Rock Shrimp VSL: Inspect that VMS is in proper working order and actively transmitting.	
8	Shrimp commercial fisheries are open year round unless otherwise announced.	
9	If snapper/grouper is retained as bycatch, ensure VSL does not retain more than 200 lbs onboard. Only recreational limits of wreckfish may be retained as bycatch.	

PENAIED & ROCK SHRIMP COMMERCIAL INSPECTION COMPLETE

13-3

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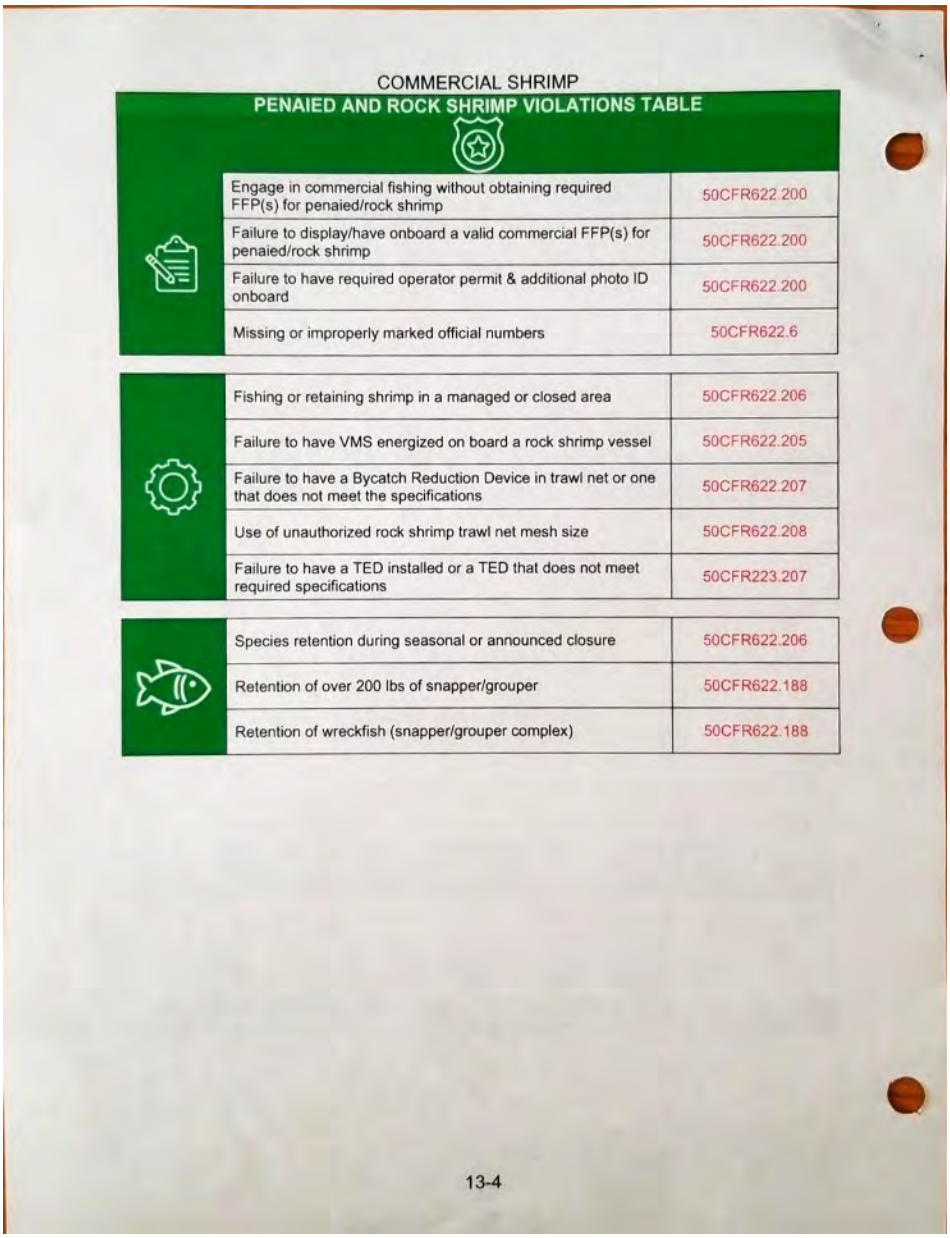

COMMERCIAL SHRIMP

PENAIED AND ROCK SHRIMP VIOLATIONS TABLE

Engage in commercial fishing without obtaining required FFP(s) for penaied/rock shrimp	50CFR622.200
Failure to display/have onboard a valid commercial FFP(s) for penaied/rock shrimp	50CFR622.200
Failure to have required operator permit & additional photo ID onboard	50CFR622.200
Missing or improperly marked official numbers	50CFR622.6
Fishing or retaining shrimp in a managed or closed area	50CFR622.206
Failure to have VMS energized on board a rock shrimp vessel	50CFR622.205
Failure to have a Bycatch Reduction Device in trawl net or one that does not meet the specifications	50CFR622.207
Use of unauthorized rock shrimp trawl net mesh size	50CFR622.208
Failure to have a TED installed or a TED that does not meet required specifications	50CFR223.207
Species retention during seasonal or announced closure	50CFR622.206
Retention of over 200 lbs of snapper/grouper	50CFR622.188
Retention of wreckfish (snapper/grouper complex)	50CFR622.188

13-4

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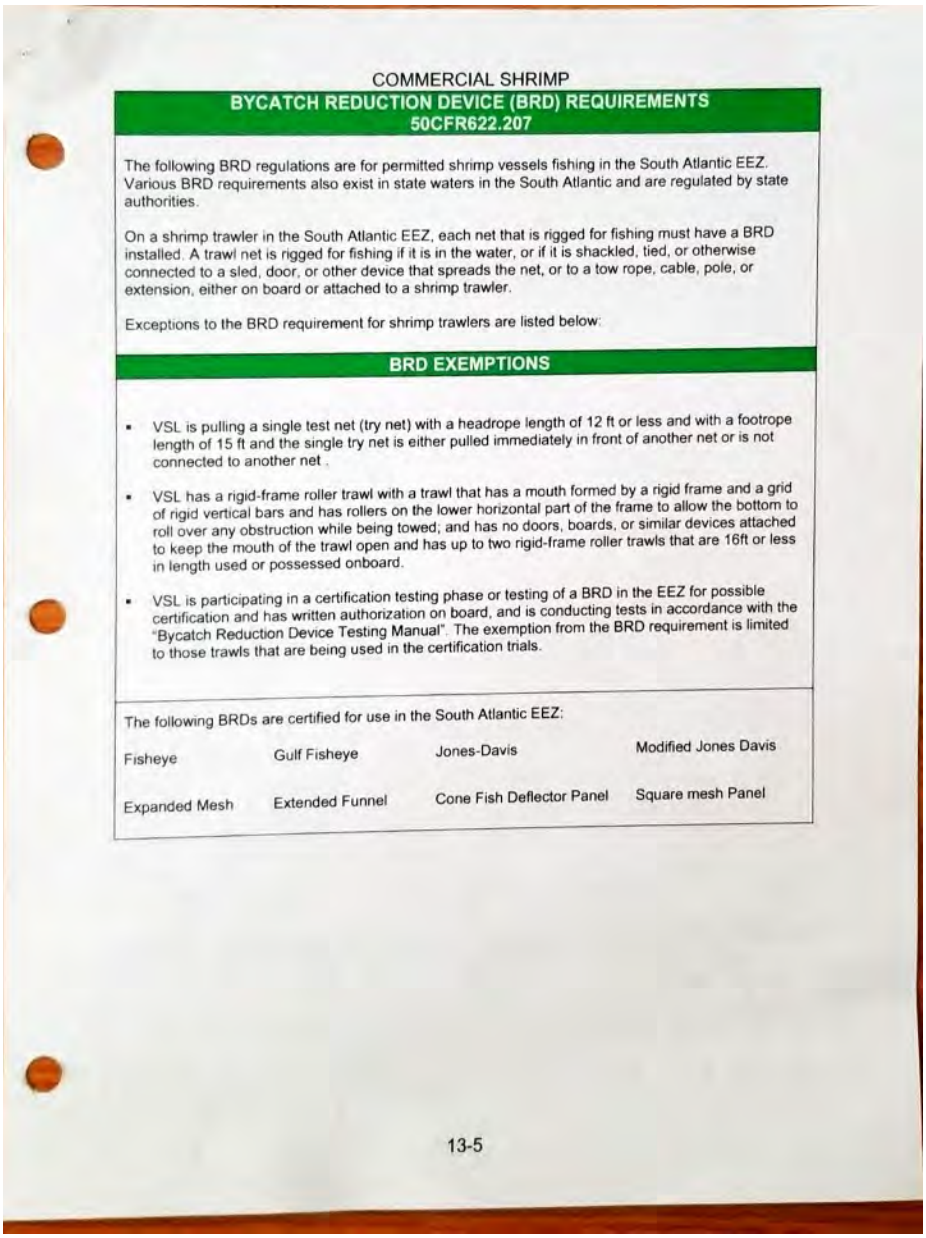

COMMERCIAL SHRIMP

BYCATCH REDUCTION DEVICE (BRD) REQUIREMENTS
50CFR622.207

The following BRD regulations are for permitted shrimp vessels fishing in the South Atlantic EEZ. Various BRD requirements also exist in state waters in the South Atlantic and are regulated by state authorities.

On a shrimp trawler in the South Atlantic EEZ, each net that is rigged for fishing must have a BRD installed. A trawl net is rigged for fishing if it is in the water, or if it is shackled, tied, or otherwise connected to a sled, door, or other device that spreads the net, or to a tow rope, cable, pole, or extension, either on board or attached to a shrimp trawler.

Exceptions to the BRD requirement for shrimp trawlers are listed below:

BRD EXEMPTIONS

- VSL is pulling a single test net (try net) with a headrope length of 12 ft or less and with a footrope length of 15 ft and the single try net is either pulled immediately in front of another net or is not connected to another net .
- VSL has a rigid-frame roller trawl with a trawl that has a mouth formed by a rigid frame and a grid of rigid vertical bars and has rollers on the lower horizontal part of the frame to allow the bottom to roll over any obstruction while being towed; and has no doors, boards, or similar devices attached to keep the mouth of the trawl open and has up to two rigid-frame roller trawls that are 16ft or less in length used or possessed onboard.
- VSL is participating in a certification testing phase or testing of a BRD in the EEZ for possible certification and has written authorization on board, and is conducting tests in accordance with the "Bycatch Reduction Device Testing Manual". The exemption from the BRD requirement is limited to those trawls that are being used in the certification trials.

The following BRDs are certified for use in the South Atlantic EEZ:

Fisheye	Gulf Fisheye	Jones-Davis	Modified Jones Davis
Expanded Mesh	Extended Funnel	Cone Fish Deflector Panel	Square mesh Panel

13-5

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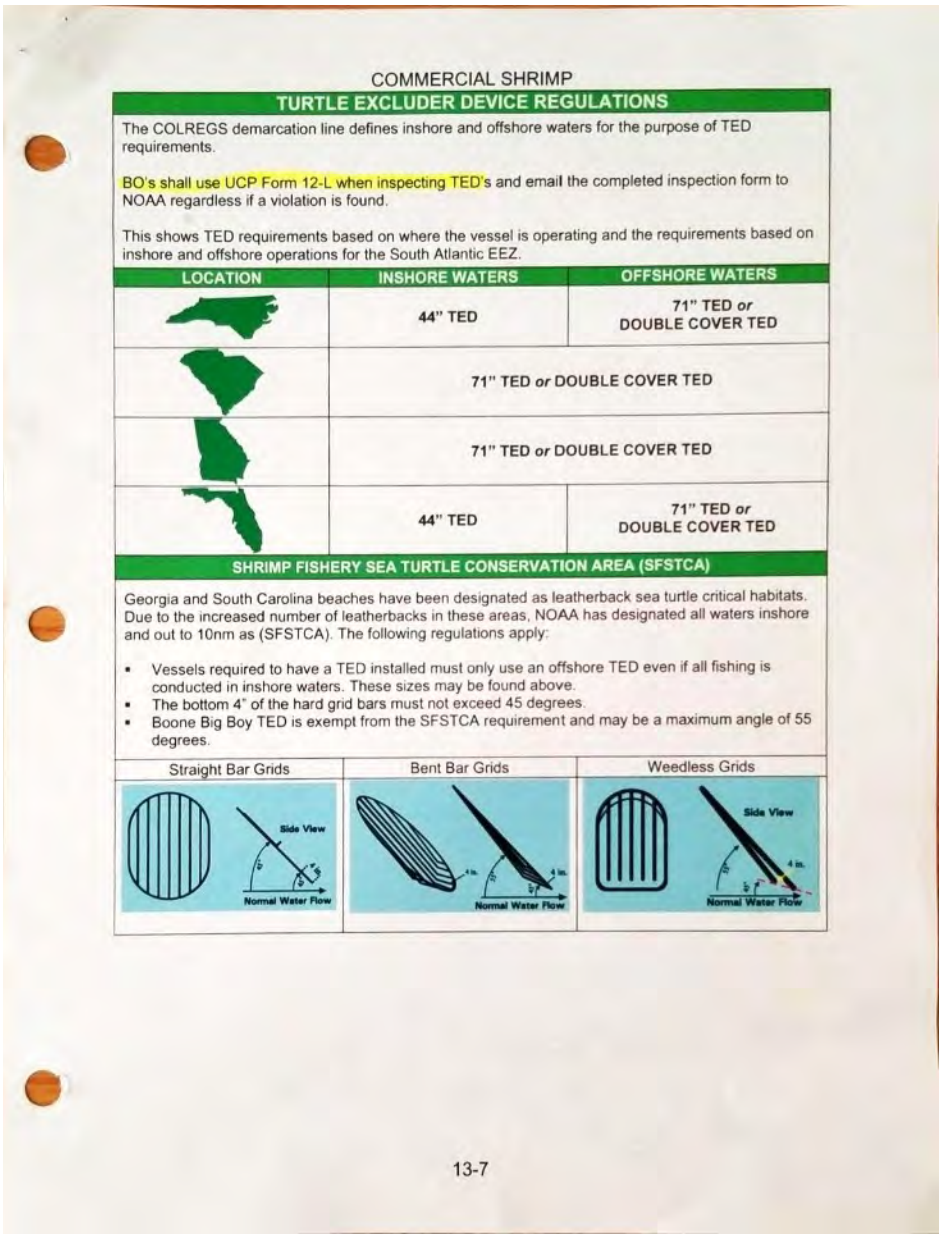

COMMERCIAL SHRIMP

TURTLE EXCLUDER DEVICE REGULATIONS

The COLREGS demarcation line defines inshore and offshore waters for the purpose of TED requirements.

BO's shall use UCP Form 12-L when inspecting TED's and email the completed inspection form to NOAA regardless if a violation is found.

This shows TED requirements based on where the vessel is operating and the requirements based on inshore and offshore operations for the South Atlantic EEZ.

LOCATION	INSHORE WATERS	OFFSHORE WATERS
	44" TED	71" TED *or* DOUBLE COVER TED
	71" TED *or* DOUBLE COVER TED	
	71" TED *or* DOUBLE COVER TED	
	44" TED	71" TED *or* DOUBLE COVER TED

SHRIMP FISHERY SEA TURTLE CONSERVATION AREA (SFSTCA)

Georgia and South Carolina beaches have been designated as leatherback sea turtle critical habitats. Due to the increased number of leatherbacks in these areas, NOAA has designated all waters inshore and out to 10nm as (SFSTCA). The following regulations apply:

- Vessels required to have a TED installed must only use an offshore TED even if all fishing is conducted in inshore waters. These sizes may be found above.
- The bottom 4" of the hard grid bars must not exceed 45 degrees.
- Boone Big Boy TED is exempt from the SFSTCA requirement and may be a maximum angle of 55 degrees.

Straight Bar Grids	Bent Bar Grids	Weedless Grids

13-7

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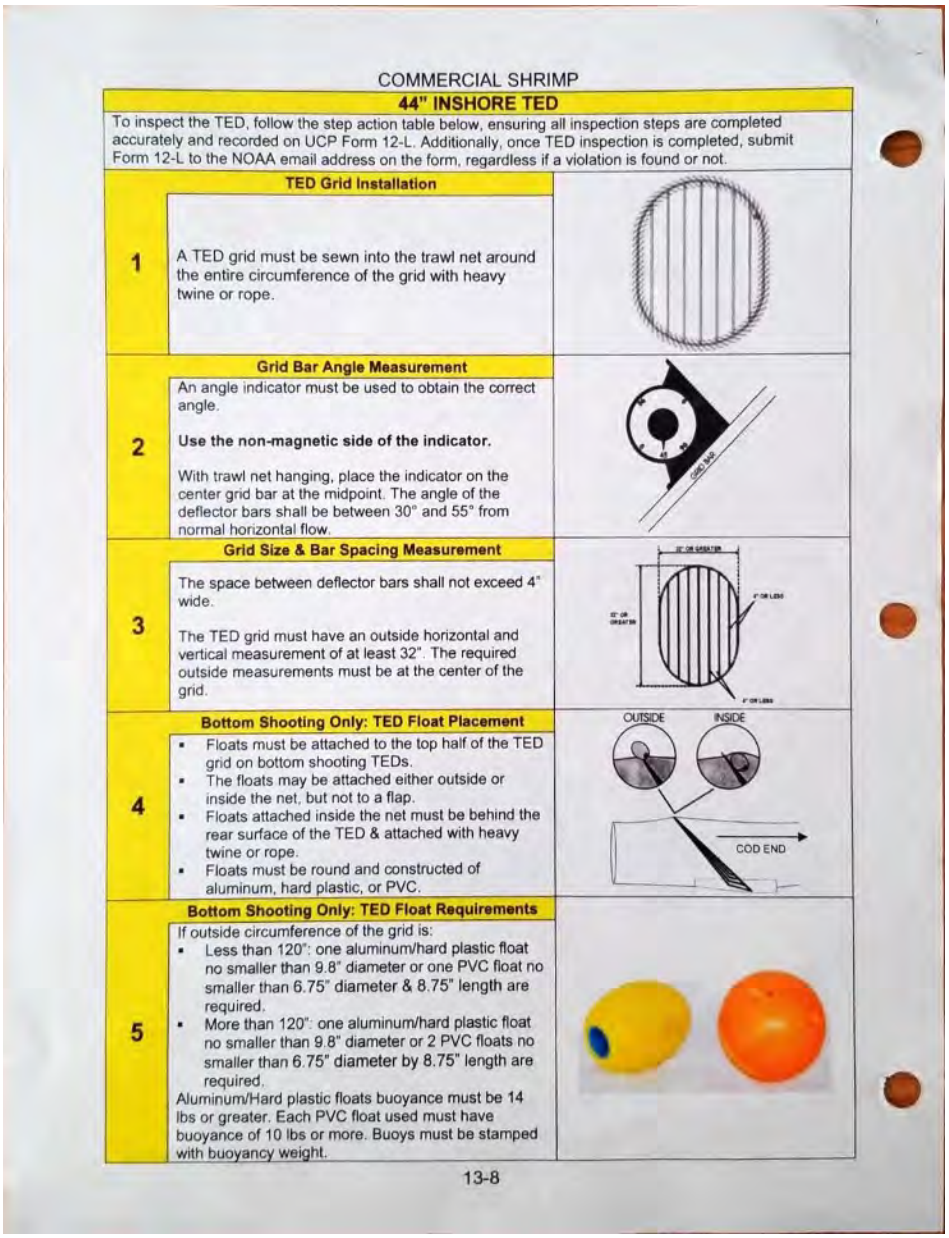
Example of one of nine total pages of diagrams within the shrimp FMP.



COMMERCIAL SHRIMP

44" INSHORE TED

To inspect the TED, follow the step action table below, ensuring all inspection steps are completed accurately and recorded on UCP Form 12-L. Additionally, once TED inspection is completed, submit Form 12-L to the NOAA email address on the form, regardless if a violation is found or not.

1	**TED Grid Installation** A TED grid must be sewn into the trawl net around the entire circumference of the grid with heavy twine or rope.	
2	**Grid Bar Angle Measurement** An angle indicator must be used to obtain the correct angle. **Use the non-magnetic side of the indicator.** With trawl net hanging, place the indicator on the center grid bar at the midpoint. The angle of the deflector bars shall be between 30° and 55° from normal horizontal flow.	
3	**Grid Size & Bar Spacing Measurement** The space between deflector bars shall not exceed 4" wide. The TED grid must have an outside horizontal and vertical measurement of at least 32". The required outside measurements must be at the center of the grid.	
4	**Bottom Shooting Only: TED Float Placement** ▪ Floats must be attached to the top half of the TED grid on bottom shooting TEDs. ▪ The floats may be attached either outside or inside the net, but not to a flap. ▪ Floats attached inside the net must be behind the rear surface of the TED & attached with heavy twine or rope. ▪ Floats must be round and constructed of aluminum, hard plastic, or PVC.	OUTSIDE INSIDE COD END
5	**Bottom Shooting Only: TED Float Requirements** If outside circumference of the grid is: ▪ Less than 120": one aluminum/hard plastic float no smaller than 9.8" diameter or one PVC float no smaller than 6.75" diameter & 8.75" length are required. ▪ More than 120": one aluminum/hard plastic float no smaller than 9.8" diameter or 2 PVC floats no smaller than 6.75" diameter by 8.75" length are required. Aluminum/Hard plastic floats buoyance must be 14 lbs or greater. Each PVC float used must have buoyance of 10 lbs or more. Buoys must be stamped with buoyancy weight.	

13-8

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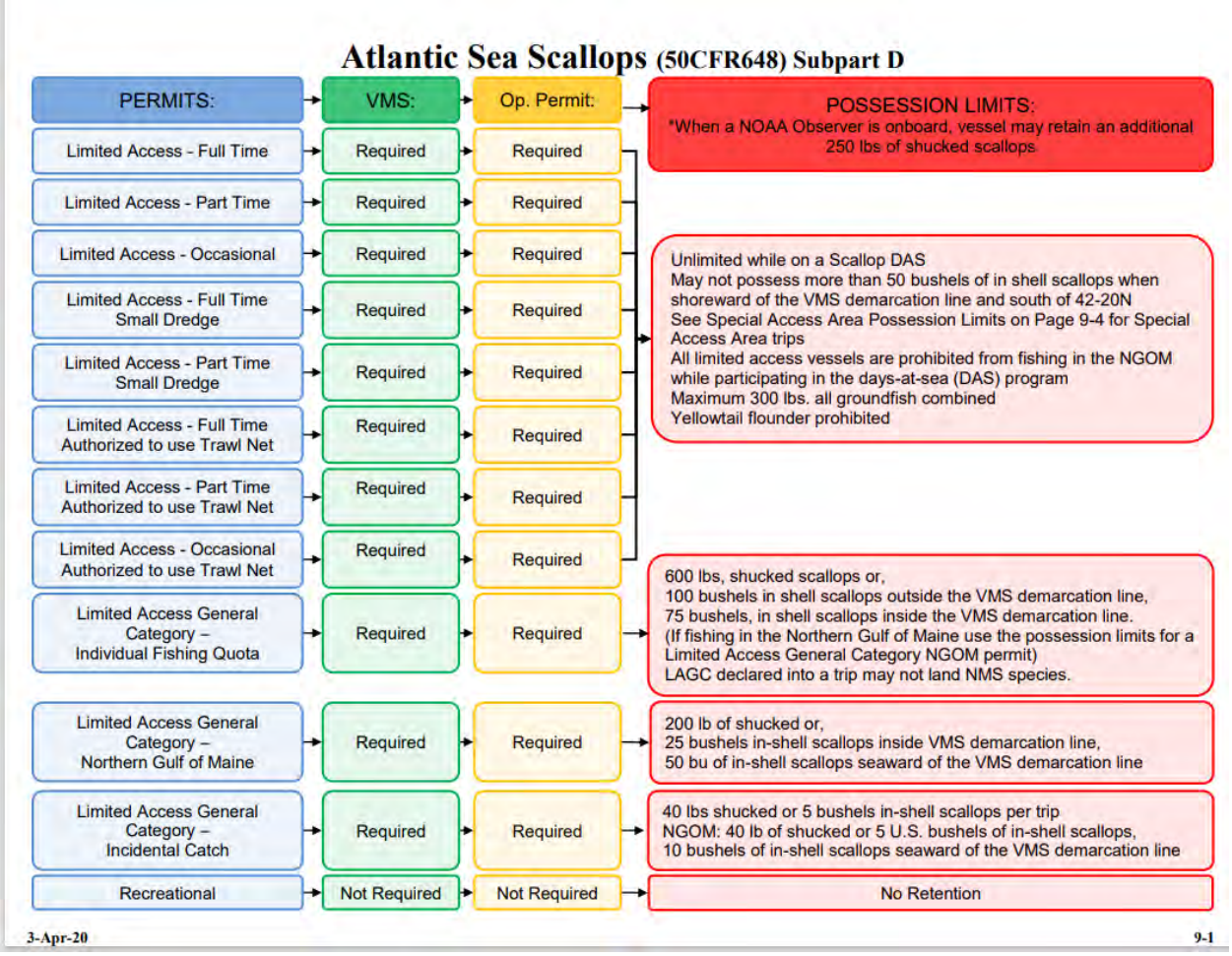
Figure 4. BOJAK for Scallops

Page 1



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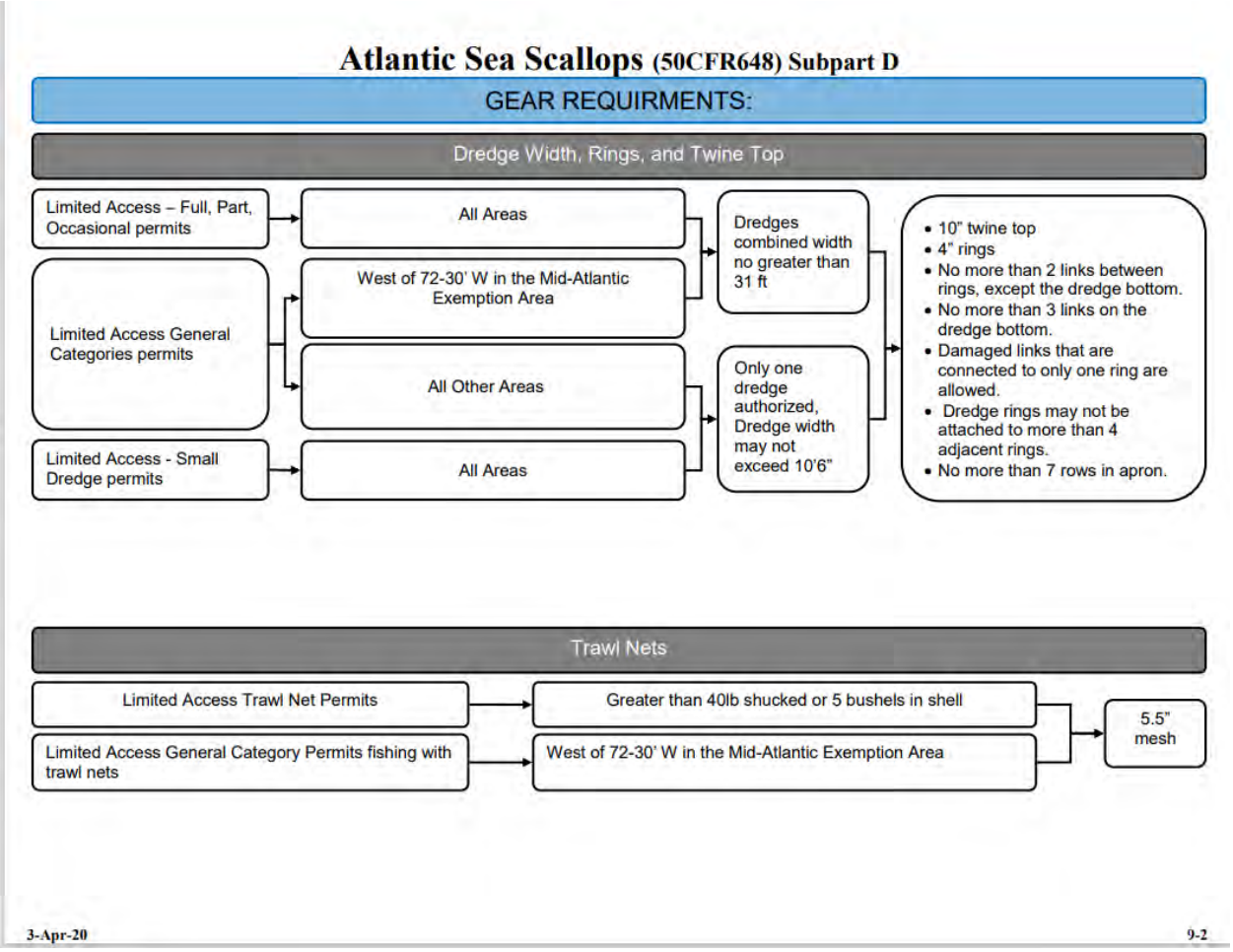

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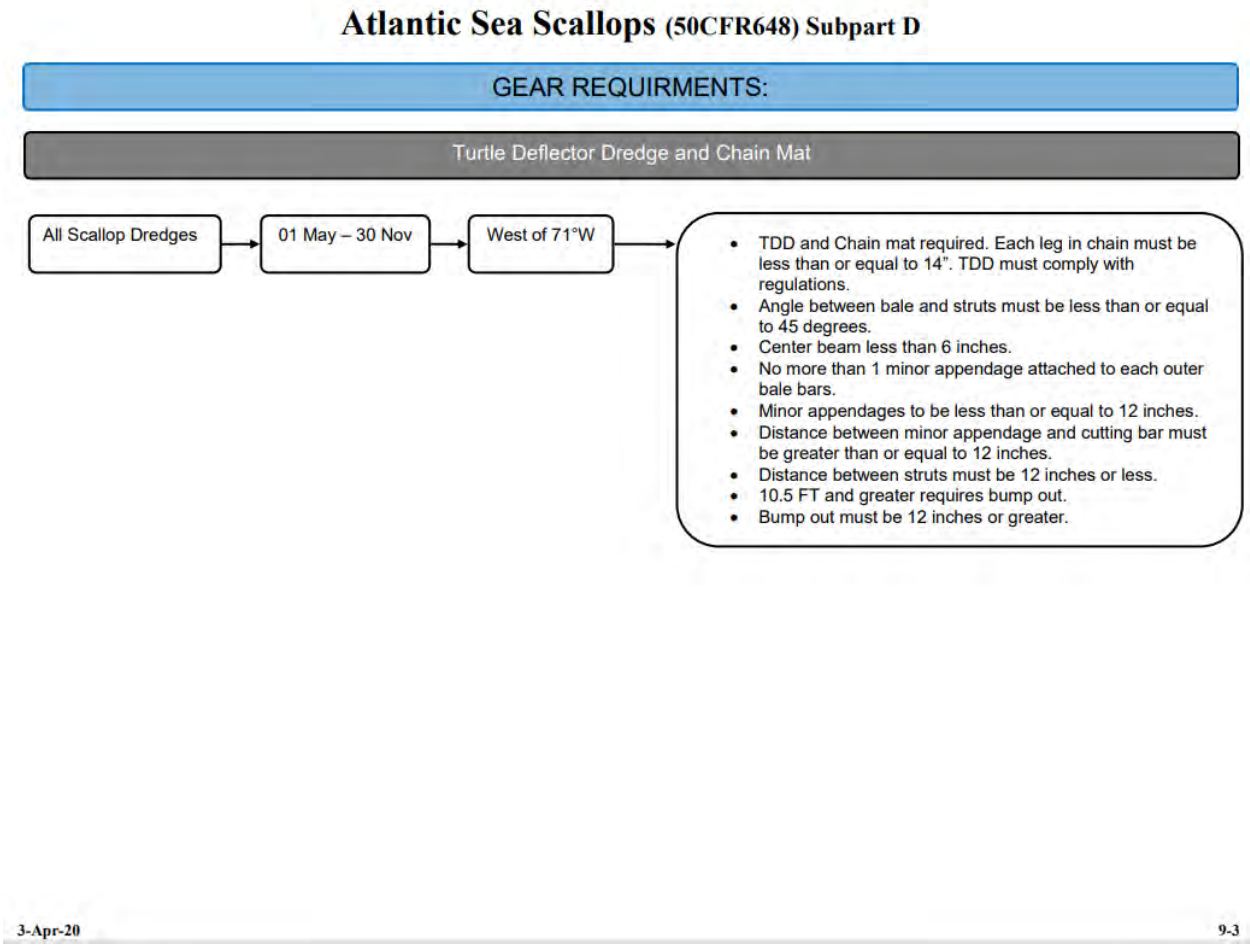

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Atlantic Sea Scallops (50CFR648) Subpart D

Special Access Area Programs: Always Refer to VMS Code

Mid Atlantic Access Area:	Open
Nantucket Lightship-North Access Area:	Open
Nantucket Lightship South-Deep Access Area:	Open
Closed Area I Access Area:	Open
Closed Area II Access Area:	Open Closed 15AUG-30NOV
Closed Area II- Southwest and Extension Closed Area:	Closed (No transit)
Nantucket Lightship- Triangle Closed Area:	Closed
Stellwagen Bank Closed Area	Closed

Special Access Area Possession Limits:

Limited Access - Full Time:	18,000 lbs/trip
Limited Access - Part Time:	12,000 lbs/trip
Limited Access - Occasional:	7,500 lbs/trip
Limited Access General Category- IFQ	600 lbs/trip

A Limited Access vessel declared into the SAA may not possess or land more than 50 bu. of in-shell scallops outside of the Access Area. A LAGC vessel declared into the SAA may not possess more than 75 bu. of in-shell scallops outside of the Access Area.

***Nantucket Lightship-Hatchet and Nantucket Lightship-West will revert to the Open Area on May 31st, to allow for 2019 carryover trips to occur.**

NMS Possession Limits on Access Area Trips:

- A Limited Access Scallop vessel that is declared into a trip and fishing within the Sea Scallop Access Areas and issued a valid NE multispecies permit may fish for, possess, and land, per trip, up to a maximum of 1,000 lbs. of all NE multispecies combined with the following exceptions:
- Vessels may possess only up to 100 lb. of Atlantic Cod per trip, provided such fish is intended for personal use only.
- Any vessel declared on a Special Access Trip is prohibited from possessing Haddock from January 1 through June 30.
- All Limited Access Permits Holders declared on a Scallop trip are prohibited from possessing Yellow Tail Flounder.
- LAGC declared into a trip may not land NMS species.

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Atlantic Sea Scallops (50CFR648) Subpart D

Crew Restrictions:

Limited Access – Full-time permits:	Open Area: No more than 7 NLS South-Deep Special Access Area: 10 All other Special Access Area's: No more than 8
Limited Access- Part-time and Occasional permits:	Open Area: No more than 7 All Special Access Area's: No more than 8
Limited Access- Small Dredge permits:	Open Area: No more than 5 NLS South-Deep Special Access Area: 8 All other Special Access Area's: No more than 6
Limited Access General Categories permits:	Open Area: No Limit Special Access Area's: No Limit

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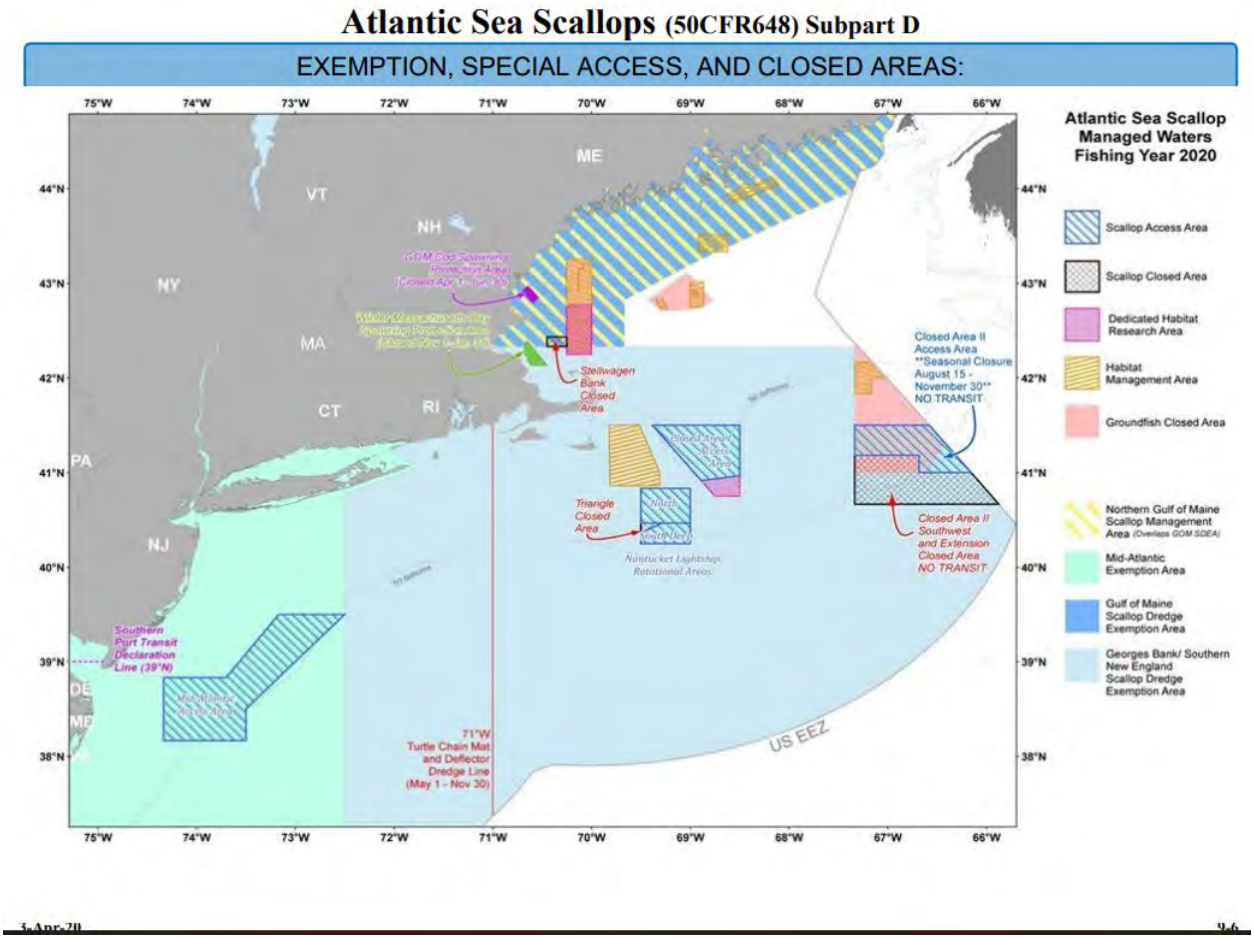

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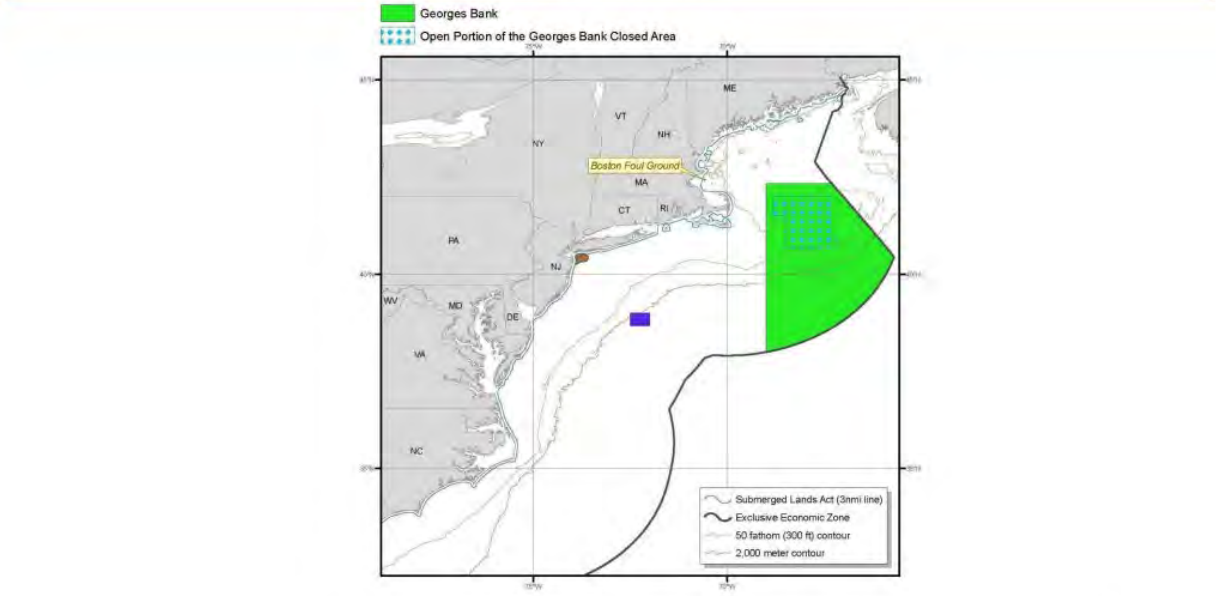
Atlantic Sea Scallops (50CFR648) Subpart D

PSP Closure Areas



Vessels fishing in the Georges Bank paralytic shellfish poisoning (PSP) closure area may not retain in-shell scallops.

3-Apr-20 **9-7**

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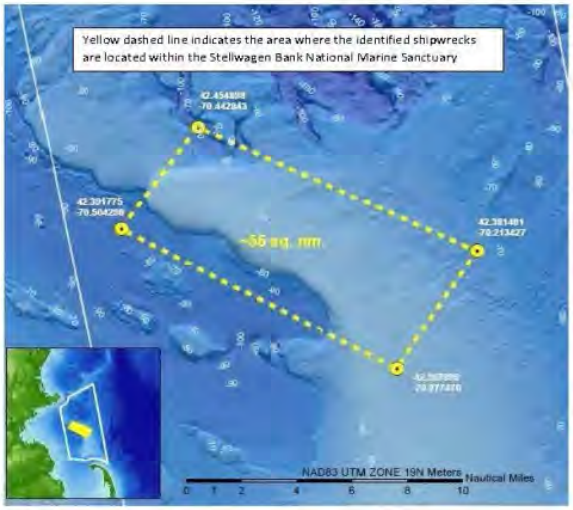
Atlantic Sea Scallops (50CFR648) Subpart D

Chart of Area on Stellwagen Bank Where Shipwrecks are Located

In preparation for this year's Northern Gulf of Maine (NGOM) scallop fishery, NOAA Fisheries, in conjunction with NOAA Stellwagen Bank National Marine Sanctuary, requests that scallopers avoid shipwreck sites in the Sanctuary by keeping gear 360 feet away from each of the sites located in the table.



Historic and modern shipwrecks to avoid in Stellwagen Bank National Marine Sanctuary

Vessel Name	Status	LatDecDeg	Deg.min.sec	Long DecDeg	Deg.min.sec	Depth
Unknown	Historic	42.395050	42° 23' 42.1794"	-70.489420	-70° 29' 21.9114"	48.5 fathom
Heroic	Historic	42.372439	42° 22' 20.7798"	-70.370489	-70° 22' 13.7604"	16 fathom
Unknown	Historic	42.421046	42° 25' 15.765"	-70.469577	-70° 28' 10.4772"	18 fathom
Unknown	Historic	42.439221	42° 26' 21.1956"	-70.412323	-70° 24' 44.3628	47.5 fathom
Unknown	Historic	42.358948	42° 21' 32.2122"	-70.395870	-70° 23' 45.132"	46 fathom
North Star	Modern	42.383890	42° 23' 2.004"	-70.356027	-70° 21' 21.6966"	16 fathom
Patriot	Modern	42.404267	42° 24' 15.3606"	-70.453283	-70° 27' 11.8182"	16 fathom

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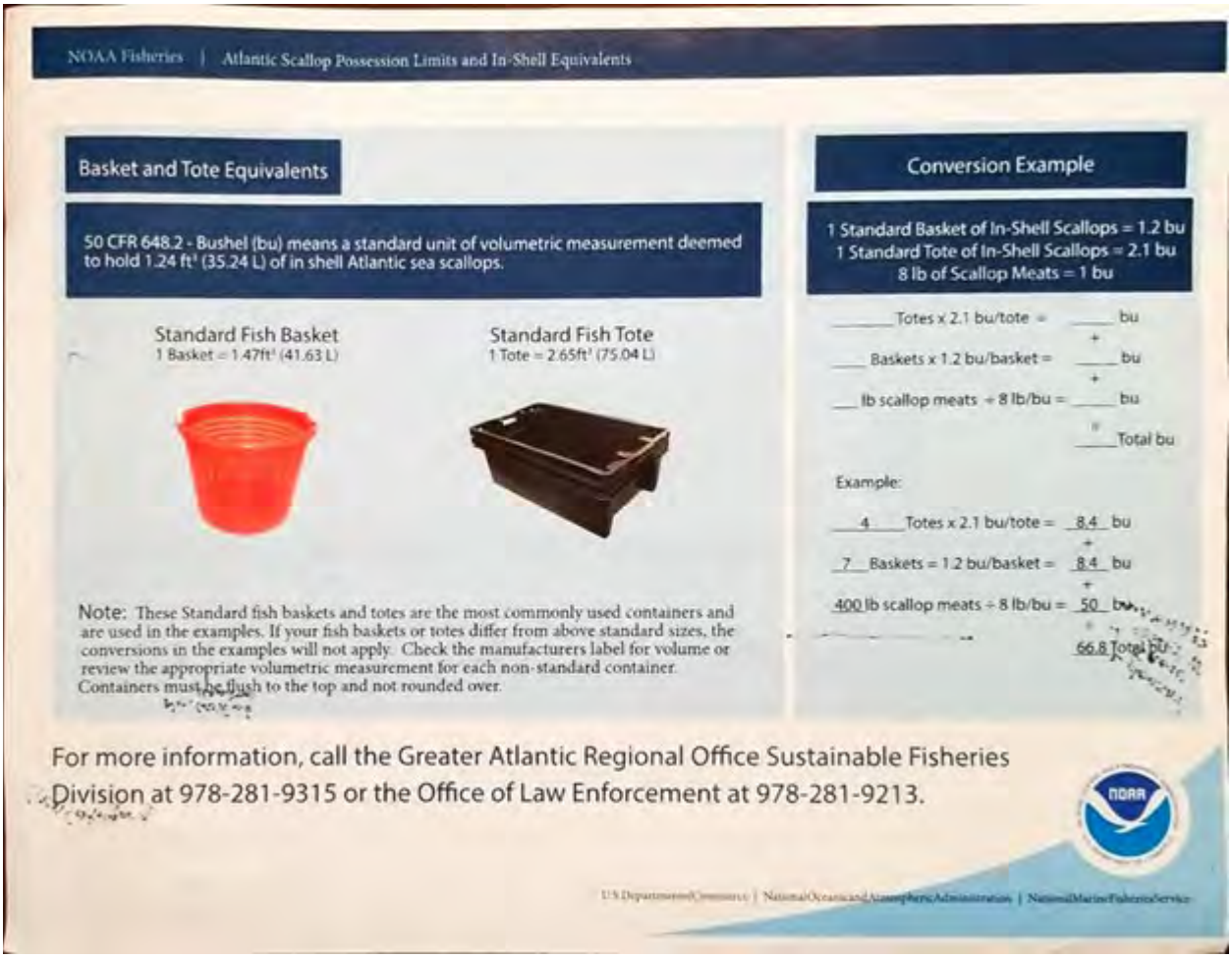

NOAA Fisheries | Atlantic Scallop Possession Limits and In-Shell Equivalents

Basket and Tote Equivalents

50 CFR 648.2 - Bushel (bu) means a standard unit of volumetric measurement deemed to hold 1.24 ft³ (35.24 L) of in shell Atlantic sea scallops.

Standard Fish Basket
1 Basket = 1.47ft³ (41.63 L)

Standard Fish Tote
1 Tote = 2.65ft³ (75.04 L)

Note: These Standard fish baskets and totes are the most commonly used containers and are used in the examples. If your fish baskets or totes differ from above standard sizes, the conversions in the examples will not apply. Check the manufacturers label for volume or review the appropriate volumetric measurement for each non-standard container. Containers must be flush to the top and not rounded over.

Conversion Example

1 Standard Basket of In-Shell Scallops = 1.2 bu
1 Standard Tote of In-Shell Scallops = 2.1 bu
8 lb of Scallop Meats = 1 bu

_____ Totes x 2.1 bu/tote = _____ bu
+
_____ Baskets x 1.2 bu/basket = _____ bu
+
_____ lb scallop meats ÷ 8 lb/bu = _____ bu
=
_____ Total bu

Example:

4 Totes x 2.1 bu/tote = 8.4 bu
+
7 Baskets = 1.2 bu/basket = 8.4 bu
+
400 lb scallop meats ÷ 8 lb/bu = 50 bu
=
66.8 Total bu

For more information, call the Greater Atlantic Regional Office Sustainable Fisheries Division at 978-281-9315 or the Office of Law Enforcement at 978-281-9213.

NOAA

U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service

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Summary of Proposal for Ranking Purposes

Proposal Type: Maintenance Project

Primary Program Priority: 100% Catch and Effort
This project will improve determination of fishing compliance for catch and effort activities using an ACCSP approved application.

Data Delivery Plan: The applications do not currently collect information on a boarding, but act as resource tools only. There is no additional API work needed on behalf of the ACCSP.

Project Quality Factors:

- **Multi-Partner/Regional impacts including broad applications:**
  This project is building off a previously funded multi-partner/regional project which developed the for the Southeast states and the Scallops Enforcement application for the state of Rhode Island. This proposal would further these mobile applications and has the potential to be used region-wide for both state and federal ACCSP partners.
- **Contains funding transition plan/defined endpoint:**
  This is a one-year project with a defined end goal.
- **In-kind contribution: 28.5%**
  RIDFW and GADNR Law Enforcement will provide 28.5% in-kind funding derived from 12.5% of the law enforcement officers time to implement, evaluate and report the results of the project.
- **Improvement in data quality/quantity and timeliness:**
  Bringing this type of technology to the officer in the field will provide a tool that will give the LMROs confidence when boarding a vessel and interacting with species having complicated and changing regulations. We believe that utilizing the app will make for a shorter time interaction with the captains while ensuring catch compliance under these FMPs.

Other Factors:

- **Properly prepared**
  This proposal follows the guidelines under the ACCSP Funding Decision Process Document
- **Merit**
  Providing marine law enforcement officers with technology in the field will greatly enhance their ability to do their job safely and effectively. Funding for paper manuals would no longer be required and officers would be able to have accurate state and federal fisheries regulatory information quickly in the field.

Summary of Proposal for Ranking- *Abridged Version*

- **Achieved Goals:** The FY22 project will continue to breakdown and understand the technical needs of the boarding officers in the field and evaluate the efficiency of the current mobile applications compared to the current paper-training manuals while out at sea for determining compliance to an FMP. The Fisheries Enforcement application is currently in testing with the USCG and GA LMROs (Living Marine Resource Officers) and will receive added location logic within the application and additional information on TEDS (Turtle Exclusion Devices). Logic would be built in for a breakdown of BRDs (Bycatch Reduction Devices). The Scallops Enforcement application which is available in the Google PlayStore and the Apple iOS Store, will continue to be tested by Rhode Island LMROs. The additional FMPs of Monkfish and American Lobster/Jonah Crab, identified by Rhode Island officers as helpful to them to perform their jobs, will be added into the Scallops Enforcement app. Logic to assist the officers with additional regulation on these new species FMPs will be completed under this project.

- **Data Delivery Plan:** The applications do not currently collect information on a boarding, but act as resource tools only. There is no additional API work needed on behalf of the ACCSP. The applications will be freely available in the Apple AppStore and Google PlayStore, and can be downloaded and deployed to any compatible smartphone or tablet.

- **Level of Funding:** This is a year 1 maintenance proposal. Funding for the FY22 proposal decreased from the FY19 proposal by 12%.

- **Properly Prepared:** This proposal follows the guidelines under the ACCSP Funding Decision Process Document.

Merit: The project is continuing the development of two innovative application platforms, Fisheries Enforcement and Scallops Enforcement. This proposal will move the current applications into production to a live environment, making it available to all ACCSP partners. Two additional FMP modules cited by the LMROs, Monkfish and American Lobster/Jonah Crab would be developed and thereby helping the officers conduct in-depth boardings of commercial vessels. Partners would be able to continue to add FMP modules to this electronic BOJAK as needed.

Proposal for Funding made to:
Atlantic Coast Cooperative Statistics Program
Operations and Advisory Committees
150N. Highland Street, Suite 200 A-N
Arlington, VA 22204

Electronic Trip-Level Reporting for the Potomac River Fisheries Commission Commercial Fisheries Sector Revised and Updated Maintenance Request August 11, 2021

Submitted by:
Martin L. Gary
Executive Secretary
Potomac River Fisheries Commission
222 Taylor Street
Colonial Beach, VA 22443
martingary.prfc@gmail.com

Applicant Name:	Potomac River Fisheries Commission
Project Title:	Electronic Trip-Level Reporting for the Potomac River Fisheries Commission (PRFC) Commercial Fisheries Sector
Project Type:	Maintenance Project: Year One
(No change in scope of work, continued emphasis on Electronic Data Reporting using eTrips, increasing participation, and integration with PRFC databases)	
Principal Investigator:	Martin L. Gary, PRFC Executive Secretary
Project Manager:	Martin L. Gary, PRFC Executive Secretary
Requested Award Amount:	$215,612.00 for the year two maintenance project. This is intended to scale both participation and supporting IT infrastructure.
Requested Award Period:	March 1, 2021 through February 28, 2022
Original Date Submitted:	June 15, 2021
Revised Date Submitted:	August 13, 2021
Objective:	This is the second year of the project to report trip-level catch and effort data, using the ACCSP eTrips tools, from Commercial license holders who fish within the jurisdiction of the Potomac River Fisheries Commission (PRFC) beginning in the 2022 season, which begins in July 2021 for the FY22 licenses and January 2022 for the CY22 licenses, and continuing in the 2023 seasons, which begins in July 2022 for the FY23 licenses and January 2023 for the CY23 licenses.

Need:

ACCSP and its partner agencies have established the collection of trip-level data as the standard which all agencies should strive to reach and maintain. Over 60 years ago, PRFC began collecting catch and effort data from commercial shellfish (oyster and crab) and finfish permit holders, which are submitted weekly. Storage of the data in electronic databases has taken place since the late 1980s. Since that time, more details regarding the catch have been collected in terms of targeting specific locations, species, and gear. The data are reported at the trip-level on a daily basis and are submitted weekly to PRFC and provided to ACCSP twice annually for the previous calendar year.

The second year of the project will work to increase the use of census-style reporting by expanding the use of ACCSP eTrips technology among a group of PRFC Commercial license holders and evaluating the efficacy of this method compared to traditional methods.

Participating license holders will use ACCSP eTrips tools to report their catch and effort in PRFC managed waters, along with paper reports provided to PRFC to be submitted by PRFC staff also using ACCSP eTrips tools. Electronic harvest reporting has been discussed in the proceedings of meetings of advisory committees to the PRFC and the Commission itself for several years, and numerous harvesters have expressed an interest and willingness to participate. Many commercial constituents are already participating in electronic harvest reporting in Maryland or Virginia, and are eager for similar opportunities to report electronically for PRFC.

Results and Benefits:
During the second year of the project, trip-level reporting to collect catch and effort data from commercial permit holders - harvesters is a goal for all ACCSP partners. On average, on an annual basis (Table 1):

Table 1: Average Count of License Holders and Daily Catch Reports for FY19 & CY19

Gear	License Holders	Daily Catch Reports
Oyster	215	300
Crab	432	11,500
Fish	742	14,000

Presently, the PRFC staff collect, organize, validate, obtain corrections, and enter the catch data for each License Holder - Harvesters, which is a rather labor-intensive effort that potentially induces errors and is time consuming; therefore, the data stored and available for decision making reports can be lagging. The anticipated benefits use of ACCSP eTrips are faster data entry with less errors and less staff hours required.

Data Delivery Plan: During the second year of the project, ACCSP eTrips will collect all catch data reports either directly entered by commercial harvesters or entered on their behalf by PRFC staff. PRFC will leverage the ACCSP eTrips database API to synchronize eTrips catch data with the current custom designed Microsoft Access Data Management System that has been in use for many years for ALL the catch data records that are NOT being entered directly into ACCSP eTrips by the commercial harvesters. The PRFC staff will be entering catch data for some of the paper reports that are submitted to PRFC by the commercial harvesters (see Task 2 in the Approach).

PRFC will continue transmitting data twice per year for all catch reports submitted for the prior year but excluding the records that have been entered into ACCSP eTrips. This will be discontinued once two consecutive reports show 100% consistency with data from ACCSP eTrips.

Approach:
During the second year of the project, PRFC will continue to move away from the current Microsoft (MS) Access databases and Operator interface code that require all license issuing and catch data reporting performed by PRFC staff. PRFC will continue to expand its participation rate and update/improve training processes and materials. Additionally, PRFC will maintain a contract with a Software Development provider company or consultant to continue to maintain relevant interfaces and continue to develop the upgraded cloud application.

During Year 2, PRFC will be in maintenance for the following items:

1. Task 1: Continued Identification of commercial harvesters to participate:

   In the second year of the project, continue to expand participation in the project. The commercial harvester community is comprised of a mix of limited entry and open access fishery participants. Though the number varies year to year, approximately 1,400 commercial harvesters are candidates, and based upon the most recent license metrics, the target would be an additional 10% = 280 participants in year two for ACCSP eTrips. The participants will be volunteers. This would provide a reasonable sample within each Gear category that is manageable for the purpose of gaining expertise with how to use the ACCSP eTrips tools, developing enhanced training guides & gaining feedback for future participant expansion.

2. Task 2: ACCSP eTrips installation and training for commercial harvesters. It is anticipated that on average, four (4) hours will be provided to each harvester to support on data entry, submission and use of mobile devices and software. Included within the four hours are staff hours for making presentations at meetings, developing/updating "cheat sheet" guides, and identifying enhancements and overall process improvement. In addition to the harvesters, the PRFC staff will enter a sampling of a variety of paper catch reports into ACCSP eTrips:

   The PRFC staff will augment the commercial harvesters ACCSP eTrips submissions to ensure a more comprehensive data set is being processed for the purpose of identifying enhancement requests for the ACCSP eTrips tools and the data can be successfully processed (downloaded, modified / corrected, and uploaded).

3. Task 3: Maintenance of MS Access required interfaces until ACCSP eTrips collected is data is verified as 100% matching with PRFC records:
   a. Download ACCSP eTrips data from ACCSP
   b. Maintain an Operator Interface to validate downloaded data
   c. Upload verified data to ACCSP

   Harvest data entered directly into the ACCSP database using eTrips must also be stored within the PRFC database for the foreseeable future until verification of

data and reported occur. The developed software tools will need to be maintained to support the steps of downloading the ACCSP data, viewing & correcting the data if necessary.

4. Task 4: During year two of the project, PRFC intends to continue its migration towards a more modern database platform that is cloud-based, has a more consistent Operator Interface, and is able to be upgraded more efficiently. The requirements will be documented, and the selected vendor will continue to develop and implement.

5. Task 5: During year two of the project PRFC will continue to procure cloud-based resources and work with ACCSP to consider database options that may be more applicable and thus provide cost saving up-front and long term during the sustainment and maintenance phases.

6. Task 6: Continue development and maintenance of web based PRFC applications to perform PRFC office automation functions:
    a. Process License issue and renewal requests
    b. Print Licenses and associated tags, flags, and catch report forms, etc..
    c. Processing paper catch reports
    d. Reporting interface – currently there are approximately 25 unique reports with many that have sub-options
    e. Database Utility interface – currently there are approximately 13 unique operations required to modify lookup tables, set/re-set sequencing, and perform database integrity checks and repair
    f. Transition MS Access data tables to the Oracle database
    a. Train and test the new interface. Prior to the complete cutover from the existing MS Access based database applications ensure that all functionality has been incorporated and performs successfully
    b. Perform modifications as necessary to resolve technical problems
    c. Perform updates as necessary to support new requirements

    The current (historical) PRFC data will be exported, possibly reformatted, and imported into the new database system. At this point in time the two systems would be considered "functionally equivalent" and parallel testing can be conducted to ensure all requirements have been implemented. When the new system is mostly successful then the old system can be retired.

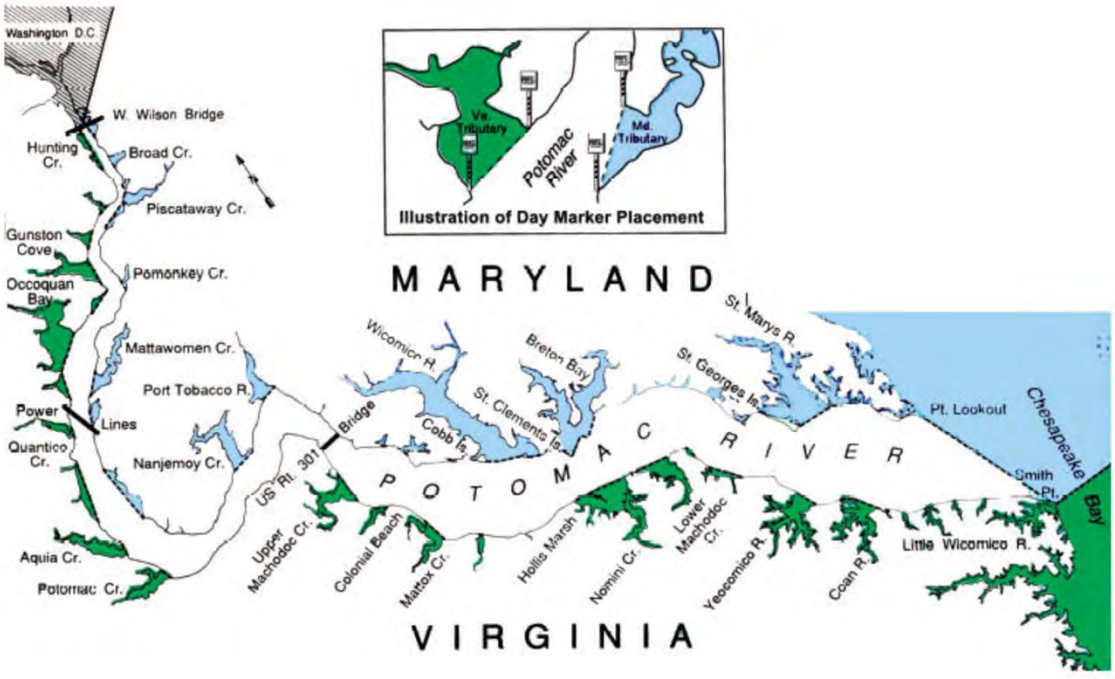
7. Task 7: Continue to increase the number of commercial harvesters using the ACCSP eTrips-tools:

    The long-range optimal goal would be to have 100% of the commercial harvesters using the ACCSP eTrips tools but a more realistic goal would be to have at least 90% participation by the end of the fourth year. The target for each year, starting with Year 2 would be to increase the participation by at

least 10% of the total number of commercial harvesters. To facilitate the effort to meet these goals:

i. Provide direct support as needed using PRFC staff via phone or in-person
ii. Presentations at various Committee meetings with demonstrations and open for questions
iii. Creating short "tri-fold" instructions specific to various topics
iv. Creating short YouTube video tutorials specific to various topics
v. Utilize existing ACCSP support products (e.g., videos, tech support and other)
vi. Incentivizing future participation by using various strategies, such as:
    1. Successful strategies used by other jurisdictions (e.g., Rhode Island license endorsement)
    2. Establishing a fee for having the PRFC staff perform the ACCSP eTrips data entry such as a flat fee - $100 per License Holder per year
    3. Fee per Gear Type - $25 for each gear type license
    4. Fee per Week per Gear Type - $5 for each weekly report for each gear type license

Geographic Location: Jurisdictional waters of the Potomac River Fisheries Commission. From the Woodrow Wilson Bridge (District of Columbia Demarcation) downriver to the confluence of the Chesapeake Bay. Approximately 100 nautical miles.



Milestone Schedule:

Task # / Month	Project Period Month											
	1	2	3	4	5	6	7	8	9	10	11	12
T1: Identification of License Holder Participants	X	X	X	X	X	X	X	X	X	X	X	X
T2: eTrips installation & training; data entry	X	X	X	X	X	X	X	X	X	X	X	X
T3: MS Access Operator Interface Maintenance	X	X	X	X	X	X	X	X	X	X	X	X
T4: Software modifications	X	X	X	X	X	X	X	X	X	X	X	X
T5: Maintain Oracle Cloud Database	X	X	X	X	X	X	X	X	X	X	X	X
T6: Develop & Maintain Oracle web-based applications	X	X	X	X	X	X	X	X	X	X	X	X
T7: Commercial Harvesters increased participation	X	X	X	X	X	X	X	X	X	X	X	X

Project Accomplishments Measurement:

The results of this project will provide the basis to improve the accuracy and timeliness of catch and effort estimations, and could subsequently inform science, stock assessments, and management policies.

The results will help determine the scope of the effort to migrate to a more robust database system that is more accessible to the Commercial License Holders.

PRFC in Year 1 completed one task fully and made progress on many others.

1. Year 1 Task 5 Completed: Established contract for the software development work required to complete Tasks 3 through 6.

PRFC will continue to monitor progress and accomplishment using the following goals and measurements.

Task	Goal	Measurement

T1: Identification of License Holder Participants	Identification of additional 10% commercial harvesters to target for enrollment in eTrips electronic catch reporting.	Records updated to reflect they have been contacted and notified about the opportunity and its benefits.
T2: eTrips installation & training; data entry	100% of identified eTrips participants who request training/support receive in person or electronic training/support.	Participant records updated to note whether training has been provided and support provided.
T3: MS Access Operator Interface Maintenance	100% completion and execution of the interface steps.	Verification that the steps executed correctly and ACCSP/PRFC data is synchronized.
T4: Software modifications	100% of requirements documented in RTM and updated to reflect Year 2 changes in process or ACCSP data requirements.	Verification that RTM is completed and updated.
T5: Maintain Oracle Cloud Database	100% of cloud-based services procured and available.	Verification by PRFC staff that cloud services are invoiced and available.
T6: Develop & Maintain Oracle web-based applications	100% of year 2 requirements identified, developed, and delivered.	Completed RTM showing Year 2 requirements marked as complete and verification by PRFC staff.
T7: Commercial Harvesters increased participation	Marketing materials developed and presented at regular meetings and in routine communications. Incentives identified and presented to the PRFC Commissioners for approval.	Verification by PRFC staff that materials were sent and communicated during meetings. Documented minutes showing discussions at Commissioner meeting.

Cost Summary (Budget):

1. BUDGET FOR PROPOSAL PLANNING – FY2021

Description	Calculation	Cost
Personnel (a)		
Principle Investigator	60 hours @ $57.57/hr	$3,429.90
Data Administrator	200 hours @ $21.12/hr	$4,223.00
Data Management Specialist	600 hours @ $11.85/hr	$7,107.00
Personnel Subtotal		**$14,759.90**
Fringe (b)		
n/a		
Fringe Subtotal		**$0**
Travel (c)		
n/a		
Travel Subtotal		**$0.00**
Equipment (d)		
Oracle Cloud Database:		
a. MySQL DB Services 1 instance, 31 days/month, 24 hours/day 1 OCPU 16 GB RAM 50 GB storage 50 GB backup	$58/month x 12 months	$696.00
b. Java Cloud Service Enterprise Edition 1 instance, 31 days/month, 24 hours/day 2 OCPU	$461month x 12 months	$5,532.00
c. Cloud Infrastructure 1 instance, 31 days/month, 24 hours/day 2 X9 OCPU 32 GB X9 RAM 50 GB storage	$164/month x 12 months	$1,968.00
d. Oracle APEX 1 instance, 31 days/month, 24 hours/day 2 OCPU 1 TB Storage	$598/month x 12 months	$7,176.00
Equipment Subtotal		**$15,372.00**
Supplies (e)		
n/a		
Supplies Subtotal		**$0.00**

Contractual (f)		
In-house Consultant/Developer	396 hours @ $103/hr	$40,788.00
Vendor/Developer	1,121 hours @ $123.60/hr	$138,555.60
Contractual Subtotal		**$179,343.60**
Other (h)		
n/a		
Totals		
Total Direct Charges (i)		$209,475.56
Indirect Charges (j)	n/a	$0.00
Total (sum of Direct and Indirect) (k)		$209,475.56

2. BUDGET – FY2020 – APPROVED BY ACCSP

Description	Calculation	Cost
Personnel (a)		
Principle Investigator	60 hours @ $55.50/hr	$3,330.00
Data Administrator	200 hours @ $20.50/hr	$4,100.00
Data Management Specialist	600 hours @ $11.50/hr	$6,900.00
Fringe (b)		
Principle Investigator	14% of salary	$455.55
Data Administrator	51% of salary	$2,092.93
Data Management Specialist	49% of salary	$3,401.46
Travel (c)		
n/a		
Equipment (d)		
Oracle Cloud Database:		
e. MySQL DB Services 1 instance, 31 days/month, 24 hours/day 50 GB storage 50 GB backup	$21/month x 8 months	$168.00
f. Java Cloud Service Enterprise Edition 1 instance, 31 days/month, 24 hours/day	$550/month x 8 months	$4,400.00
g. Cloud Infrastructure 1 instance, 31 days/month, 24 hours/day 50 GB storage	$33/month x 8 months	$264.00
Supplies (e)		
n/a		

Contractual (f)		
In-house Consultant/Developer	501 hours @ $100/hr	$50,100.00
Vendor/Developer	1,180 hours @ $130/hr	$140,400.00
Other (h)		
n/a		
Totals		
Total Direct Charges (i)		$215,612.00
Indirect Charges (j)	n/a	$0.00
Total (sum of Direct and Indirect) (k)		$215,612.00

BUDGET NARATIVE

(Requested Funding Period, FY21)

Project:	Electronic Trip-Level Reporting for the Potomac River Fisheries Commission (PRFC) Commercial Fisheries Sector
Project Period:	1 March 2020 – 28 February 2021
1 Year Funding:	$209,475.56
Prepared By:	Martin L. Gary, PRFC Executive Secretary

Personnel (Salaries) $14,759.90: Three PRFC employees' salary time will be covered using these funds. The three employees are: Principle Investigator, for 60 hours ($3,429.90); Data Administrator, for 200 hours ($4,223.00), and a Data Management Specialist, for 600 hours ($7,107.00).

Fringe Benefits $0.00: N/A

Travel $0.00: N/A

Equipment $15,372.00: Oracle Cloud Infrastructure (OCI) resources are procured to host the PRFC interface between ACCSP and PRFC's MS Access application on a monthly basis. Additionally, PRFC's modernized application runs on the OCI infrastructure as well.

Supplies $0.00: N/A

Contractual $179,343.60:

In-house Consultant – Ray Draper: $40,788.00

Updating the existing PRFC Access based application will require the knowledge and expertise of the consultant/developer Ray Draper. Ray has designed and developed the entire PRFC application from the ground up over the last 15 years and will be the primary developer of the ACCSP interface. This work will require five (5) months of part-time development work, estimated at 396 hours total, and PRFC has contracted with Ray at a rate of $103 an hour to perform these services.

Talent & Technical Solutions Corporation (TTSC): $138,555.60

Developing a new PRFC database, procuring cloud services and infrastructure, and assisting with the PRFC existing application integration will be handled by TTSC. PRFC has contracted with TTSC at a rate of $123.60 an hour and expects the work to support T3, T4, T6, and T7 to take 12 months of part-time work and an estimated 1,121 hours.

Other $0.00: N/A

BUDGET NARATIVE

(Approved Funding Period, FY20)

Project: Electronic Trip-Level Reporting for the Potomac River Fisheries Commission (PRFC) Commercial Fisheries Sector

Project Period: 1 March 2020 – 28 February 2021

1 Year Funding: $215,612.00

Prepared By: Martin L. Gary, PRFC Executive Secretary

Personnel (Salaries) $14,330.00: Three PRFC employees' salary time will be covered using these funds. The three employees are: Principle Investigator, for 60 hours ($3,330.00); Data Administrator, for 200 hours ($4,100.00), and a Data Management Specialist, for 600 hours ($6,900.00).

Fringe Benefits $5,950.00: The current PRFC fringe benefit cost is set per employee at: Principle Investigator at 14% of Salary ($455.55), Data Administrator at 51% of salary ($2,092.93), and Data Management Specialist at 49% of salary ($3,401.46). The Principle Investigator falls within the fringe guidelines set forth by NOAA, however, a full breakdown of how the Fringe Benefits are calculated below (PRFC does not have a NICRA established).

		Principle Investigator	Data Administrator	Data Management Specialist
Gross	Annually	$ 111,000.00	$ 41,000.00	$ 23,000.00
	Hourly	$ 55.50	$ 20.50	$ 11.50
Fringe	Health	$ -	$ 15,418	$ 8,333
	Retirement	$ 13,086	$ 4,945	$ 2,696
	Life	$ 1,499	$ 566	$ 309
	Disability	$ -	$ -	
	Def Comp	$ 600	$ -	$ -
	Total:	$ 15,185	$ 20,929	$ 11,338
	Per Hour:	$ 7.59	$ 10.46	$ 5.67
Hours / Year:	2000			
	Rate:	14%	51%	49%
		$ 7.59	$ 10.46	$ 5.67
	Hours:	60	200	600
		$ 455.55	$ 2,092.90	$ 3,401.40
	Total Cost:	$ 3,330.00	$ 4,100.00	$ 6,900.00

Travel $0.00: N/A

Equipment $4,832.00: Oracle Cloud Infrastructure (OCI) resources are procured to host the PRFC interface between ACCSP and PRFC's MS Access application on a monthly basis. Additionally, PRFC's modernized application runs on the OCI infrastructure as well.

Supplies $0.00: N/A

Contractual $190,500.00:

In-house Consultant – Ray Draper: $50,100.00
Updating the existing PRFC Access based application will require the knowledge and expertise of the consultant/developer Ray Draper. Ray has designed and developed the entire PRFC application from the ground up over the last 15 years and will be the primary developer of the ACCSP interface. This work will require five (5) months of part-time development work, estimated at 501 hours total, and PRFC has contracted with Ray at a rate of $100 an hour to perform these services.

Talent & Technical Solutions Corporation (TTSC): $140,400.00
Developing a new PRFC database, procuring cloud services and infrastructure, and assisting with the PRFC existing application integration will be handled by TTSC. PRFC has contracted with TTSC at a rate of $130 an hour and expects the work to support T3, T4, T6, and T7 to take 12 months of part-time work and an estimated 1,180 hours.

Other $0.00: N/A

Maintenance Projects History for Primary Program Priorities:

Funding Fiscal Year	Amount	Time Period	Results/Comments
2020	$215,612.00	1 Mar 2020 – 28 Feb 2021	Pilot implementation of ACCSP eTrips and initial development of PRFC Interface & modernized cloud application

Ranking Guide – Maintenance Projects:

Primary Program Priority	**Point Range**	**Description of Ranking Consideration**
Catch and Effort Biological Sampling Bycatch/Species Interactions Social and Economic	0 – 10 0 – 10 0 – 6 0 – 4	Rank based on range within module and level of sampling defined under Program design. When considering biological, bycatch or recreational funding, rank according priority matrices.
Data Delivery Plan	+ 2	Additional points if a data delivery plan to Program is supplied and defined within the proposal.

Project Quality Factors	**Point Range**	**Description of Ranking Consideration**
Multi-Partner/Regional impact including broad applications	0 – 5	Rank based on the number of Partners involved in project OR regional scope of proposal (e.g. geographic range of the stock).
> yr 2 contains funding transition plan and/or justification for continuance	0 – 4	Rank based on defined funding transition plan away from Program funding or viable justification for continued Program funding.
In-kind contribution	0 – 4	1 = 1% - 25% 2 = 26% - 50% 3 = 51% - 75% 4 = 76% - 99%
Improvement in data quality/quantity/timeliness	0 – 4	1 = Maintain minimum level of needed data collections 4 = Improvements in data collection reflecting 100% of related module as defined within the Program design. Metadata is provided and defined within proposal if applicable.
Potential secondary module as a by-product (In program priority order)	0 – 3 0 – 3 0 – 3 0 – 1	Ranked based on additional module data collection and level of collection as defined within the Program design of individual module.
Impact on stock assessment	0 – 3	Rank based on the level of data collection that leads to new or greatly improved stock assessments.

Other Factors	**Point Range**	**Description of Ranking Consideration**
Properly Prepared	-1–1	Meets requirements as specified in funding decision document Step 2b and Guidelines
Merit	0 – 3	Ranked based on subjective worthiness

***Maintenance funding requested*)**

Ranking Factors	Point Range	Description of Ranking Consideration
Achieved Goals	0 – 3	Proposal indicates project has consistently met previous set goals. Current proposal provides project goals and if applicable, intermediate metrics to achieve overall achieved goals.
Data Delivery Plan	0 – 2	Ranked based if a data delivery plan to Program is supplied and defined within the proposal.
Level of Funding	-1 – 1	-1 = Increased funding from previous year 0 = Maintained funding from previous year 1 = Decreased funding from previous year
Properly Prepared	-1 – 1	-1 = Not properly prepared 1 = Properly prepared
Merit	0 – 3	Ranked based on subjective worthiness

Proposal for funding made to the
Coordinating Council and the Operations Committee
Atlantic Coastal Cooperative Statistics Program
1050 N. Highland St., Ste. 200A-N
Arlington, VA 22201

FY22: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island

Submitted By:
Nichole Ares
Rhode Island Department of Environmental Management
Division of Marine Fisheries
3 Fort Wetherill Rd
Jamestown, RI 02835
nichole.ares@dem.ri.gov

Applicant Name: Rhode Island Department of Environmental Management, Division of Marine Fisheries

Project Title: **FY22: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island**

Project Type: Maintenance

Requested Award Amount: **$27,521**

Requested Award Period: FY 2022 (August 1, 2022 to July 31, 2023)

Primary Program Priority: Commercial and Recreational Catch and Effort Module

Date Submitted:

Project Supervisor: John Lake, Supervising Biologist, john.lake@dem.ri.gov
Principal Investigator: Nichole Ares, Principal Biologist, nichole.ares@dem.ri.gov
Project Staff: Nicole Lengyel Costa, Principal Biologist, nicole.lengyel@dem.ri.gov
Seasonal Interns

Atlantic Coastal Cooperative Statistics Program (ACCSP) Proposal

Bold Comments indicate sections that help with the ranking process

for the State of Rhode Island

Objectives:

- Provide new and existing Rhode Island (RI) seafood dealers with technical support to maintain and improve dealer electronic reporting to the Standard Atlantic Fisheries Information System (SAFIS) pursuant to RI Marine Fisheries Statutes and Regulations.
- Provide technical and analytical support to the RI Marine Fisheries Quota Monitoring Program as well as maintain dealer compliance monitoring protocols for both quota and non-quota managed species by utilizing commercial landings data from SAFIS.
- Collect and enhance trip-level catch and effort data through the RI Marine Fisheries Commercial Harvester Catch and Effort Logbook Program and the RI Electronic Recreational Logbook (eLOGBOOK) Program and continue to transition commercial fishermen to electronic trip reporting.
- Maintain and improve the existing data feed of RI supplemental fisheries data to the ACCSP data warehouse.

Need:

Beginning in 2006, the Rhode Island Division of Marine Fisheries (RIDMF) implemented the marine fisheries commercial data collection program. This program collects trip level landings data from all 136 dealers licensed in RI through direct dealer entry into the eDR (electronic dealer report) SAFIS application. Catch and effort data are currently collected from 100% of the fishermen in the state for the finfish, squid, whelk, and crustacean sectors. RI meets the ACCSP standard by maintaining a one-ticket system for the shellfish fishery sector and a two-ticket system for the crustacean, squid, finfish, and whelk fishery sectors. In addition, crustacean dockside sales are collected through a supplementary paper logbook which captures daily data of all sales. Data are transferred to the ACCSP data warehouse in the proper format annually.

Maintenance and coordination of the SAFIS data entry is critical for successful fisheries management in RI. This data has been essential for the determination of commercial catch and effort statistics, establishing an efficient quota monitoring process, and tracking active verses latent license holders. Quota monitoring is one of the most important uses of SAFIS data, as staff analyze trip level commercial landings data for quota managed species in RI daily. These analyses are used to make decisions regarding seasonal closures and possession limit changes.

Recreational data is collected. RI ACCSP staff is also responsible for outreach and support of the voluntary eLOGBOOK program; this SAFIS application is used to enter and house recreational catch and effort data. Additionally, in 2019, RIDMF established mandatory party and charter trip level electronic reporting. This increases the amount of recreational data collected and will provide a better understanding of the party and charter industry through accurate trip counts, census effort data, discard information, and catch rate data.

In addition to recreational and commercial data, as of 2020 RI requires trip level aquaculture reporting into SAFIS. Previously, a single data point was supplied to ACCSP for inclusion in the spring data upload for each species. Now, dealers must report each aquaculture

purchase to SAFIS eDR, improving our understanding of the aquaculture industry in RI. This data will show seasonal trends, provide a better understanding of the economic impact of the industry, and allow for better tracking of human health concerns such as vibrio monitoring.

Furthermore, RI ACCSP staff continues to provide data feeds for lobster at-sea and port sampling data via the Atlantic States Marine Fisheries Commission (ASMFC) Lobster Database as well as supplemental horseshoe crab and dockside data for the Fisheries of the United States via ACCSP. Data feeds for finfish sampling to the ACCSP warehouse will continue to be developed and RI ACCSP staff will need to maintain this data feed once it is active.

With these programs established and planned enhancements scheduled for 2022, the goal of this project is to maintain these data feeds to the ACCSP while continuing to improve data quality as well as maintaining outreach to dealers and fishermen. The plan detailed below is similar to the scope of work proposed for the past several years.

Results and Benefits:

Collecting high quality, comprehensive fisheries data is essential to successful fisheries assessment and management. This project allows the current level of oversight and coordination of the ACCSP to continue in RI by providing funding for the staff necessary to maintain the project. **RI relies on comprehensive SAFIS eDR and eTRIPS/RI Commercial Harvester Logbook data for fisheries management programs including quota monitoring, resource assessment and allocation, and license tracking. The state also relies on eLOGBOOK data and the newly required census party and charter data; it enhances and adds to the existing MRIP dataset with regarding landings and discards** and increases our understanding of the length frequency distribution of recreational harvest. This comprehensive and timely data allows RIDMF to establish higher latitude in management programs which is encouraged by the fishing industry. **Additionally, once in the ACCSP data warehouse, the catch and effort and biological sampling data provided by RI can be utilized by other partners and stock assessment scientists for regional scientific assessment of important fish populations.** Although the work outlined in this proposal is specific to RI, **the presence of RI ACCSP staff provides benefits to regional partners; including increased coordination between state and federal program partners, increased technical assistance, as well as sharing of data collection methodology and troubleshooting techniques.**

Data Delivery Plan:

All landings data and catch and effort data collected by RI is entered in SAFIS. Landings data of both wild harvest and aquacultured species is entered directly into SAFIS eDR by the dealer twice a week and immediately available to ACCSP. Catch and effort (logbook) data (both commercial and party/charter) is submitted to SAFIS eTRIPS throughout the year, typically data entry is completed by March of the following year. **Once entered, all data is immediately available to ACCSP and other program partners who utilize SAFIS and the SAFIS tables within the warehouse. This data is also incorporated into the warehouse tables during the yearly uploads and available for warehouse users annually.**

Additionally, RIDMF collects data on crustacean dockside sales, horseshoe crabs, lobster (sea, port, and ventless surveys), and finfish port sampling. **Currently, the dockside sale,**

horseshoe crab, and lobsterdata is converted into the proper flat file format and submitted to ACCSP during the spring upload. The data feed for the finfish port sampling is still being developed, once active, RI data will be submitted.

Approach:

All licensed seafood dealers in RI (approximately 136 dealers) are electronically entering trip level data into SAFIS at least twice weekly (RIMF, 2018). Dealers are provided support and initial SAFIS training regarding the SAFIS eDR system. **Technical support is provided to dealers who call, email, or walk-in daily for questions regarding licensing, possession limits and seasons, reporting, and other topics. Site visits are conducted if further support and training are necessary.**

To ensure data quality and proper SAFIS reporting, RIDMF strictly monitors dealer compliance. Phone calls are made to dealers who fall behind in reporting, and in cases where dealers are found to be non-compliant, administrative action is taken. Rhode Island Department of Environmental Management (RIDEM) Division of Law Enforcement becomes involved when a dealer has repeatedly violated compliance regulations. To summarize a dealer's compliance performance, dealer "report cards" assigning qualitative grades are mailed quarterly to all dealers. It contains information regarding the number of reports made during a period, the number of reports that were submitted late, and the number of times RIDMF staff needed to contact the dealer regarding late reporting and reporting mistakes.

Landings entered by dealers are routinely checked for accuracy, both via SAFIS audit protocols daily, and through additional weekly audits. Any issues discovered during these audits are addressed with dealers and corrected via National Marine Fisheries Service (NMFS) JIRA or through eDR directly. **Licensing and commercial vessel data generated from RIDEM are kept up to date in SAFIS tables through weekly updates via the SAFIS Management System (SMS).** These audits and updates are of great importance and are necessary to maintain high standards of data quality.

Quota monitoring relies solely on accurate and up to date SAFIS data. Data are downloaded from SAFIS daily and analyzed using a software program developed in the statistical package R (R core team 2016). Once data are in the software program, they are sorted and filtered to detail daily landings of fluke, scup, black sea bass, striped bass, tautog, menhaden, bluefish, and smooth dogfish. **This data is then used to make fisheries management decisions, possession limit changes, and early seasonal closure decisions. Non-confidential, graphical updates of cumulative RI landings are then posted weekly to the RIDMF webpage as public information.**

Data requests and validations from fishermen, academics, stock assessment scientists, the RIDEM Licensing Division, and other stakeholders are also completed. **These requests support fisheries science and management decisions and are necessary to maintain the level of support required by RIDEM and other regional fisheries managers. The data obtained becomes available to support state and regional stock assessments, economic analyses, and research.** All requests include only non-confidential data unless confidential access is granted

through ACCSP channels. RI ACCSP staff are needed both to complete these data requests and handle confidential data access requests originating from ACCSP.

In addition to monitoring SAFIS landings data, metadata and socio-economic data are also collected by RI ACCSP staff. Examples of metadata include but are not limited information regarding weather (i.e. wind data), possession limits, and closed fishing seasons. Socio-economic data collected comes primarily from dockside sales of crustaceans from the state dockside sales logbook. Economic data entered by the dealers are used in monthly summaries for RI's two largest ports, Point Judith and Newport. The data are used to justify funding for port improvements and maintaining shoreside operations that enhance fisheries. Data are also used to highlight seafood availability and provide the basis for public outreach promoting local seafood consumption and improving the state's economy through support of the fishing industry.

Catch and effort data for all fisheries are essential to provide efficient and effective management. **Harvesters in all commercial fisheries are required by RI law to submit catch and effort data to RIDMF. Currently, all finfish, crustacean, squid, and whelk commercial fishermen are required to submit catch and effort information.** Shellfish fishermen are not required to submit catch and effort logbooks because the data is captured via a one-ticket system.

There are approximately 1700 commercially licensed fishermen in RI. Fishermen with a reporting requirement fall into two main categories: fishermen with a federal VTR requirement, and fishermen without a federal VTR requirement. Fishermen with a VTR requirement report to NMFS. Fishermen without a VTR requirement report to RIDMF and can elect to report either via the paper logbook, or electronically utilizing SAFIS eTRIPS. Due to the multiple reporting options, at the time of license renewal/purchase the **fishermen must declare a reporting method: federal VTR, state paper logbook, or eTRIPS. Fishermen who selected paper logbook are also required to purchase the paper logbook endorsement to help contribute to the printing, mailing, data entry, and administrative costs of the paper logbook program.**

Federal fishermen are exempt from the state logbook program to ensure there is not duplicate effort information being collected, however they are still required per regulation to submit reports. At the beginning of the year, all fishermen who declared VTR as their reporting method are mailed a "VTR Declaration Form," that asks for their federal permit and commercial fishing license number. **This information is then used to track compliance for the fishermen using the online NMFS database.** This system for VTR compliance eases the burden on both the fishermen and RIDMF. Fishermen are now reporting their catch and effort information to a single source (NMFS), decreasing confusion and mailing costs. This also decreases staff time used to track VTR compliance.

Fishermen without a VTR requirement must submit catch and effort information directly to RIDMF either via a paper logbook or through eTRIPS/eTRIPS Mobile. **All fishermen who report via the logbook need to submit quarterly catch and effort paper logbooks. They are provided postage-paid envelopes by RIDMF** to ensure timely return of completed logbooks. **Data quality is checked for each logbook submitted and any missing or inaccurate information is corrected through contacting the fishermen.** Any logbook not completed in full is returned to the fishermen for correction.

Since 2012, RI fishermen have had the ability to enter their catch reports directly into eTRIPS. Currently there are approximately 859 eTRIPS accounts in RI issued to fishermen who declared eTRIPS as their reporting method; **this is equivalent to 58% of all fishermen with a reporting requirement, a large increase as 26% of fishermen were utilizing eTRIPS in 2014** (Figure 2: Reporting Method Breakdown). To help continue the trend to electronic reporting, RIDMF staff offers support to fishermen who want to learn and use the program. **Training materials are available on the RIDMF website, and staff routinely answer phone calls, emails, and walk-in questions about eTRIPS.** While electronic reporting is not mandatory per any regulatory agency, RIDMF will continue outreach for eTRIPS to continue to increase the number of fishermen using electronic reporting.

RIDMF also does outreach and support for eTRIPS-Mobile and will continue this in the future. The application allows for both real time data entry as well as post-trip entry. Reports submitted through this application fulfill both state reports and NMFS Greater Atlantic Regional Fisheries Office (GARFO) VTRs. RI has also adopted eTRIPS-Mobile as a mandatory reporting method for a pilot aggregate landing program, further increasing its use. In 2020 there were 67 users an increase from just 39 in 2018. Due the ease of use, GARFO acceptance, and use in RI pilot programs use has been increasing. **Utilizing the mobile application and offering training on the program will allow fishermen to enter data in real time, resulting in more accurate and time sensitive entries.**

All reports directly entered by the fishermen electronically are audited; in the event an error is found, the fisherman is contacted and sent a report with any corrections that need to be made. In addition to audit reports, **emails are sent to all RI eTRIPS users detailing the common errors seen during the audit process and importance of accurate reporting.**

RI commercial licensees may not renew their licenses unless they have correctly completed their catch and effort logbooks or eTRIPS reports for the entire year. Additionally, **harvester license number, dealer, and sale date from the catch and effort data are used to match records with dealer reports for quality control and assurance of the landings data.**

F**ishermen who hold a RI crustacean dockside sales endorsement must fill out a dockside sales logbook which details the quantity, market, grade, and price of all crustaceans sold at the dock.** The dockside sales logbook is mailed to the 301 dockside endorsement holders and must be completed before the licensee can renew their license for the following year. **The dockside sales data captures some of RI's economic data, and this data is transmitted to the ACCSP as supplementary data.** RI staff is needed to oversee data entry, perform quality checks, and transfer the sale data to ACCSP in the proper format annually.

Reporting of all party and charter trips became mandatory in 2019. Per RIMF Regulations, all trips must be reported electronically through either eTRIPS or eTRIPS Mobile within 48 hours of landing. Staff are needed to train fishermen, audit data, check compliance, and provide support to the industry. **This data will also provide a clearer picture of the party/charter fleet in RI and allow more flexibility within the regulations for the fleet.**

RI will continue to utilize and promote the voluntary eLOGBOOK program. This data can be used for recreational effort estimates as well as for important management decisions. The eLOGBOOK data also contains lengths of both fish harvested and released. This data was useful for all partners in the **bluefish stock assessment, as discard data was used in the 2015 benchmark assessment.**

RIDMF has port and at-sea sampling programs for selected commercial fisheries within the state. **The port sampling program focuses on collecting biological samples required by ASMFC fishery management plans.** These species include striped bass, weakfish, tautog, bluefish, menhaden, lobster, and Jonah crab. **RIDMF's at-sea lobster sampling program focuses on ASMFC management needs** as well as state specific data needs. **RIDMF provides the data feed of lobster port and at-sea sampling data to ACCSP via the ASMFC Lobster Assessment Database.** Neither the lobster sampling programs nor the finfish sampling programs receive funding from ACCSP.

RIDMF staff also sit on ACCSP committees including: Operations Committee, Biological Review Panel, Bycatch Prioritization Committee, Commercial Technical Committee, Information Systems Committee, Standard Codes Committee, and Recreational Technical Committee. RIDMF staff are heavily involved in all aspects of ACCSP and contribute in full to all partners' interest.

From 2002 through 2016, RI utilized primarily contract employees through ASMFC to manage the ACCSP data collection program funded through ACCSP. In February 2016, RIDMF hired a state full-time employee to fill the ACCSP Coordinator duties. Project staff will continue to provide support with processing and data entry of harvester logbooks, aiding with compliance monitoring and data auditing, quota monitoring and compliance issues relevant to SAFIS, SAFIS technical support and outreach, ACCSP committees, eTRIPS and eLOGBOOK outreach, grant management, and long-term program development.

This proposal represents a recurring project funded by ACCSP for the past sixteen years. With a total budget of $94,582, 71% of the total cost is an in-kind contribution from RIDMF. Table 1 provides a brief project history of ACCSP Implementation in RI. Cost details for fiscal year 2022 are outlined in the requested budget while last year's requested funding is presented in Appendix A.

In a RIDMF white paper, Gibson and Lazar (2006) documented the deficiencies of the Rhode Island Marine Fisheries program and argued that significant infusion of funding and staff is needed. The RIDMF Marine Fisheries section has undergone a peer reviewed evaluation and need assessment, which concluded that RIDMF Marine Fisheries requires more staff to effectively maintain its services (Boreman et al., 2006). However, like many other states on the Atlantic Coast, the state of RI is experiencing fiscal shortfalls. **RIDMF is starting to actively assume some of the costs of ACCSP programs by devoting more staff time to the project and continues to seek alternate funding sources for the project.** In 2010 the state of RI implemented the RI Recreational Saltwater License. **Funds from license receipts are dedicated to the salary of a recreational biologist as well as improving data quality. The recreational biologist sits on the ACCSP recreational technical committee and manages**

eLOGBOOK and party and charter reporting, thus these funds now help support the ACCSP program. Encouraging commercial fishermen to transition from paper logbooks to the eTRIPS reporting method through incentives, training programs and regulations has already decreased and ultimately will eliminate some of the costs surrounding the distribution and data entry required for paper logbooks. This will reduce the RIDMF's dependence upon ACCSP funds for maintaining timely and accurate data feeds and will be completed as funding and staff time allows. **Furthermore, the transition the ACCSP coordinator from a fisheries specialist ASMFC employee to an RIDEM FTE (Principal Biologist) shows RIDMF's dedication to covering the costs of the ACCSP program in the future, but asks for funding assistance during this transitional time.**

RIDMF also recognizes the recent changes made to maintenance proposals regarding funding opportunities. While FY21 was originally the last year RI could request funding for this project, due to COVID 19 an additional year of funding is being requested at the FY21 funding level. An account of RIs need to continue this project with ACCSP funding for an additional year, and the plan to continue this project with an alternative funding source for FY23 and beyond is contained in Appendix C. While a plan is in place for FY23, RI is in a financial shortfall for FY22, so the additional year of available funding is important to RI and its ACCSP program.

Geographic Location:

The project will be administered out of the Rhode Island Division Marine Fisheries office in Jamestown, RI. The scope of the project covers all of RI and adjacent state and federal waters fished by RI license holders.

Program Accomplishment Measurement Metrics:

The success of the project will be measured by the following metrics:

Goal	Metric	Accomplished
Data Delivery to ACCSP	Supplemental data complete, correct, and available for spring upload	Data delivered to ACCSP in March annually
Landings and Effort Data Delivery to ACCSP	Trips Entered by application	eDR: 18,541 state only trips eTRIPS: 19,123
Support to RI Licensed Seafood Dealers	Dealer trainings, site visits, and other outreach.	14 new dealers Phone call and email correspondence was made
Quota Monitoring	Number of possession limit changes and early closures during determined through accurate SAFIS data	30 changes in possession or early season closures

Table 1. Project History.

Year	Title	Cost	Results
2000	Implementation of the ACCSP Program in Rhode Island	230,938	Planning and development of ACCSP commercial module implementation
2001	Implementation of ACCSP Continuation	20,000	Implementation of trip level reporting for all RI lobster harvesters, Commercial fishing license reconstruction
2002	Implementation of Phase 2 of ACCSP in the State of Rhode Island	133,084	ACCSP coordinator hired, planning and development of electronic dealer reporting system (RIFIS)
2003	Implementation of Phase 3 of ACCSP in the State of Rhode Island	131,760	Phased Implementation of RIFIS with focus on high volume dealers
2004	Continued Implementation of the ACCSP Program in the State of Rhode Island	159,716	Transition of RIFIS to SAFIS, implementation of federally permitted dealers
2005	Continued Implementation of the ACCSP Program in the State of Rhode Island	95,365	Quota monitoring system developed using SAFIS data, regulation created requiring all RI dealers to report landings via SAFIS
2006	Continuation of SAFIS and Finfish Logbooks in Rhode Island	150,365	Implementation of SAFIS completed, Development of harvester logbook for finfish and crustacean fishery sectors
2007	Coordination and Development of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	145,697	Implementation of harvester logbook for finfish and crustacean fishery sectors
2008	Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	128,647	Implementation of Dockside Sales Logbook, work begun on feeding data to ACCSP, maintenance of Data collection programs
2009	Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	142,075	Data feeds of Logbook data and lobster biological sampling developed.
2010	Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	100,983	eREC developed and eTrips pilot program started, data feeds continued, Fluke sector monitoring database developed, dealer report card system developed
2011	Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	85,584	Automatic data feed for catch and effort data established via eTRIPS, eREC maintained and developed, data feeds continued
2012	Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	99,379	Maintenance of automatic data feed for catch and effort data via eTRIPS on a real time basis, maintenance of eLOGBOOK, data feeds continued
2013	FY13: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	91,416	RSA tracking improved, maintenance of automatic data feed for catch and effort data via eTRIPS upload, maintenance of eLOGBOOK, data feeds continued
2014	FY14: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	85,408	RSA tracking improved, maintenance of automatic data feed for catch and effort data via eTRIPS upload, maintenance of eLOGBOOK, data feeds continued
2015	FY15: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	79,719	Maintenance of automatic data feed for catch and effort data via eTRIPS on a real time basis, maintenance of eLOGBOOK, data feeds continued. Improvements to party and charter industry tracking. eTRIPS user outreach and training
2016	FY16: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	79,736	Maintenance of automatic data feeds for catch and effort data via eTRIPS, maintenance of eLOGBOOK data feeds continued. Outreach of eTRIPS Mobile application. Continue eTRIPS user training and outreach.
2017	FY17: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	78,420	Maintenance of automatic data feeds for landings catch and effort data via SAFIS, eLOGBOOK data feeds, and supplemental data feeds. Outreach of eTRIPS-Mobile. Continue SAFIS user training and outreach.
2018	FY18: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	76,920	Maintenance of automatic data feeds for landings catch and effort data via SAFIS, eLOGBOOK data feeds, and supplemental data feeds. Outreach of eTRIPS-Mobile. Continue SAFIS user training and outreach.
2019	FY19: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	76,920	Maintenance of automatic data feeds for landings catch and effort data via SAFIS, eLOGBOOK data feeds, and supplemental data feeds. Outreach of eTRIPS-Mobile. Continue SAFIS user training and outreach.
2020	FY20: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	55,043	Maintenance of automatic data feeds for landings catch and effort data via SAFIS, eLOGBOOK data feeds, and supplemental data feeds. Outreach of eTRIPS-Mobile. Continue SAFIS user training and outreach.
2021	FY21: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	27,521	Maintenance of automatic data feeds for landings catch and effort data via SAFIS, eLOGBOOK data feeds, and supplemental data feeds. Outreach of eTRIPS-Mobile. Continue SAFIS user training and outreach.

Table 2. Milestone Schedule

Activity	Month														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SAFIS Support to RI Dealers	X	X	X	X	X	X	X	X	X	X	X	X			
Quota Monitoring	X	X	X	X	X	X	X	X	X	X	X	X			
eTRIPS support to industry	X	X	X	X	X	X	X	X	X	X	X	X			
eTRIPS logbook Data Entry	X	X	X	X	X	X	X	X	X	X	X	X			
Data Feeds to ACCSP	X	X	X	X	X	X	X	X	X	X	X	X			
Semi and Annual Report Writing							X					X	X	X	X

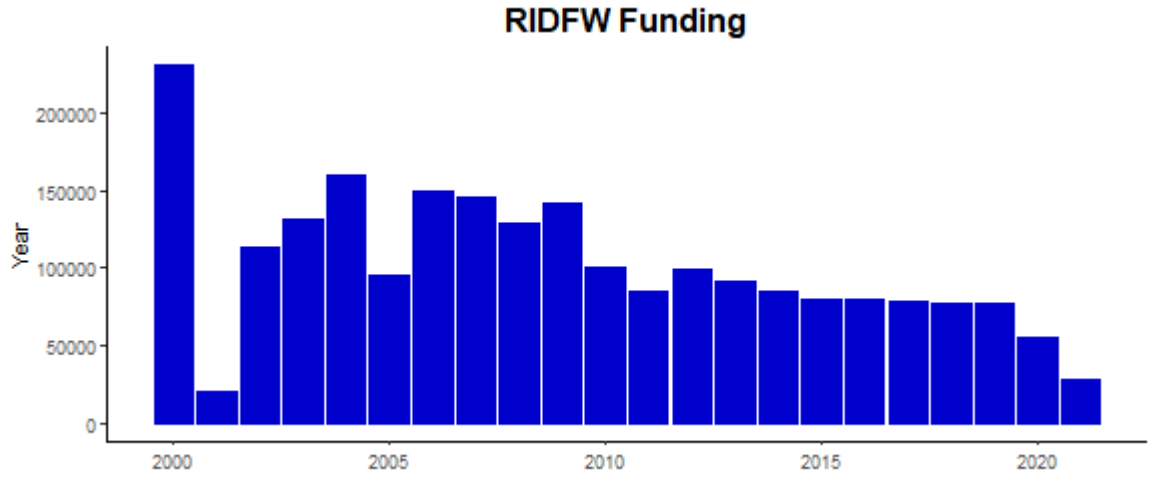


Figure 1. RIDMF past funding from ACCSP.

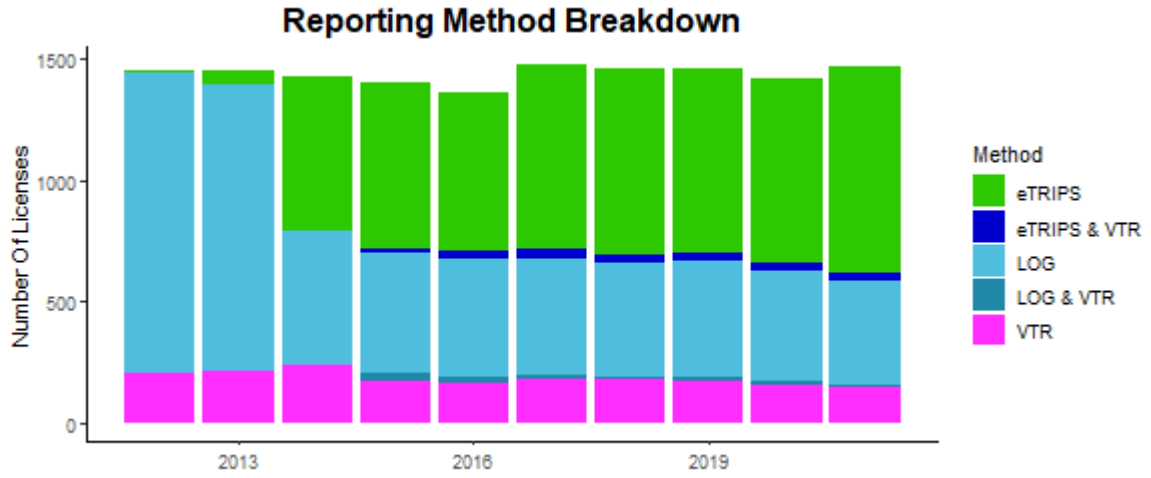


Figure 2: Reporting Method Breakdown

References:

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Gibson M. and N. Lazar. 2006. Rhode Island Division of Fish and Wildlife, Marine Fisheries Section 2006: Current Activities, Funding, and an Appraisal of Future Needs. RIDEM Internal Document, August 2006.

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Requested Budget FY 2022 (August 1, 2022 to July 31, 2023)

Item	ACCSP Share	Direct State Share	Total
Supervising Biologist (FTE 3%)	$0	$3,655	$3,655
Principal Biologist (FTE 10%)	$0	$10,781	$10,781
Principal Biologist (FTE 27%)	$14,525	$18,177	$56,568
Seasonal Interns - 2 (RIDEM 40% each)	$8,553	$3,868	$12,422
Indirect Charges (RIDEM FTE 19.25%)	$4,443	$7,022	$24,365
Total Personnel	$27,521	$43,503	$71,025

EQUIPMENT & SUPPLY:

Item	ACCSP Share	Direct State Share	Total
Logbook Printing @ $5.91 per logbook	$0	$3,546	$3,546
Logbook Mailing @ $4.75 per logbook	$0	$2,850	$2,850
Dockside Printing @ $4.96 per logbook	$0	$1,488	$1,488
Dockside Mailing @ $5.91 per logbook	$0	$1,773	$1,773
Business reply envelope printing	$0	$2,500	$2,500
Business reply account	$0	$1,500	$1,500
Website development and updating	$0	$2,400	$2,400
Outreach mailing	$0	$3,000	$3,000
Office supplies	$0	$1,000	$1,000
Telephone & Fax Usage	$0	$500	$500
Vehicle Usage and Travel	$0	$3,000	$3,000
Total Supply	$0	$23,557	$23,557

TOTAL:

Item	ACCSP Share	Direct State Share	Total
Total Direct Charges	$27,521	$67,060	$94,582
Percentage	29%	71%	

Bold Comments indicate sections that help with the ranking process

COST DETAILS:

Description of Budget categories and expenses for this project.

a. Salary

Each person spends a fraction of their time working on this grant in a team effort. The annual salaries for personnel and the percentage of their time spent on this project are as follows:

From ACCSP:

i. **Principal Biologist/ ACCSP Coordinator:** 12% ACCSP funded position to act as support to the ACCSP Coordinator; 12% of salary and fringe benefits for one year = $14,525.

ii. **Seasonal Interns:** Support for 2 Seasonal Interns to assist with data entry 40% of annual salary = $8,553.

From RIDEM as match:

i. **Supervising Biologist:**
Approximately 3% of annual salary and fringe benefits equals $3,655.

ii. **Principal Biologist:**
Approximately 10% of annual salary and fringe benefits equals $10,781.

iii. Principal Biologist

iv. Approximately 15% of annual salary and fringe benefits equals $18,177.**Seasonal Interns:**
Support for 2 Seasonal Interns to assist with data entry.
Approximately 17% of annual salary $3,868.

b. Fringe benefits

Annual fringe benefits rates for all employees include the following:

Retirement 24%
Deferred Compensation 0.4%
FICA 6.2%
Medicare 1.45%
Health care $21,937/year
Dental $ 1,132/year
Vision Mercer - $165/year
Assessed Fringe 4,25%
Retiree Health 6.75%

c. Travel

$3,000 used for mileage, tolls for site visits and meetings, and to subsidize vehicle usage by ACCSP staff as well as any incurred travel expenses for dealer visits; RIDEM will assume the costs. These costs are based on historical used under the current award.

d. Equipment

No equipment will be purchased on this grant.

e. Supplies

From ACCSP:

i. None.

From RIDEM:

ii. **Logbook Printing**: 600 logbooks @ $5.91/logbook – $3,546.

iii. **Logbook Mailing**: 600 logbooks @ $4.75/book = $2,850
iv. **Dockside Printing:** 300 logbooks @ $4.96/logbook - $1,488
v. **Dockside Mailing:** 300 logbooks @ $5.91/logbook - $1,773
vi. **Business Reply Envelope Printing**: 20,000 Envelopes @ $0.125/envelope = $2,500.
vii. **Business Reply Account**: $100/month Mar-Nov; $200/month Dec-Feb = $1,500.
viii. **Website Development and Updating**: Costs for maintaining current website and creating a website section dedicated to online reporting, including the creation training materials. Estimated at $2,400.
ix. **Telephone and Fax usage** - $500
x. **Office Supplies** $1,000
xi. **Miscellaneous and outreach mailing**:
    1. **Compliance mailing**: 1,600*$0.50 = $800
    2. **License renewal mailing to notify license holders of renewal regulations and changes**: 3,000*$0.50 = $1,500
    3. **Dealer Report Cards**: 140*4*$0.50 = $280
    4. **Returned Logs**: ~2% per month of 1,600 = 32*12 = 384*$0.50 = $192
    5. **Miscellaneous/Outreach mailings:** ~$228

f. Contractual
There will be no contractual under this grant.

g. Construction
There will be no construction as part of this grant.

h. Other
There is nothing in this category

i. Total Direct Charges
This is the sum of all direct charges to the grant, listed above.

j. Indirect charges.
Indirect charges are only calculated using RIDEM personnel charges. The negotiated Indirect Rate for fiscal year 2020 is 19.25%.

Summary of Proposal for Ranking

Proposal Type: Maintenance

Primary Program Priority: Catch and Effort **(100%)**

- 100% of dealers report trip level landings data for all species.
- 100% of commercial fishermen report trip level catch and effort data, which is entered into SAFIS (except federal permit holders that report on VTRs to NMFS) or via a 1-ticket system for shellfish entered at trip level by the dealer in the eDR.
- 100% of all party and charter captains report trip level data, which is entered into SAFIS.
- Metadata and socioeconomic that is detailed on page 6 are also collected to enhance and describe data sets that are important to RI's commercial fisheries.

Project Quality Factors:

Partners

- **Multi-Partner/Regional impact including broad applications** –To collect and manage catch and effort, landings, and recreational data in RI. However data on many regionally managed species, such as American lobster, striped bass, black sea bass, bluefish, tautog, and others is collected. As these species are regionally managed, the data collected are used in coastwide and regional stock assessments, therefore other partners benefit from having access to this data.

Funding

- **Contains funding transition plan –** This proposal contains a transition to funding plan on page 8-9 and in Appendix C. Changes in maintenance proposal funding has been addressed by RIDMF and the ACCSP Coordinator role has been transitioned to a Principal Biologist FTE. While RIDMF continues to ask for funds during this transitional period, it is understood there is a definite end date to the funds available to RI for this project.
- **In-kind contribution-** 71% of this project is funded by the RIDMF.

Data

- **Improvement in data quality/quantity/timeliness –** RI provides timely catch and effort data and landings data to the ACCSP. This is done by fully utilizing ACCSP data entry products (eTRIPS, eDR, eLOGBOOK, and eTRIPS Mobile) as well as having standards backed up by Marine Fisheries regulations that require reporting that meets ACCSP standards. RI has successfully begun to push fishermen to using eTRIPS for direct data entry resulting in timelier data entry and is embracing eTRIPS Mobile for data entry. Additionally, all supplemental data (port and sea sampling, aquaculture, dockside sales, and horseshoe crab data) is provided to ACCSP annually in the proper format.
- **Potential secondary module as a by-product –** Social and economic data that is described on pages 6 is collected regularly and used in fisheries models to characterize and understand RI fisheries. This data has also been made available to regional partners upon request and has been used in groundfish disaster relief funding to determine how the money is to be distributed.
- **Impact on stock assessment-** Data collected in this program is regularly used for many "in-house" stock assessments done on local species such as whelk, quahog, and soft shell clam. This data also includes information on regionally or jointly managed species and is used for their science and management programs as well. Partners, like surrounding states, the ASMFC, and the NOAA Fisheries can and do use this information for various stock assessments.

Appendix A: Prior year budget

Budget FY 2021 (August 1, 2021 to July 31, 2022)

Item	ACCSP Share	Direct State Share	Total
Supervising Biologist (FTE 3%)	$0	$3,655	$3,655
Principal Biologist (FTE 10%)	$0	$10,781	$10,781
Principal Biologist (FTE 27%)	$14,525	$18,177	$56,568
Seasonal Interns - 2 (RIDEM 40% each)	$8,553	$3,868	$12,422
Indirect Charges (RIDEM FTE 19.25%)	$4,443	$7,022	$24,365
Total Personnel	$27,521	$43,503	$71,025

EQUIPMENT & SUPPLY:

Item	ACCSP Share	Direct State Share	Total
Logbook Printing @ $5.91 per logbook	$0	$3,546	$3,546
Logbook Mailing @ $4.75 per logbook	$0	$2,850	$2,850
Dockside Printing @ $4.96 per logbook	$0	$1,488	$1,488
Dockside Mailing @ $5.91 per logbook	$0	$1,773	$1,773
Business reply envelope printing	$0	$2,500	$2,500
Business reply account	$0	$1,500	$1,500
Website development and updating	$0	$2,400	$2,400
Outreach mailing	$0	$3,000	$3,000
Office supplies	$0	$1,000	$1,000
Telephone & Fax Usage	$0	$500	$500
Vehicle Usage and Travel	$0	$3,000	$3,000
Total Supply	$0	$23,557	$23,557

TOTAL:

Item	ACCSP Share	Direct State Share	Total
Total Direct Charges	$27,521	$67,060	$94,582
Percentage	29%	71%	

Appendix B: Curriculum Vitae for Principal Investigator

Nichole L. Ausfresser Ares Nichole.Ares@gmail.com **(**978) 833- 4017

Education

Roger Williams University — Bristol, RI
Bachelor of Science in Marine Biology — Dec. 2010
Minor in Mathematics

Atlantic States Marine Fisheries Commission
Introduction to Stock Assessment — October 2015
Intermediate Stock Assessment Training — December 2017

Work Experience

Rhode Island Department of Environmental Management — February 2016-Present
Principal Biologist

- Coordinate and improve the Atlantic Coastal Cooperative Statistics Program (ACCSP) in Rhode Island.
- Monitor commercial fishing quotas, lead quota management meetings and determination of seasonal closures and possession limit changes.
- Reporting compliance for ~1500 RI commercially licensed fishermen. Including tracking compliance, training and support to fishermen on report submissions and utilization of the electronic reporting system. Supervise and train staff on data entry of collected catch and effort data. Audit data quality of submitted reports.
- Data accuracy and quality of dealer reported landings data for the ~140 RI commercial licensed seafood dealers. Correction of inaccuracies in data, training new seafood dealers, and retraining dealers with data entry issues.
- Serve on ACCSP committees, including Commercial Technical Committee, Information Systems Committee and Standard Codes Committee.
- Assist in field work as necessary including but not limited to otter trawl, ventless lobster pot, beach seine, fyke net, and ventless fish pot surveys.
- Write and submit project plans, compliance reports, and grant proposals.

Atlantic States Marine Fisheries Commission — May 2014- February 2016
Fisheries Specialist 1- ACCSP Coordinator

- Coordinate and improve the Atlantic Coastal Cooperative Statistics Program (ACCSP) in Rhode Island under the supervision of Rhode Island Division of Fish and Wildlife Marine Fisheries Section.
- Monitor commercial fishing quotas, lead quota management meetings and determination of seasonal closures and possession limit changes.
- Track reporting compliance for ~1500 RI commercially licensed fishermen. Train fishermen and seasonal staff on report submissions. Audit data quality of submitted reports.
- Audit and correct data of dealer reported landings data for the ~140 RI commercial licensed seafood dealers. Train new seafood dealers and retraining dealers with data entry issues.
- Write and submit project plans, compliance reports, and grant proposals.
- Member of various ACCSP committees, including Commercial Technical Committee and Information Systems Committee.

- Assist in field work as needed, including beach seine, lobster ventless pot, and otter trawl surveys.

East West Technical Services LLC Feb. 2012- May 2014
At-Sea Monitor and Scallop Observer
- Organize fishing trips with federal commercial fishermen of the North Eastern United States.
- Collect catch and discard data on groundfish (trawl, gillnet, and longline) and scallop dredge fishing vessels. Identify all species brought on board and take biological measurements and samples including; length, weight, scales, vertebrae, and otoliths.

Rhode Island Department of Environmental Management June. 2011-Dec. 2011
Division of Fish and Wildlife- Marine Fisheries Student Researcher April 2013-Oct. 2013
- Data and logbook entry using Microsoft Access, Microsoft Excel, SAFIS, and Telnet.
- Contact fishermen when questions arise with logbook submissions.
- Assist in field work sampling in beach seine, otter trawl, clam suction, clam dredge, lobster pots, fish pots, and finfish port sampling.
- Fish aging structure removal (operculum, scales, and otoliths) and preparation.

Research Experience
Roger Williams University June 2009- June 2011
- Project goals are to examine mercury bioaccumulation in fish tissues, examine selenium concentrations in tissues, and examine selenium mercury relationships.
- Includes sampling methods of rod & reel and otter trawl surveys, the extraction of muscle, liver, brain tissues, and otoliths. Preparing tissues samples for atomic absorption spectroscopy and inductively coupled plasma mass spectroscopy. Use of Microsoft Excel and SAS to analyze the data, PowerPoint to present data at conferences. Organize the laboratory and help keep scientific equipment running correctly.
- Mentor: Dr. David L. Taylor, Assistant Professor

Technology, Skills, and Certifications
- Proficient in Microsoft Word, PowerPoint, Excel, Access, and Picture Manager, SAFIS info systems, Telnet, HTML, Adobe DreamWeaver, Oracle Databases (SAFIS Interface and Business Objects), and R.
- Familiar with SQL.
- Large dataset management
- Certified PADI Open Water Scuba Diver
- RIDEM Certificate of Boating Safety Education
- U.S Coastguard Auxiliary Boating Safety Course
- Fisheries sampling techniques including fish and invertebrate identification, trawl, beach seine, lobster and fish pots, gillnets, and dissections.

Appendix C: Funding extension request

RI is requesting an additional year of funding under the COVID 19 provision outlined in the funding request for proposals. RI has exhausted the funding provided in the previous year and will require funding in FY22. Over the grant period that RI has received ACCSP funding, RI has been looking for ways to transition off this funding source. In an effort to do so to-date, RI has used recreational fishing license funds to assist with recreational data collection, has assumed the costs of the printing and mailing of the logbook program, and continues to encourage the shift to electronic reporting. However, even with these efforts, RI required financial assistance to maintain the program. In attempts to meet this shortfall, for the past several years, RI has introduced a bill to restructure the commercial and for-hire fishing licenses. Under this proposal comes an increase in fees, which are intended to assist RI in replacing the previous funding received from ACCSP. Unfortunately, the adoption of these changes was halted due to the 2020 COVID 19 pandemic delaying the state legislative cycle for a year. Therefore, currently RI is still in need of funding assistance. The proposed legislation is expected to be approved in 2021, at which time RI would no longer request ACCSP funding for this project.

Geoff White, Director
Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

August 16, 2021

Dear Mr. White,

The Massachusetts Division of Marine Fisheries and the Rhode Island Division of Marine Fisheries, through partnership with Harborlight software, are pleased to resubmit the proposal titled "*Integration of vessel monitoring systems and electronic reporting in SAFIS and SAFIS applications through API development and field testing of multiple hardware options: Phase 2*" for your review. We believe this proposal is the next important step toward integration of various vessel-based data streams into the SAFIS databases and applications and implementing tracked data collections programs by partner agencies.

Please address questions jointly to Rich Balouskus of the Rhode Island Division of Marine Fisheries and Anna Webb of the Massachusetts Division of Marine Fisheries.

Sincerely,

Anna Webb
Environmental Analyst
MA Division of Marine Fisheries
30 Emerson Ave
Gloucester, MA 01930
anna.webb@mass.gov
(978) 282-0308 x115

Rich Balouskus
Principal Biologist
RI Division of Marine Fisheries
3 Fort Wetherill Dr
Jamestown, RI 02835
richard.balouskus@dem.ri.gov
(401) 423-1924

Enclosures:
ACCSP Proposal: "*Integration of vessel monitoring systems and electronic reporting in SAFIS and SAFIS applications through API development and field testing of multiple hardware options: Phase 2*"
Appendix A: Principal Investigators' Curricula Vitae
Memo from ACCSP regarding proposed work within the SAFIS framework.
Letter containing replies to questions from proposal team reviewers

Proposal for Funding made to:
Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

Integration of vessel monitoring systems and electronic reporting in SAFIS and SAFIS applications through API development and field testing of multiple hardware options: Phase 2

Submitted by:

Anna Webb
Massachusetts Division of Marine Fisheries
30 Emerson Avenue
Gloucester, MA 01930

Rich Balouskus
Rhode Island Division of Marine Fisheries
3 Fort Wetherill Drive
Jamestown, RI 02835

Applicant Name:	Massachusetts Division of Marine Fisheries and Rhode Island Division of Marine Fisheries
Project Title:	Integration of vessel monitoring systems and electronic reporting in SAFIS and SAFIS applications through API development and field testing of multiple hardware options: Phase 2
Project Type:	New Project
Principal Investigators:	Anna Webb (MADMF), Rich Balouskus (RIDMF)
Requested Award Amount:	$86,244.44
Requested Award Period:	For one year, beginning after the receipt of funds
Date Submitted:	August 16, 2021

Sections of the proposal identified to help with the ranking process are highlighted in green with a summary on page 17**.**
Revisions are highlighted in yellow.

Terminology:
While project partners named this proposal "Phase 2" of the similarly titled FY19 proposal that initiated the integration of vessel tracking data with trip reporting, they consider this a new project. While the authors recognize the similarities to the Phase 1 pilot project, a significant change in scope is presented for Phase 2. The primary focus of this proposal is the development of an operable SAFIS backend for storage of tracking data and the creation of an administrative interface for viewing tracking data. The primary focus of "Phase 1" was determining if and how specific cellular devices could deliver tracking data to both eTrips and SAFIS. Phase 2 proposes` to build upon the baseline created during Phase 1 producing enhanced products and scoping additional features. Thus, this proposal is not considered a request for maintenance funding for the existing platform.

It is probable that a production version of eTRIPS supporting VMS integration (as developed in Phase 1) will be available for distribution to the general public (i.e., available for download in the Apple and Google app stores) prior to the initiation of Phase 2. As a result, location data will be collected alongside catch and effort data in real fishing scenarios from those fishermen who are choosing to utilize the VMS connection (optional), or if mandated by any partner prior to the initiation of Phase 2. Enhancements to this version would be the goal of this project and, pending testing and review, provide expanded VMS options as well as more user-friendly tools.

Objective:
To continue development of an API-based integration of geographical vessel-monitoring data with real-time electronically reported data for small scale inshore fisheries in the eTRIPS mobile application and through an ACCSP hosted web-based administrative application. Within the scope of the project, the following additional deliverables will be met:

- Evaluate functionality of additional VMS devices not tested in Phase 1 in order to complete technical analysis of all currently available cellular devices.
- Develop strawman requirements for future cellular and/or low-cost satellite VMS devices to meet ACCSP standards for integration into the program. This step will be carried out in collaboration with the ACCSP data team. Additionally, this will negate the need for future testing of cellular units as they become available on the market.
- Analyze approval procedures for federal VMS products in light of new inshore cellular options and pending lobster/Jonah crab fishery regulations. Compare approval procedures for federal VMS products to strawman ACCSP requirements developed for this project.
- Produce an updated comparative cost and technical specification analysis of available cellular VMS devices and data plans as well as all NOAA GARFO approved VMS devices.

- Investigate enhancements to current program capabilities for specific use cases of geofencing and track line post-hoc analysis, and document a process to add further use cases and/or additional enhancements after project completion.
- Enhance the existing administrative tool and scope requirements to develop a new tool to view tracks in real time and provide a platform for advanced post-hoc analysis.
- Conduct an informal survey of fishermen to solicit ideas for future improvements of program and end user needs.

Need:

Satellite-based vessel-monitoring-systems (VMS) have been deployed for years on federally permitted vessels and utilized by NOAA Fisheries and NOAA Office of Law Enforcement (OLE) successfully. These systems allow OLE to monitor and receive messages about vessels' positions, but also allow for the vessel captains to be notified when approaching defined boundaries. Most ACCSP state partners have not yet implemented this technology due to high costs and logistics. New cellular-based VMS technology has emerged that is less expensive to purchase and use and can be accessed via mobile devices providing opportunity for partners with limited resources. State managers and law enforcement are eager to explore the utility of this technology to allow for more flexible management programs in various fisheries accompanied with more robust accountability. Positional data generated from VMS devices linked with trip-level data is needed to accomplish the rigorous monitoring associated with these types of management programs especially where the current level of reported location data is insufficient. Furthermore, with the increasing presence of other ocean uses in recent years (e.g., renewable energy, aquaculture) in historically utilized commercial fishing areas, the ability to track spatiotemporal use with catch may be of interest to various commercial fishing stakeholders and management groups.

Per an August 4th press release from the Atlantic States Marine Fisheries Commission (ASMFC), "The ASMFC's American Lobster Management Board initiated Draft Addendum XXIX to Amendment 3 to the Interstate Fishery Management Plan for American Lobster. The Draft Addendum considers implementing electronic tracking requirements for federally-permitted vessels in the American lobster and Jonah crab fishery, with the goal of collecting high resolution spatial and temporal effort data. Draft Addendum XXIX will propose specifications for tracking devices to ensure the collected data meet both management and assessment needs. These specifications include data reporting rates, preferred technologies, and minimum standards for tracking devices." Phase 2 of this project proposes to directly collaborate with both ACCSP and ASMFC to support the successful development of Addendum XXIX.

In Phase 1 of this funding, the project team successfully enhanced eTRIPS mobile to obtain VMS data collected from several affordable cellular sourced devices and created an API (Application Programming Interface) capable of transmitting the collected VMS data into a

single standardized format in the Standard Atlantic Fisheries Information System (SAFIS). This VMS data is then 'paired' with eTRIPS trip report data creating a comprehensive history of spatially explicit fishing trips. This is distinct from the current federal use of satellite VMS which tracks vessels 24 hours a day/7 days a week, regardless of when fishing is occurring. A variety of cellular-based VMS systems were evaluated for compatibility with the API. After completion of Phase 1, several additional needs, which became the objectives of Phase 2, were identified to build upon this concept and to increase functionality of the program for both managers and harvesters.

NOAA Fisheries 'approved' VMS devices are required to meet stringent standards as set forth by OLE, and until recently, did not include non-satellite-based options. State managers do not typically have access to OLE stored data in real time, so Phase 1 of this project determined that data generated by cellular VMS systems would most appropriately work independently but parallel to existing databases and applications currently in place at NOAA Fisheries and should be stored and extracted by ACCSP. Additionally, the Phase 1 concept was developed as a data collection tool, and consequently, its scope differed in intent from the OLE VMS program. This identified a need for a standard process and repository for the combined positional and catch and effort trip-level data reported by vessels utilizing new cellular VMS technology. The proposed Phase 2 represents the next step necessary to begin developing an integrated database and programmatic system to fully take advantage of both new and existing VMS technologies.

Results and Benefits:

The storage and display of VMS data by SAFIS and SAFIS applications further moves towards ACCSP being the sole repository for fisheries-dependent data collection, which makes multi-jurisdiction management more streamlined and data more easily available and accessible. This project ultimately addresses the ACCSP's catch and effort priority by further integrating and advancing data collection methods to include location tracking, which will support emerging management issues and improve the quality of data used to make decisions. The addition of geographic/positional fisheries-dependent data streams is becoming a priority of ACCSP and its partners and integral to SAFIS and SAFIS applications keeping current with emerging technologies. During Phase 1, ACCSP acquired appropriate GIS licenses and dedicated staff time to advancing ACCSP's spatial data storage and use. Additionally, in March 2021, the Commercial Technical Committee initiated a spatial coordination working group to assist and guide ACCSP in spatial development. ACCSP and its partners are increasingly being asked to provide spatial analyses at resolutions that currently are not collected, and this approach will help resolve those issues.

eTRIPS mobile, which facilitates the collection of real-time catch and effort data, has been in production since 2015 and been successfully implemented within the SAFIS framework across several fisheries for both the commercial and party/charter sectors. In Phase 1, the application

was integrated with VMS data from the five tested device platforms, creating a more complete accounting of the catch, effort, and location of a given fishing trip. This integrated dataset, submitted via the API to ACCSP and displayed in the enhanced administrative application proposed in Phase 2, shall provide a platform to query the data for these ”alternative” VMS programs. A single repository for all vessel-generated VMS data is necessary to create the query platform for “real time” report generation. SAFIS is the ideal place for this type of data compilation as it encompasses both state and federal systems and thus is usable among all partners. Scoping the potential for development of a new administrative application to view and query non-trip VMS data and live data will provide important context and details for both application developers and managers moving forward. It is intended that such a tool would bolster management efforts by supporting the identification of fishing patterns and non-fishing activity as well as provide the potential for future law enforcement compatibility.

By collaborating with industry representatives, the project will be able to incorporate elements that make the reporting of location data more attractive to the end users. The utilization of a survey will not only improve the end user (fishermen) experience by soliciting feedback about what works best at sea and how they would like to view and use those data, but also promote buy-in from industry via involvement in the process. Ultimately the results of this project should foster more flexible management strategies that benefit fishing practices by allowing fishermen to operate more effectively and efficiently. Upon success, the results from this effort would make VMS programs more accessible to all partners and location tracking management programs possible. This type of management strategy is particularly valuable for stock assessments that are spatially refined, such as those used for menhaden, black sea bass, tautog, and proposed for striped bass. A spatiotemporally explicit catch reporting system will allow for easier adjustment of catch information into discrete spatial units, thus precluding the need for some of the assumptions currently being used for these more progressive assessments. Additionally, the availability of this type of spatially defined catch and effort information could allow for other population assessments to progress to more spatially refined structures, thus improving the stock assessment enterprise as a whole. Managers, harvesters, and various stakeholders may also find utility in aggregated tracking data in relationship to proposed ocean uses such as offshore renewable energy development and aquaculture. While Phase 2 of this project does not intend to make harvester’s personal tracks available for use by the public, the value of these data is apparent.

The collaboration during Phase 1 between two state partners highlighted the varying data needs of each. By utilizing the new technology on the market and expanding an avenue of integrated reporting, this project will open new methods for real-time data collection and utilization by all state partners. This project emphasizes partner collaboration and developing a product that can be used by any single partner, particularly for inshore fisheries. This will include discussions with NOAA Fisheries and OLE and build upon any advances that occur prior to Phase 2. A cost

analysis of tested VMS hardware and the resulting applications will be updated with new devices for any partner interested in implementing a VMS program at the conclusion of the project to aid in regulatory decision-making processes.

Although this project does not include any objectives directly tied to law enforcement, refinement of the ACCSP administrative viewer could potentially be adapted for law enforcement needs. As an example, Rhode Island OLE is currently utilizing cellular VMS trackers to aid in the enforcement of a pilot program involving weekly landing limits. Any developments made expressly for law enforcement would require partnership with OLE. It is anticipated that a "Phase 3" would follow the completion of this project. A Phase 3 would be smaller in scope but would include development on the scoped interface from Phase 2 (see section titled *Development and Scoping of Administrative Application* below) and potentially involve collaboration with ACCSP to further enhance data processing and visualization for law enforcement needs.

Data Delivery Plan:

All data will be stored at ACCSP following the same protocols as Phase 1. Tracks from completed trips, along with real time locations, will be pulled via API into ACCSP tables. Authorization schemes at the application and database level ensure that administrators only have access to location data under their jurisdiction. Tables are accessed through applications in the SMS portal, and data will be available to export in multiple formats. Database connections would also be available to pull trip location data directly into partner systems.

Approach:

Phase 1 of this project highlighted the need to further develop several concepts to improve the end user experience, improve the manager/data consumer capabilities, and to better assimilate new devices or further enhancements. Additionally, clearly defining the relationship between federal VMS and the piloted devices and programs as well as providing detailed cost analyses will be critical to the launch of any state-managed VMS data collection program. Phase 2 of this project plans to deploy VMS devices on ten fishing vessels. In an effort to increase participation in the project, participating fishermen will be rewarded with a gift card and entry into a lottery to win a larger prize. The approach to each objective is outlined here:

New Devices:

This is a rapidly expanding market and new companies are launched often. To date, two additional devices have been identified and are proposed to add to the eTRIPS mobile tracking version in Phase 2: Particle and SkyMate. These devices will be tested in the field and the ability to merge VMS data from each with eTRIPS trip reporting determined. It should be noted that as part of this project a set of requirements for devices to meet ACCSP standards will be developed,

thus negating the necessity to test new devices as they are released in the future (see section *Requirements Document for New Devices* for more detail).

1. Particle, https://www.particle.io/

These devices have been initially tested in Maine and are currently being incorporated into the VESL application designed to act similarly to the Phase 1 eTRIPS mobile application.

Hardware: While Particle offers several available tracking devices, the Tracker One unit offers the most 'out-of-the-box' options for this program. These devices are an extremely low-cost option (~$160).

Service: Based on a ping rate of one minute, each individual Tracker One device qualifies under Particle's 'free tier', meaning there is no monthly or annual fee for data usage.

Connection Type: Particle provides an open-source online platform that requires advanced programming but is capable of being designed to fit specific projects. Based on initial work conducted in Maine, connection between Particle's API and eTRIPS/SAFIS should be feasible.

2. SkyMate, https://www.skymate.website/vms-index

This is a satellite-based company but has launched a lower cost device that aligns with the cellular models previously tested.

Hardware: SkyMate is providing two hardware options. Both utilize satellite transmission and have Bluetooth built in. The first option is the m1600 (details here), and the current cost of this device is $1,399. However, they will be launching a newer, low cost, coastal product due out in the Spring of 2022. This is slated to be half the price of the m1600, approximately $700.

Service: The base fee is $15 per month. There are no additional charges for data sent to eTRIPS mobile via Bluetooth to then be forwarded to the ACCSP. There is an additional $0.50 charge per hour of data (1 minute recording frequency) for any data sent via satellite.

Connection Type: SkyMate is proposing to allow the transmission of trip data points via a Bluetooth connection to the eTRIPS mobile device that is connected to the SkyMate VMS unit. With this method, the captain would be able to later utilize the WiFi on their eTRIPS device to submit the trip and location data. Since there would be no data transmission via satellite, only the base fee of $15 per month would apply. The proposal

includes costs for the satellite transmission for testing purposes and to clearly document the process for using this device.

Requirements Document for New Devices and Comparison to Federal Requirements
As this market is expanding rapidly, the requirements for cellular-based VMS devices to be added to the eTRIPS mobile platform and SAFIS data repository will need to be clearly documented. Phase 2 will concentrate on identifying those needs for transmission of data to the ACCSP and, in collaboration with the ACCSP data team, developing a standardized approval process for new devices or updates in the future without the need for further funding resources. Additionally, this effort is critical for the centralized administrative application (another objective of this proposal) to be successful. These requirements will ensure the accurate and timely ingestion of data from the VMS device to the SAFIS administrative application. This requirements document will be available through ACCSP for any interested companies moving forward.

This process will also be compared to the existing OLE VMS requirements documents, with a focus on the Greater Atlantic Region (GARFO), to determine how the cell-based devices and the requirements set forth for ACCSP compare to the existing satellite VMS requirements. Furthermore, there are ongoing discussions in the Northeast region regarding integration of cost-effective cell-based tracking into the federal lobster fishery. These discussions may result in a federal rule making process that advances this effort prior to the initiation of Phase 2. This project will build on any results from these discussions (contingent upon those discussions occurring) and expand upon the requirements needed to run a successful, integrated, federal, non-federal, or hybrid VMS data collection program. This comparison will be made available to any interested parties, but particularly to managers who are looking to implement a vessel tracking program. This type of analysis will be valuable to those considering all options and what is specifically required of each.

This proposal does not intend to address the potential issue of certain vessels being regulatorily required to have both a traditional satellite VMS device as well as a cellular VMS device, but will provide comparisons of federally approved VMS devices and cellular units. These comparisons will assist managers when evaluating the costs of adding a secondary VMS unit to a vessel. This is a discussion being held at both the ASMFC and at the federal level. Because proposed lobster tracking requirements (ping rate) exceed the current capabilities of satellite VMS units or are cost prohibitive, it is possible that multi-permitted vessels will require two separate VMS devices.

Satellite Versus Cellular Costs Summary

Phase 2 proposes to update the evaluation of costs and technical specifications associated with a variety of options that was completed in Phase 1. All currently approved NOAA GARFO VMS devices will also be included in the cost/specification analysis to provide side-by-side detail for ACCSP, NOAA Fisheries, and managers. Lastly, this is a rapidly expanding market and new companies are launched often. To date, two additional devices have been identified to test in Phase 2: SkyMate and Particle and upon successful testing will be added to the summary. Devices tested in Phase 1 will have cost summaries updated based on any new pricing structures implemented since the completion of Phase 1.

Further Application Enhancements

Partners electing to use these VMS systems will need to know the costs associated with and utility of the implementation of the various options for management programs, as well as understand the economic impact on individual fishing practices. These types of management programs can be quite diverse and often are tailored to meet a specific need. For example, in Rhode Island the VMS and trip data is desired to track trips associated with a weekly aggregate landing programming while in Massachusetts the VMS are desired for allowing fishing to take place in state managed environmentally sensitive habitats. During Phase 1, it was determined that geofencing, including the potential for interactive alerts with captains, would be feasible with further development and is critical to application success. Further development is necessary to determine functionality outside of cell range and in what capacity geofencing might be limited. Regardless of distance from shore limitations though, geofencing will have many inshore applications specifically involving identification of ports and the ability to reduce ping rates while docked or identifying sensitive habitat areas. A review of the existing capabilities, limitations of each platform, each device's requirements to implement such features, and testing of enhancements on each device will be conducted during Phase 2.

Development and Scoping of Administrative Application

Initial development occurred on a viewer for post-hoc track analysis (e.g., multiple trip patterns, vessel speed, harvesting locations) during Phase 1. The current application does not display real-time vessel tracking information and has limited functionality for submitted VMS data. Phase 2 intends to enhance this existing application. At a minimum, the expanded existing viewer would be able to display all completed tracks from a given vessel over a specified time period, provide information pertaining to the vessel submitting those data, and provide basic metrics regarding specific trips (e.g., vessel speed) with the opportunity to download data for further analysis.

While the expanded track viewer will allow basic data queries and provide managers a starting point for post-hoc analysis, there is a need for a dedicated and robust real-time track viewer and post-hoc analysis tool. Development of an ACCSP web-hosted administrative application allowing for both real-time view of vessel location and post-hoc analysis is required for the

spatial analysis necessary to manage discreet fishing management areas. Furthermore, non-trip tracking data storage and viewing is essential for management. This may involve changes to the API which delivers track data to ACCSP, or to merge the API from the earlier MA-ME tracking project with the API from Phase 1 to acquire such data. The best available service needed to host such a platform will be scoped through discussions with the ACCSP Spatial Coordination sub-committee, ACCSP, Harborlight, and project partner agencies. ArcGIS Online (AGOL) will be explored as a host platform as well as within the SAFIS application itself. Baseline requirements will be defined as will a path forward for feature enhancements to produce output that can be used by partners for data analysis. Phase 2 proposes to scope what this application would look like and how it would functionally be developed and hosted. However, actual development of this advanced application would not occur under this Phase 2 funding.

This objective is perhaps the most time and work intensive piece of the project for ACCSP staff. This commitment is addressed in the accompanying memo from ACCSP.

Industry Survey
Lastly, industry members will be surveyed for input on various interface topics including but not limited to the utility of track data in their SAFIS account, ease of linking devices, installation of devices, and more. Participants will be identified by each partner for the survey and include those who participated in testing previously as well as others who have interest in the project. By including some funds for fishermen incentives in this project budget, we are also improving the success rate of obtaining volunteers and promoting participation in surveys conducted throughout this project.

Geographic Location:
Inshore waters surrounding Massachusetts and Rhode Island.

Milestone Schedule:

The milestone schedule is based on the starting month of the project as month "1."

	Month												
Task	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Complete requirements gathering	X	X											
Acquire new device APIs	X	X											
Acquire new devices and plans		X											
Program new devices to eTRIPS mobile			X	X	X	X	X	X	X	X	X		
Test new devices and all enhancements				X	X	X	X	X	X	X	X	X	
Identify requirements for new devices				X	X	X	X	X	X	X	X		
Federal VMS comparison effort							X	X	X	X	X		
Geofencing enhancement	X	X	X	X	X	X	X	X	X	X	X	X	
Track Viewer scoping/development	X	X	X	X	X	X	X	X	X	X	X	X	
Industry survey	X	X	X										
Report writing						X	X					X	X

Sections of the proposal identified to help with the ranking process are highlighted in green with a summary on page 17**.**
Revisions are highlighted in yellow.

Project Accomplishments Measurement:

Project Goal	Measure of Accomplishment
Evaluate functionality of additional VMS devices not tested in Phase 1.	Report identifying functionality, benefits, and problems associated with each device.
Develop strawman requirements for future cellular and/or low-cost satellite VMS devices to meet ACCSP standards for integration into the program.	Publish a requirements document for new devices to be added to the eTRIPS mobile vessel tracker program.
Analyze approval procedures for federal VMS products in light of new inshore cellular options and pending lobster/Jonah crab fishery regulations. Compare approval procedures for federal VMS products to strawman ACCSP requirements developed for this project.	Include in the report a comparison to existing marketed federal VMS options and note how the new products would fair in the federal approval process.
Produce an updated comparative cost and technical specification analysis of available cellular VMS devices and data plans as well as all NOAA GARFO approved VMS devices.	Report identifying costs of all tested VMS products and federal counterparts.
Investigate enhancements to current program capabilities for specific use cases of geofencing and track line post-hoc analysis, and document process to add further use cases and/or additional enhancements after project completion.	Documented results for geofencing use cases such as port identification and closed area crossings as well as how to request feature enhancements moving forward.
Enhance the existing administrative tool and scope requirements to develop a tool to view tracks in real time and provide a platform for advanced post-hoc analysis.	Report comprehensive overview of technical requirements needed to support development of an enhanced administrative tool.
Conduct an informal survey of fishermen to solicit ideas for future improvements of program and end user needs.	Include in the report summarized, anonymous responses from survey highlighting repeated trends.

Cost Summary:

Description	Calculation	Funding Source				
		In-Kind		Requested from ACCSP		
		MADMF	RIDMF	MADMF	RIDMF	Admin Costs
Personnel (a)		**$1,942.83**	**$2,391.0**	**$9,302.14**	**$7,278.00**	**$0.00**
Anna Webb (Env Analyst, MADMF)	5% of time @ 2 hrs/wk	$1,942.83		$1,942.83		
Nick Buchan (Env Analyst, MADMF)	10% of time @ 4 hrs/wk			$7,359.31		
John Lake (Mar. Biologist, RIDMF)	3% of time @ 1 hr/wk		$2,391.0			
Rich Balouskus (Mar. Biologist, RIDMF)	10% of time @ 3.5 hrs/wk				$7,278.00	
Fringe (b)		**$767.41**	**$1,141.0**	**$3,674.34**	**$5,387.00**	**$0.00**
37.53% MA Fringe rate	Applied to A. Webb's salary	$729.14		$729.14		
37.53% MA Fringe rate	Applied to N. Buchan's salary			$2,761.95		
1.97% MA Payroll rate	Applied to A. Webb's salary	$38.27		$38.27		
1.97% MA Payroll rate	Applied to N. Buchan's salary			$144.98		
RI Fringe rate	Applied to J. Lake's salary		$1,141.0			
RI Fringe rate	Applied to R. Balouskus salary				$5,387.00	
Supplies (c)		**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$5,186.96**
SkyMate units	3 Units @ $700 per unit					$2,100.00
Particle units	3 Units @ $159.99 + Shipping @ $6.99					$486.96
Fishermen Incentives	Estimated 10 $200 gift cards + 1 lottery incentive					$2,500.00
Shipping costs	Estimated shipping to partners					$100.00
Contractual (d)		**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$50,000.0**
Harborlight Software	Development 215 hours @$170/hour = $36,550 QA and Test 107.6 hours @$50/hour = $5,350 Project Management 54 hours @150/hour = $8,100					$50,000.0
Other (all divided evenly amongst partners) (e)		**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$640.00**
SkyMate data cost	3 devices at $15/month for one year					$540.00
SkyMate satellite cost	200 hours at $0.50 per hour					$100.00
Particle plan data cost	No data cost with this company; using free tier					$0
Total Direct Charges		**$2,710.24**	**$3,532.0**	**$12,976.48**	**$12,665.0**	**$55,826.96**

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Sections of the proposal identified to help with the ranking process are highlighted in green with a summary on page 17.
Revisions are highlighted in yellow.

Description	Calculation	Funding Source				
		In-Kind		Requested from ACCSP		
		MADMF	RIDMF	MADMF	RIDMF	Admin Costs
Total Direct Charges (repeated from previous page)		***$2,710.24***	***$3,532.0***	***$12,976.48***	***$12,665.0***	***$55,826.96***
Indirect Charges (f)		**$481.63**	**$689.00**	**$2,306.00**	**$2,470.00**	**$0.00**
24.79% MA Indirect	Applied to A. Webb salary only	$481.63		$481.63		
24.79% MA Indirect	Applied to N. Buchan salary only			$1,824.37		
19.5% RI Indirect	Applied to J. Lake's salary		$689.00			
19.5% RI Indirect	Applied to R. Balouskus salary				$2,470.00	
Totals		**$3,191.87**	**$4,221.0**	**$15,282.48**	**$15,135.0**	**$55,826.96**
Total Project Cost		**$93,657.31**				
In-kind versus Direct Percent Contribution		**7.91%**		**92.09%**		
Requested Amount		**$86,244.44**				

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Sections of the proposal identified to help with the ranking process are highlighted in green with a summary on page 17**.**
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Cost Details:

a. **Personnel ($16,580.14 Requested; $4,333.83 Match)** MA DMF will use a small portion of co-PI Anna Webb's salary as match for this application. Her CV is attached. J. Lake will provide in-kind support from RI. The remaining salary is requested from ACCSP.

b. **Fringe ($9,061.34 Requested; $1,908.41 Match)** MA DMF will provide matching funds to cover fringe and payroll expenses associated with A. Webb's match salary. MA DMF's fringe rate of 37.53% includes the costs for Group Insurance, Retirement, and Terminal Leave. MA DMF's payroll rate of 1.97% includes the costs of Unemployment Insurance, Employer Medical Assistance Contribution, Medicare Tax, and Paid Family Medical Leave. RI will provide matching funds to cover fringe for expenses associated with J. Lake's match salary. All remaining fringe costs are requested from ACCSP.

c. **Equipment/Supplies ($5,186.96 Requested; $0 Match)** All equipment/supplies costs for devices, fishermen incentives, and shipping is requested from ACCSP. Three of each device type is requested; one of each device will be used by MA, RI, and Harborlight for testing. For incentives, participation in the trials will be rewarded with gift cards and a lottery for a larger incentive will be used to encourage survey participation. Devices will be moved among vessels during the testing phase to accommodate more participation.

d. **Contractual ($50,000.00 Requested; $0 Match)** Software development costs for Harbor Light Software, Inc. will be $50,000 and includes project management, development, and QA/testing costs. This covers enhancements to eTRIPS mobile to integrate with the Particle and Skymate VMS devices to retrieval of device-specific GPS data, and upload that data to SAFIS. It additionally covers enhancements to geofencing functionality and to eTRIPS based on extended user experience in the field. These costs are based on development experience with existing devices, with consideration that the two new devices present unique approaches to accessing location data that were not offered by Phase 1 devices.

e. **Other ($640.00 Requested; $0 Match)** The data plan/contract costs for the devices are requested from ACCSP. This includes the cost of transmitting the data at designated ping rates.

f. **Indirect Charges ($4,776.00 Requested; $1,170.63 Match)** MA DMF will provide matching funds to cover the indirect costs associated with A. Webb's match salary. MA DMF has a federally-negotiated indirect rate of 24.79%. RIDMF's indirect rate is 19.5% on salary plus fringe. All remaining indirect costs are requested from ACCSP.

Summary of Proposal for Ranking Purposes
Proposal Type: ***New Project***

Primary Program Priority:

Catch and Effort: This proposal focuses on enhancements to the collection and integration of positional data with catch and effort data already collected through SAFIS applications.

Data Delivery Plan: See outline on page 6.

Project Quality Factors:

Multi-Partner/Regional impact including broad applications:

This is a joint project between two Northeast partners. The results will be directly applicable to any partner interested in developing a location monitoring program in inshore waters, and the cost analysis in the final report will aid further management decisions both by the principal investigator's agencies and any interested partner.

Contains funding transition plan/defined end-point:

This is a one-year project with a defined end goal. The goal is to enhance the existing product to better serve both managers and fishermen, produce documentation regarding implementing a cell-based VMS data collection program, and to scope the requirements for a real-time VMS administrative tool.

In-kind contribution: Please see the costs table on page 14.

Improvement in data quality/quantity/timeliness:

Further integrating positional data into catch and effort reporting is another step towards implementation of a comprehensive spatiotemporal data collection program. Testing new VMS devices and the ability to integrate with eTRIPS mobile expands the options for such data collection.

Potential secondary module as a by-product:

***Social and Economic*:** Integration of VMS and electronic reporting will help foster more progressive management strategies, which will help fishermen fish more efficiently while still making the programs enforceable. With the increasing presence of other ocean uses in recent years (e.g., renewable energy, aquaculture) in historically utilized commercial fishing areas, the ability to track spatiotemporal use with catch may be of interest to various commercial fishing stakeholders and management groups. The ability to geofence specific areas could allow fishermen access to areas that have competing uses, thus allowing them greater opportunities for their fishing businesses. Additionally, the comparative analysis across different VMS units will allow fishermen to make informed decisions on the type of unit that best meets their business needs and supports the management objective.

Impact on stock assessment:

Positional data at the trip level would be valuable for stock assessments, allowing the nuances of catch location to be observed and utilized in spatially refined models while introducing possibilities for more refined spatial analyses where current statistical reporting area demarcations are not sufficient to identify and monitor fishing activity within a given region.

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Appendix A: Curricula vitae for the principal investigators

Anna R. Webb

30 Emerson Ave · Gloucester, MA 01930
anna.webb@mass.gov · (978) 282-0308 x115

EDUCATION:

Continuing Education:

Intro to Computer Programming, University of Massachusetts, Lowell; Fall 2016
Relational Database Concepts, University of Massachusetts, Lowell; Spring 2015
SQL Programming, Hands-On Technology Transfer, Inc.; Fall 2014

Graduate Education:

Master's of Science Degree, Marine and Atmospheric Science, *Focus: Fisheries,* School of Marine and Atmospheric Sciences, Stony Brook University, August 2011
Thesis title: *Understudied Species in Coastal U.S. Waters: Issues, Solutions, and Implications for Ecosystem-Based Fishery Management*

Undergraduate Education:

Bachelor of Science Degree, Marine Vertebrate Biology, Stony Brook University, May, 2007

WORK EXPERIENCE:

Environmental Analyst, Massachusetts Division of Marine Fisheries, Gloucester, MA
November, 2015 - Present

Ongoing Responsibilities:

- Project leader for Division's Fisheries Statistics Project. Project is a six person team responsible for collecting, entering, and managing catch and effort data from commercial fishermen and landings data from seafood dealers in Massachusetts. Job duties also include managing ongoing federal grants as the principal investigator.
- Specifically oversee the harvester data collection, entry, quality control, and compliance for Massachusetts and provide outreach and technical support to harvesters submitting reports electronically through SAFIS or via paper.
- Provide support and oversight for dealer data collection, entry, quality control, and compliance, data requests from internal personnel, other partner agencies, and the public, and quota monitoring of various species.
- Lead point of contact for all swipe card technology and Atlantic Coastal Cooperative Statistics Program (ACCSP) related matters.
- Member of the Commercial Technical Committee, Past Chair of the Information Systems Committee, and Chair of the SAFIS Outreach Committee at the ACCSP.

Program Coordinator, Massachusetts Division of Marine Fisheries, Gloucester, MA
April, 2014 – November, 2015

- Oversee the harvester data collection, entry, quality control, and compliance for Massachusetts
- Provide outreach and technical support to harvesters and dealers submitting reports electronically through SAFIS or via paper.
- Instituted the online video tutorial series for harvesters using SAFIS and a newsletter focusing on electronic reporting for dealers and harvesters.
- Participate in the swipe card dealer application project with ACCSP and Maine

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Department of Marine Resources.
- Member of the Commercial Technical Committee, Vice Chair of the Information Systems Committee, and Chair of the SAFIS Outreach Committee at ACCSP.

ACCSP Fishery Specialist (Coordinator), Rhode Island Division of Fish and Wildlife-Marine Fisheries Section, Jamestown, RI
April, 2012 – April, 2014
- Oversee SAFIS data entry and compliance by dealers, harvesters, and staff.
- Provide daily technical support to dealers and fishermen.
- Participate on the quota monitoring team to make decisions regarding seasonal closures and possession limit changes for summer flounder, black sea bass, tautog, bluefish, striped bass, scup, menhaden, and monkfish.
- Manage the research-set-aside program in Rhode Island.
- Write and submit progress and final reports for ACCSP grants.
- Provide data to staff and external users while monitoring confidentiality issues.
- Member of the Commercial Technical Committee, Vice Chair of the Information Systems Committee at ACCSP, Chair of the Data Warehouse Outreach Committee.

Seasonal Field Technician, New York State Department of Environmental Conservation, East Setauket, NY
June, 2011 – April, 2012
- Conduct seining surveys of juvenile striped bass in Western Long Island bays.
- Assisted with the monitoring of 35 fish pots in a Long Island Sound fishery-independent survey of tautog and a trawl survey of Peconic Bay, NY targeting juvenile finfish species.
- Participated in onboard sampling and measurement of recreational charter boat catch including local species such as summer flounder, black sea bass, and scup.
- Monitor and collect commercial striped bass fishery samples from local fish markets
- Press and age striped bass scales.
- Data entry: Cooperative Angler Program; Vessel trip reports into SAFIS.

Research Technician, Stony Brook University, Stony Brook, NY
March, 2007 – September, 2008
- Participated in hard clam restoration project in conjunction with The Nature Conservancy by analyzing gonad and general body condition of both sanctuary and native clams
- Collected and filtered seawater for chlorophyll and POC/PON content analysis
- Analyzed sediment cores for both POC/PON analysis and enumeration of benthic organisms
- Prepared all materials for both field sampling and laboratory testing

SPECIAL SKILLS:
- Relational database management including MS Access and Oracle based databases
- Data mining large datasets for repeating errors
- Proficient in SQL and Microsoft Office Suite, expert in Microsoft Excel
- Experience with R, GIS, HTML, Visual Basic

Richard G. Balouskus

3 Fort Wetherill Rd · Jamestown, RI 02840
Richard.Balouskus@dem.ri.gov · (401) 423-1924

EDUCATION:

Graduate Education:

Master's of Science Degree, Marine Biosciences, *College of Earth, Ocean, and Environment*, University of Delaware, 2011

Thesis: "*Macrofaunal utilization of intertidal fringing salt marsh and hardened shorelines*"

Undergraduate Education:

Bachelor of Science Degree, Environmental Science, University of Vermont, 2005

WORK EXPERIENCE:

Principal Marine Biologist, Rhode Island Division of Marine Fisheries, Jamestown, RI
February, 2019 - Present

Ongoing Responsibilities:

- Lead PI for the Rhode Island ventless fish pot survey. Collects monthly samples of structure oriented species in state waters. Performs data entry and analysis on collected biological samples; maintains project database. Conducts research with state partners.
- Lead PI for the Rhode Island winter flounder spawning stock survey. Conducts weekly fyke net surveys in RI coastal ponds in winter months. Maintains winter flounder tagging project conducted since 1999. Performs data entry and analysis on collected biological samples; maintains project database. Conducts research with state partners.
- Oversees the RI aggregate fluke and black sea bass pilot program. Performs extensive data analysis of fishing activity to determine efficacy of program. Works with harvesters to ensure compliance with VMS and reporting requirements.
- Member of the NEFMC Groundfish Planning Development Team
- Member of the ASMFC Winter Flounder Technical Committee

Fisheries Biologist, INSPIRE Environmental, Newport, RI
July, 2017 – February, 2019

- Developed protocol and secured funding for a hook and line survey to address concerns of federal and state agencies regarding locations of spawning cod aggregations on Cox Ledge with regards to offshore wind development.
- Served as chief scientist for research; responsible for procurement and maintenance of equipment, contracting and community engagement with vessels and anglers, dissection and assessment of collected cod, data analysis and reporting.
- Additional work includes assessment of sediment profile and plan view images to assess seafloor habitat characteristics.
- Preparation of proposals to private, federal, international, and NGO RFPs. Responsible for scoping and monitoring of project budgets through to completion and delivery of final products to clients.

Project Manager, Applied Science Associates (dbs RPS ASA), Wakefield, RI
April, 2011 – July, 2017

- Performed marine fisheries and coastal habitat research calculating injuries and reporting scientific findings for the DeepWater Horizon oil spill NRDA. Conducted analyses of large fisheries and environmental datasets.

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- Developed novel methodologies for assessment of marine fish and invertebrate population dynamics.
- Project manager for development, application, and training of environmental risk assessment regarding oil and offshore wind development and operation in marine and coastal waters.
- Conducted risk assessments for coastal waters incorporating socioeconomic and ecological resources, including climate change planning.
- Preparation of proposals to private, federal, international, and NGO RFPs. Responsible for scoping and monitoring of project budgets through to completion and delivery of final products to clients.

SPECIAL SKILLS:

- Relational database management including MS Access
- Proficient in Microsoft Office Suite, R, and GIS
- Small boat handling including several safe boating courses

Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street, Suite 200A-N | Arlington, VA 22201
703.842.0780 | 703.842.0779 (fax) | www.accsp.org

TO: ACCSP Operations and Advisors Committee Members

FROM: Julie DeFilippi Simpson, ACCSP Deputy Director

DATE: June 10, 2021

SUBJECT: ACCSP Staff Workload for Proposed Project

Project Title:
Integration of vessel monitoring systems and electronic reporting in SAFIS and SAFIS applications through API development and field testing of multiple hardware options: Phase 2

Project Type: New Project

Principal Investigators: Anna Webb (MADMF), Rich Balouskus (RIDMF)

ACCSP Staff Workload Comments: *
One of the objectives of the project is to develop an enhanced administrative tool to view tracks in real time and provide a platform for advanced post-hoc analysis of spatial data. During the FY2020 project, ACCSP staff developed an APEX application for post-submission track viewing. The application provides tracks based on data points, with limited spatial analysis as attributes, and is integrated within the SAFIS management system. The data are available immediately after submission to the ACCSP unified API. SAFIS Administrators can select from dropdown lists of users, and trips submitted by those users along with a date range. Records representing unique pings are converted into Oracle geometries. Spatial analyses are then performed and connected with segments between each data point. Segments are then loaded into the map interface, and are color-coordinated according to custom speed bins. The application should not be considered a GIS, as users are not able to perform spatial analysis on their own, but will serve as the basis for achieving this objective during FY 2022.

The entirety of the technical work for achieving this objective will be done by ACCSP Data Team staff with spatial data skills. Partner agency staff have already proved to be willing and able to share ideas, codes, and approaches as possible to achieve efficiency through collaboration.

In order to develop an administrative tool that can support extensive spatial analyses, significant ACCSP staff time is required (500+ person-hours). This may involve ArcGIS Online integration with ACCSP's portal, or it may involve further development with the Google Map services. The staff workload for this proposal would be focused on a single member of the Data Team. The Data Team is structured in such a way as to be at least 2 people deep in almost all areas. As such, while the workload would be substantial, it could be spread over the entirety of the team through task sharing managed by the Data Team Lead. It is the opinion of the ACCSP leadership that this project is feasible.

* Comments and opinions are based on evaluation of this project individually as opposed to all proposed projects as all projects have yet to be submitted.

Geoff White, Director
Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

August 16, 2021

Dear Mr. White,

The Massachusetts Division of Marine Fisheries and the Rhode Island Division of Marine Fisheries, through partnership with Harborlight software, are pleased to resubmit the proposal titled "*Integration of vessel monitoring systems and electronic reporting in SAFIS and SAFIS applications through API development and field testing of multiple hardware options: Phase 2*" for your review. This letter documents the proposal PI's responses to questions posed by the Operations Committee proposal review team. Where applicable this information has also been included in the text of the updated proposal document. The project team felt having direct responses to questions in one document may be helpful for further review.

Question: Proposal appears to be 'maintenance' as opposed to a 'new' project.
Reply: While the authors recognize the similarities to the Phase 1 pilot project, a significant change in scope of work is presented for Phase 2. The primary focus of this proposal is the development of an operable SAFIS backend for storage of tracking data and the creation of an administrative interface for viewing tracking data. The primary focus of "Phase 1" was determining if and how specific cellular devices could deliver tracking data to both eTrips and SAFIS. Phase 2 proposes` to build upon the baseline created during Phase 1 producing enhanced products and scoping additional features. Thus, this proposal is not considered a request for maintenance funding for the existing platform.

Question: Provide clarification whether vessels might be required to have two tracking devices (depending on fishing permits) running simultaneously on a single vessel.
Reply: This is a discussion being held at both the ASMFC and at the federal level. Because proposed lobster tracking requirements (ping rate) exceed the current capabilities of satellite VMS units and/or are cost prohibitive, it is possible that multi-permitted vessels will require two separate VMS devices under Addendum XXIX to Amendment 3. However, this proposal does

not intend to address this specific issue but will provide comparisons of federally approved VMS devices and cellular units. These comparisons will assist managers when evaluating the costs of adding a secondary VMS unit to a vessel.

Question: How would the regulatory requirement be handled beyond the state level?
Reply: This proposal does not intend to address specifics of how regulatory requirements would be implemented. The focus of this project is centered on data collection and uses by management. A multi-jurisdictional group discussion will be needed to address potential regulatory implementation of this project's tool. As an example, implementation of such a program in the federal lobster fishery will require data to be collected under ACFCMA, be transmitted to ACCSP for initial storage, then be transferred to NOAA OLE for enforcement purposes. Other regulatory impacts to such data collection should be determined through multi-jurisdictional discussions.

Question: How many vessels tested each platform in Phase 1? Across which species?
Reply: Significant difficulties in development and implementation of devices on commercial devices were encountered during Phase 1 due to the COVID-19 pandemic. Five unique state vessels were used for testing across a range of environments including open ocean, nearshore bays, and inland coastal ponds. Implementation of devices on commercial vessels will proceed in the near future; species landed during test trips will be entirely dependent upon volunteers.

Question: Concerns were expressed regarding the cost to ACCSP to complete this project.
Reply: This project was designed in direct collaboration with ACCSP. Please see the provided memo (an attachment to this proposal) which highlights ACCSP's role and staffing abilities for this proposed work.

Sincerely,

Anna Webb
Environmental Analyst
MA Division of Marine Fisheries
30 Emerson Ave
Gloucester, MA 01930
anna.webb@mass.gov
(978) 282-0308 x115

Rich Balouskus
Principal Biologist
RI Division of Marine Fisheries
3 Fort Wetherill Dr
Jamestown, RI 02835
richard.balouskus@dem.ri.gov
(401) 423-1924

Proposal for Funding made to:

Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

Implementation of Electronic Quota Monitoring Reporting in North Carolina

Submitted by:

Meredith Whitten
North Carolina Division of Marine Fisheries
3441 Arendell Street; P.O. Box 769
Morehead City, NC 28557
meredith.whitten@ncdenr.gov

Sections of the proposal identified to help with the ranking process are underlined in the text, with a summary on pages 13-14.
Revisions are highlighted in yellow.

Addressing Questions from Reviewers

- Why does the current TT system not meet need?

  The North Carolina Trip Ticket Program collects commercial landings data monthly, including data submitted electronically through the current North Carolina Trip Ticket System (NCTTS) software. Dealers are required to submit their trip tickets for the whole month by the 10th of the following month. However, this resolution is insufficient for monitoring the quotas of species specified in this proposal, so dealers with permits for the purchase and sale of those species must submit a quota monitoring log each day. These daily log forms capture less detailed data at a more frequent temporal resolution, and for that reason, require a slightly different submission system than the monthly trip ticket submission process. Although the electronic submission systems for monthly trip tickets and daily quota logs will be integrated, the forms and data file structure are slightly different.

- What is the location intent for data delivery to ACCSP? Does data need to be sent to GARFO or SERO?

  North Carolina intends to continue sending data through the existing pathways. North Carolina currently does not use SAFIS, but dealers with federal permits submit their data through the NCTTS software, and those data are stored in an auxiliary table that GARFO accesses and can use for GARFO quota monitoring. North Carolina intends to work with ACCSP to enhance this pathway to allow state only licensed seafood dealers to submit data through this process. North Carolina understands that SAFIS is currently being redesigned to make data flows and processing more efficient and would like to work with the ACCSP to make sure the most efficient system can be developed.

- Could you provide a quote for project cost breakdown from Bluefin Data?

  The North Carolina Trip Ticket Program has on ongoing maintenance contract with Bluefin Data LLC to maintain and update the NCTTS software as well as develop VESL, the future web and mobile based submission portal for monthly trip tickets. The electronic, daily quota monitoring elements outlined in this proposal would be included in that maintenance contract, rather than as a separate project. Although we do not have an itemized cost breakdown, the projected maintenance costs fall within the amount included in the attached budget.

Sections of the proposal identified to help with the ranking process are underlined in the text, with a summary on pages 13-14.
Revisions are highlighted in yellow.

Applicant Name:	North Carolina Division of Marine Fisheries
Project Title:	Implementation of Electronic Quota Monitoring Reporting in North Carolina
Project Type:	New
Principal Investigator:	Meredith Whitten Marine Fisheries Biologist
Requested Award Amount:	$63,854
Requested Award Period:	For one year, beginning after the receipt of funds

Sections of the proposal identified to help with the ranking process are underlined in the text, with a summary on pages 13-14.
Revisions are highlighted in yellow.

Objective:

The primary objective of this project is to establish an electronic reporting mechanism for seafood dealers holding North Carolina permits for the purchase and sale of quota monitored species. This project will shift quota monitoring daily reporting from a paper-based system to an electronic reporting system in the following ways:

- Implement electronic quota monitoring reporting and integrate electronic reporting with the extant North Carolina Trip Ticket System (NCTTS) software.
- Implement a web-based application for electronic quota monitoring reporting that will allow dealers to submit required quota monitoring reports from any computer or mobile device with internet access.
- Enhance the data pathways needed to submit quota monitoring data to SAFIS and ACCSP by NC dealers.

Need:

The North Carolina Division of Marine Fisheries (NCDMF) requires daily reports from dealers holding permits for the purchase and sale of certain species managed by commercial quotas. Currently these species include Spiny Dogfish, Summer Flounder, Atlantic Ocean Striped Bass, Central/Southern Management Area (CSMA) Striped Bass, Albemarle Sound Management Area (ASMA) Striped Bass, and Black Sea Bass North of Cape Hatteras. Seafood dealers holding permits for these species are required to submit daily quota monitoring logs during the respective season for each species, including negative reports if there are no landings. Dealers print and sign these logs and then submit them to NCDMF via fax or e-mail. They also have the option to call in landings to the Quota Monitoring Biologist and then mail in the paper forms at the end of the season. After receiving these logs, NCDMF staff manually enter each daily log for each permit number into the state's Fisheries Information Network (FIN) through an outdated software application. This application can only be used on the computer on which it is installed, and that computer must be connected via ethernet to the state network, which has presented a challenge with state offices closed for Covid-19. The current process is time consuming for dealers and staff, and the manual entry method introduces a source of potential error. This project will streamline quota monitoring by allowing dealers to submit their daily logs through the existing NC Trip Ticket System (NCTTS) software. Dealers will use a specialized report to pull data directly from their entered trip tickets into the quota log, which will reduce reporting redundancy and delays. Modernizing this process will make it easier for dealers to comply with reporting requirements and enable NCDMF to monitor landings more efficiently.

The current system requires NCDMF staff to manually enter a log for each day for each individual species permit for each dealer. If a dealer holds permits for all six relevant species, then NCDMF staff may have to enter up to 186 individual data points for a single dealer in one month. This modernization will greatly reduce the time that NCDMF staff spends on data entry and will allow more time for verifying the quality and completeness of the data. NCDMF staff currently spends on average about 5-6 hours per week just entering logs and appropriately saving the faxed or emailed forms, in addition to time spent calling dealers for missing reports and correcting data. This process is also time consuming for dealers, requiring up to an estimated 3-4 hours per month in addition to time spent completing and sending state or federally required trip tickets. During busy times, NCDMF staff struggle to get all the logs entered, monitor quality assurance and quality control (QA/QC) measures, and follow up with non-reporters. If NCDMF staff can spend less time on data entry, they will have more time to follow up with non-reporters and better monitor the quotas.

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Dealer compliance is a major challenge with daily quota monitoring. When dealers neglect to submit logs on a daily basis, it is difficult to assess the total landings that actually occurred within the season in a timely way. From a dealer perspective, the reporting process is redundant and time consuming. Approximately 60% of dealers holding quota monitoring permits already use the NCTTS software to report their required monthly trip tickets electronically to the state, but they have to send their daily quota logs through a different, paper-based submission process. Daily quota logs are separate from monthly trip tickets because of the need to have a finer temporal resolution of landings data on these quota managed species. Additionally, the quota monitoring logs are different from the trip ticket forms because they collect less detailed information to ease the daily reporting burden on dealers, so for these reasons, the current NCTTS software and trip ticket submission process is not sufficient for quota monitoring. When considering this potential project, NCDMF conducted an informal survey of 12 dealers to assess their interest level in electronic quota monitoring reporting and to ask for dealer input on the features they would like to see. Approximately half of those dealers responded, and of those who responded, they were all excited about the potential to send daily quota logs electronically. Integrating electronic quota monitoring with this software will create an improved "one stop shop" experience for dealers. Although the NCTTS software can generate a quota monitoring log from the entered trip tickets, very few dealers use this reporting feature. Based on conversations with dealers, they generally find it more complicated to print a log from the NCTTS software than it is to fill out and print a saved Word or Excel form template. The current quota monitoring report feature in the software does not offer dealers much of an advantage because they must print the daily log anyway. Streamlining the data submission for dealers will help improve compliance and therefore the quality of these important fisheries dependent data.

Additionally, in the survey responses, dealers highlighted their need to be able to submit their quota monitoring logs from multiple computers and locations. Since the NCTTS software can only be installed and used on one computer, dealers commented that if they are out of the office or at a different business location on a given day, they are not able to use the NCTTS software to print a quota monitoring log. Even when electronic quota monitoring is added to the NCTTS software, dealers will still only be able to use it on one computer, which is inconvenient for many dealers. This proposed project will address this issue through the second goal of moving to a web-based, mobile friendly reporting platform. The current process requires that a representative of each dealer have daily access to a computer, printer, scanner, and/or fax machine; this is not realistic for many of the dealers in North Carolina with multiple locations, limited internet access, or part-time staff, and sometimes daily quota monitoring logs are submitted late due to technical issues with fax machines and scanners. NCDMF hopes that the web-based platform will reduce these barriers and result in better dealer compliance. Although NCDMF could launch directly to the web-based platform without first deploying the electronic reporting functionality to the NCTTS software, NCDMF feels it is important to allow dealers to transition more gradually. While many dealers like being able to submit electronically, new technology can be intimidating for some of the less computer savvy users. Allowing dealers to use a familiar software interface for the new reporting system will reduce frustration and prevent dealers from feeling overwhelmed. NC is also currently working with Bluefin Data LLC to develop VESL, a web-based reporting platform for dealers to submit trip tickets monthly. The web-based quota monitoring reporting will be integrated with VESL to continue to provide a "one stop" experience for dealers.

Integrating the quota monitoring submission process with the trip ticket submission process also allows for better control of data quality. Currently, NCDMF staff runs an annual verification to compare the data submitted via trip tickets to the data submitted via quota monitoring logs. Sometimes the discrepancies between quota monitoring logs and trip tickets can be tens of thousands of pounds. Many of these errors identified in verification are often a result of either 1) NCDMF staff making a data entry mistake or 2) dealers incorrectly entering data either into the quota monitoring log or trip tickets. Implementing electronic

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reporting will reduce these errors by drastically reducing the amount of manual data entry by NCDMF staff. Electronic quota monitoring will also reduce transcription errors from the dealer. Instead of manually copying data from trip tickets into quota monitoring logs, dealers will pull the data from trip tickets directly into the daily log. This will also reduce the amount of time that NCDMF staff spends verifying the accuracy of values between trip tickets and quota monitoring logs.

Obtaining accurate daily records from more than 70 dealers for these tightly managed species is challenging, but essential, when the quotas may be met within a few weeks of opening the season. For example, the 2021 ASMA Striped Bass season quota was met and exceeded within 15 days. By proclamation, the season was initially opened for two months, but the fine scale data obtained from daily quota monitoring logs informed managers of the need to close the season earlier. Monitoring catch data in a fishery like ASMA Striped Bass requires staff to pay very close attention, and having accurate data is essential. NCDMF and the North Carolina Marine Fisheries Commission (MFC) are finalizing the details of an amendment to the current Southern Flounder Fishery Management Plan (FMP) that will add Southern Flounder as a quota monitored species requiring daily reporting. This change, expected to take place in 2022, will nearly triple the number of dealers NCDMF staff will have to monitor daily. Furthermore, NCDMF anticipates that the Southern Flounder quota will be split by three different regions and at least two different gear types, which will require an additional level of monitoring. Much like ASMA Striped Bass, the Southern Flounder quota is also expected to be met prior to the closure of the season and will require intensive staff attention. Pre-emptively implementing a more efficient reporting system prior to the addition of Southern Flounder is critical to quota monitoring in North Carolina.

Results and Benefits:

Implementing electronic quota monitoring data submission will be a substantial and innovative modernization of the current system. Asking dealers to submit faxed or scanned paper forms is outdated, and this project takes advantage of modern technological capabilities by allowing dealers to electronically submit quota monitoring data that will be imported automatically into the state's FIN. This project will improve the quality and timeliness of catch data and will facilitate better QA/QC and dealer compliance. Additionally, this project will give NC the capacity to add other species to this daily quota monitoring process. By proactively modernizing the quota monitoring reporting system before Southern Flounder or other species are added, NCDMF staff can be prepared for management measures that may rapidly require new species to have a strict quota and be monitored daily.

This project will improve data quality not only in North Carolina, but also at a regional scale, since many of these quotas are established through coastwide management plans. Although many of the larger dealers who sell these quota monitored species are federally permitted dealers and send data to ACCSP, substantial landings still occur with dealers who only have state permits. Implementing electronic quota monitoring would allow NCDMF to develop a file structure for the quota monitored data that could more easily be shared with ACCSP for more timely data. NCDMF representatives on both the Mid-Atlantic Fisheries Management Council (MAFMC) and the South Atlantic Fisheries Management Council (SAFMC) have expressed a desire to share more of our state data with the Greater Atlantic Regional Fisheries Office (GARFO) and the Southeast Regional Office (SERO) for species like Bluefish that have coastwide allocations but are not managed in NC by permits that require daily reporting. Establishing a better interface for sharing data at finer temporal scale than trip tickets would improve coastwide management and could help prevent overages as seen in NC Bluefish in 2020.

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This project will primarily address the Program Goal 1a: Improvements in Catch, effort, and landings data. Additionally, two of the species directly affected by this proposal, Black Sea Bass and Spiny Dogfish, fall in the top quartile of the Biologic Review Panel priority matrix. Although this project focuses on collecting catch data rather than biological sampling, the data obtained are still relevant and important for informing management of these priority species.

Funding Transition Plan:

This project has a defined end-point at the end of the funding period. Full time staff funded through other sources will be able to maintain and support the quota monitoring program going forward after the implementation of electronic quota monitoring.

Data Delivery Plan:

NCDMF staff sends out weekly quota monitoring report emails to state and regional managers to provide updates on current landings against the quota. These weekly updates currently go to members of the Atlantic States Marine Fisheries Commission (ASMFC), MAFMC, SAFMC, managers in neighboring states, and staff at NOAA regional offices. Additionally, a publicly available poster is published on the NCDMF website each week to make the data accessible to all stakeholders. The data shared in these weekly updates will be collected through electronic reporting proposed in this project.

NCDMF hopes to be able to use and enhance the current data pathways used by NC federally permitted dealers to include state only permitted dealers. If this pathway cannot be enhanced then NCDMF staff could work with ACCSP staff to see if the NC/ACCSP upload portal could be modified to submit daily quota monitoring records.

NCDMF also submits monthly uploads of trip ticket data to the ACCSP Data Warehouse via the NC/ACCSP upload portal and plans to continue using this pathway for submitting landings data. Currently NC does not submit data to SAFIS. When SAFIS was developed, NC was already working with Bluefin Data LLC to develop the current electronic reporting system and felt that at that time, the Bluefin Data application better suited the reporting needs of NC. Currently, federally permitted dealers in North Carolina submit their data through the NCTTS software, and the data are stored in auxiliary tables outside of SAFIS that federal agencies can access and use in combination with SAFIS data. NCDMF is not planning to develop new pathways but hopes that this project can lay the groundwork to allow NC to transmit quota monitoring data to ACCSP and SAFIS. The quota monitoring data structure is less detailed than trip ticket data, so the data structure may need to be edited to fit within current pathways. Defining and developing the needed data structure to submit quota monitoring data through existing pathways would also increase the future capacity to monitor other species through daily quota monitoring.

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Approach:

Goal One: Implement electronic quota monitoring reporting and integrate electronic reporting with the extant North Carolina Trip Ticket System (NCTTS) software.

Task A: Develop the data structure needed to receive electronic quota monitoring files into the current state FIN.

Bluefin Data LLC will:

- Develop the code needed to add electronic quota monitoring to the current NCTTS software; and
- Provide ongoing technical support to resolve issues.

NCDMF will:

- Conduct QA/QC of software functionality prior to deployment; and
- Partner with North Carolina Department of Information Technology (NCDIT) staff and developers at Bluefin Data LLC to ensure that data collected through the software application can be captured in the state FIN.

Task B: Deploy electronic quota monitoring as a feature of the NCTTS software.

Bluefin Data LLC will:

- Provide ongoing technical support for any bugs identified after deployment.

NCDMF will:

- Provide technical support to dealers; and
- Verify accuracy of data through QA/QC standards.

Task C: Conduct outreach and training to dealers.

NCDMF will:

- Make site visits to dealers to demonstrate electronic reporting and assist with technical support and software installations;
- Use outreach emails and phone calls to encourage dealers to switch to electronic reporting; and
- Update software manuals to include step-by-step instructions and disseminate to dealers.

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Goal Two: Implement a web-based application for electronic quota monitoring reporting that will allow dealers to submit required quota monitoring reports from any computer or mobile device with internet access.

Task A: Coordinate the development of the web-based platform and mobile application

Bluefin Data LLC will:

- Develop the web-based data entry platform and mobile application;
- QA/QC of functionality prior to deployment;
- Deploy mobile app to app stores; and
- Provide ongoing technical support to resolve issues.

NCDMF will:

- Test the new functionality prior to deployment; and
- Provide technical support to dealers.

Task B: Conduct outreach and training to dealers

NCMDF will:

- Conduct site visits to dealers to demonstrate the web-based and mobile applications and assist with technical support;
- Send outreach emails and make phone calls to encourage dealers to use the new web-based platform and mobile application; and
- Update program manuals and develop new outreach materials with step-by-step instructions for dealers

Additional Task: NCDMF will collaborate with ACCSP and SAFIS to enhance the data pathways needed to submit quota monitoring data to SAFIS from NC dealers.

Geographic Location:

This project will be administered through the NCDMF Headquarters in Morehead City, North Carolina and will include dealers throughout coastal North Carolina. The project will be completed in partnership with Bluefin Data LLC, located in Louisiana.

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Milestone Schedule:

Task	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Develop the data structure needed to receive electronic quota monitoring files into the current FIN	X	X										
Develop electronic quota monitoring as a feature of the NCTTS software			X									
Conduct outreach and training to dealers		X	X	X	X	X	X	X	X	X	X	X
Coordinate the development of the web-based and mobile platforms				X	X	X	X					
Develop the web-based and mobile platforms							X	X	X	X		
Coordinate data feed with ACCSP and SAFIS								X	X	X		
Semi and Annual Report Writing						X				X	X	X

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Project Accomplishments Measurement:

Project Component	Goal	Measurement
Develop a mechanism for electronic daily quota monitoring report and integrate with the NCTTS software.	Quota monitoring data submitted by dealers electronically, rather than by paper forms, using the NCTTS software.	Electronic quota monitoring reporting application developed, tested, and deployed.
Dealer outreach	Promote the use of electronic rather than paper-based reporting and provide dealers with the support and information needed to switch.	Dealers are made aware of this new feature through phone calls, emails, and outreach visits and have received support to download the updated version of the reporting software and eventually migrate to the web-based/mobile platform.
Data Collection, QA/QC, and Analysis	Obtain daily reports from users, verify data quality, and disseminate data to appropriate fisheries managers.	Data entered by dealers daily; NCDMF conducting regular QA/QC checks and publishing weekly reports of the data.
Web-based and mobile data entry platforms	Implement web-based and mobile data entry platforms.	Web-based and mobile entry applications developed, tested, and deployed.
Data feed to ACCSP and SAFIS	Work with ACCSP and SAFIS to try to submit daily quota log data through current pathways.	Necessary data structure developed to send data directly ACCSP and SAFIS.

Project Personnel:

Alan Bianchi – Environmental Program Supervisor I, NCDMF
Brandi Salmon – Section Chief, NCDMF License and Statistics Section
Stephanie McInerny – Section Chief, NCDMF Information Technology
Meredith Whitten – Marine Fisheries Biologist I, NCDMF
Willow Patten – Marine Fisheries Biologist I, NCDMF
Vacant – Marine Fisheries Biologist I, NCDMF
Brett Messner – Applications Systems Analyst II, NCDMF IT Section

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Budget Narrative:

The cost summary table below includes an explanation for each budgeted item. The fringe and ACA fee included here are for a temporary employee so no indirect costs are associated.

Cost Summary (Budget):

Category	Expense	Cost	ACCSP Request	State In-Kind	Explanation
Personnel	NCDMF Marine Fisheries Biologist I, Willow Patten	$38,000	$38,000		$20 hr./1,900 hours
	NCDMF Staff in-kind			$50,100	NCDIT staff and NCDMF Trip Ticket program staff will contribute to this project and work to implement electronic quota monitoring.
Subtotal			$38,000	$50,100	
Contractual	Bluefin Data LLC	$10,000	$10,000		Contract with Bluefin Data LLC to develop and support electronic quota monitoring and associated applications
Subtotal			$10,000		
Fringe	NCDMF Willow Patten, temporary solutions fringe and Affordable Care Act (ACA) fee		$8,845		Fringe=18.8% of salary plus required ACA fee of $1701.12
Subtotal			$8,845		
Travel	Travel for dealer support and outreach trips	$3,000	$3,000		Per diem for meals and additional mileage fee to cover cost of state vehicles
Subtotal			$3,000		
Supplies	Computer and monitors	$1,959	$1,959		NCDMF Biologist will need computer and monitors
	General Office Supplies	$500	$500		Pens, paper, printer toner, mailing supplies
	Software	$700	$700		SAS Software license for data analysis
	Camera and Headset	$250	$250		Camera and headset to facilitate remote work and meetings
	Cell phone	$600	$600		Cell phone for NCDMF Biologist
Subtotal			$4,009		
	Column Totals		$63,854	$50,100	Total project cost = $113,954
	Total Request		**$63,854**		
	Percent		56%	44%	Percentage calculated from total cost without fee

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Summary of Proposal for Ranking Purposes

Proposal Type: *New*

Program Priority

Catch and Effort: **100%** of all commercial dealers submit trip-level **catch and effort** data to the trip ticket program for **100%** of the species included in the quota monitoring permits (pg. 7).

A **data delivery plan** is included on page 7.

Project Quality Factors

Multi-Partner/Regional impact including broad applications:

Although this project addresses data in North Carolina, the species impacted by this proposal include Spiny Dogfish, Summer Flounder, Atlantic Ocean Striped Bass, Central/Southern Management Area (CSMA) Striped Bass, Albemarle Sound Management Area (ASMA) Striped Bass, and Black Sea Bass North of Cape Hatteras. Except for ASMA Striped Bass, these species are managed through coastwide, state-based allocations. For this reason, maintaining accurate, timely data at the state level in North Carolina has significance regionally, particularly given the proportion of these quotas allocated to North Carolina. North Carolina currently holds the largest single state allocation of Summer Flounder (27.4%) and Spiny Dogfish (14.036%) and a considerable portion of the Black Sea Bass (11%) quota. Regional management agencies such as the ASMFC, MAFMC, and NOAA Fisheries would benefit from having this accurate and timely trip-level data from North Carolina to improve management at a regional level (pg. 6).

Contains funding transition plan/Defined end-point:

This project has a defined end-point at the end of the funding period. Full time staff funded through other sources will be able to maintain and support the quota monitoring program going forward after the implementation of electronic quota monitoring (pg. 7).

In-kind contribution:

44% (pg. 12)

Improvement in data quality/quantity/timeliness:

This project will improve data quality and timeliness by reducing the time required by both dealers and NCDMF staff to monitor daily landings of quota monitored species. It will also reduce errors by reducing the amount of manual data entry and will help to improve dealer compliance with daily submission requirements (pg. 5-6).

Potential secondary module as a by-product:

None

Impact on stock assessment:

Although this project addresses data in North Carolina, the species impacted by this proposal include Spiny Dogfish, Summer Flounder, Atlantic Ocean Striped Bass, Central/Southern Management Area (CSMA) Striped Bass, Albemarle Sound Management Area (ASMA) Striped Bass, and Black Sea Bass North of Cape Hatteras. Except for ASMA Striped Bass, these species are managed

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through coastwide, state-based allocations. For this reason, maintaining accurate, timely data at the state level in North Carolina has significance regionally, particularly given the proportion of these quotas allocated to North Carolina. North Carolina currently holds the largest single state allocation of Summer Flounder (27.4%) and Spiny Dogfish (14.036%) and a considerable portion of the Black Sea Bass (11%) quota. Regional management agencies such as the ASMFC, MAFMC, and NOAA Fisheries would benefit from having this accurate and timely trip-level data from North Carolina to improve management and stock assessments.

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Meredith Whitten

North Carolina Division of Marine Fisheries
3447 Arendell St.
Morehead City, NC 28557
(252) 515-6690
Meredith.Whitten@ncdenr.gov

EXPERIENCE

Marine Fisheries Biologist I
2020 – Current North Carolina Division of Marine Fisheries (NCDMF) Morehead City, NC

Communicate with dealers to ensure timely submission of mandated quota monitored fisheries data logs
Input commercial quota monitoring data and eel pot log data into databases using the quota monitoring software and Microsoft Access
Produce weekly reports that present the most recent available data on the status of North Carolina's quota managed fisheries
Implement data quality controls and verify the accuracy of quota monitoring data with Trip Tickets
Maintain accurate, organized records of quota monitoring logs and electronic Trip Ticket updates and edits
Assist dealers and Port Agents with the installation and ongoing support of Trip Ticket electronic reporting software through technical support calls, emails, and in person visits
Investigate and resolve Trip Ticket data integrity issues in partnership with the data clerks, Port Agents, seafood dealers, software developers, and IT team members
Use and edit SAS code to complete data requests for fishermen, dealers, and internal Division of Marine Fisheries Staff
Utilize DMF's Fisheries Information Network (FIN) to obtain fisheries participant information and relevant DMF data
Attend state and federal fisheries meetings to develop and maintain knowledge of current issues in commercial fisheries management
Review and assist with writing technical reports such as the annual License and Statistics Big Book and various Biological Review Team documents

Graduate Researcher
2019 – 2020 Quantitative Fisheries Ecology Lab, Stony Brook University Stony Brook, NY

Planned and conducted field-based shark tagging research in collaboration with other researchers and New York State officials as a Ph.D. student
Maintained standardized metadata and nomenclature in database of biological samples

Research Assistant
2017 – 2019 Marine Geospatial Ecology Lab, Duke University Beaufort, NC

Assisted with a literature review of hundreds of migratory fish papers for the Migratory Connectivity in the

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Ocean (MiCO) project
Developed standardized methodology and conducted spatial analysis of satellite telemetry data using R, ArcGIS Pro, and NOAA data sources

Georgia Adopt-A-Stream State Coordinator
2016 – 2017 Georgia Environmental Protection Division Atlanta, GA

Managed and supported a statewide network of community coordinators and hundreds of volunteers
Used ArcGIS, Google Earth, and government data sets to develop sampling plans for water quality testing and data collection
Maintained relational database of citizen science data and managed QA/QC of data
Organized and led certification workshops in water quality monitoring protocols
Developed, updated, and distributed outreach materials, scientific manuals, and program newsletters
Planned and led organizational meetings with the program advisory board, network of community coordinators, and local stakeholders
Orchestrated an annual water quality monitoring conference with over 200 attendees, including water quality professionals, academic researchers, citizens, and government officials

EDUCATION

May 2019 Duke University Durham, NC
Master of Environmental Management, Coastal Environmental Management Concentration, Geospatial Analysis Certificate

May 2014 Emory University Atlanta, GA
B.S., Environmental Sciences

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Proposal for Funding made to:

Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

North Carolina fishery-dependent biological data transmissions to the Atlantic Coastal Cooperative Statistics Program Data Warehouse

Submitted by:

Stephanie McInerny
North Carolina Division of Marine Fisheries
3441 Arendell Street; P.O. Box 769
Morehead City, NC 28557
stephanie.mcinerny@ncdenr.gov

Applicant Name:	North Carolina Division of Marine Fisheries
Project Title:	North Carolina fishery-dependent biological data transmissions to the Atlantic Coastal Cooperative Statistics Program Data Warehouse
Project Type:	New
Principal Investigator:	Stephanie McInerny Information Technology Section Chief
Requested Award Amount:	$79,887
Requested Award Period:	For one year, beginning after the receipt of funds
Original Date Submitted:	June 12, 2021

Objective

To create an interface to be used by North Carolina to view, schedule, and transmit fishery dependent biological data to the Atlantic Coastal Cooperative Statistics Program (ACCSP) Data Warehouse.

Background/Need

The development of a comprehensive database to house field sampling collections for the North Carolina Division of Marine Fisheries (NCDMF) was initiated in May 1980 and incorporates data from the 1960s to present. Data are collected from both fishery-dependent and fishery-independent surveys and used in stock assessments and fishery management plans (FMPs) to manage species important to the state as well as those managed by regional and federal management commissions and councils.

Currently, there are data from over 120 programs within NCDMF's Biological Database (BDB) and almost 20 million records. Types of fishery-dependent data collected include length, weight, aging structures, bycatch, species interactions, tagging, and observer data. The BDB consists of a hierarchical set of 128-byte ASCII records that detail various data collected by the sampling programs conducted by the division. This 128-byte file is scheduled to be converted to a SQL Server database starting in July 2021 along with new web interfaces for data entry, editing, and extraction through an approved FY2021 ACCSP grant titled "North Carolina biological database enhancements to prepare for transmission of data to the ACCSP". That project will lay the groundwork for the data used in the proposed project. The current proposal is being submitted as a new project instead of maintenance because of the change of scope.

In 2014, a web interface was created under a FY2015 ACCSP grant titled "Update and enhance Atlantic Coastal Cooperative Statistics Program data transmission methods for North Carolina Division of Marine Fisheries". This web interface was created to revamp the transmission of North Carolina's trip-level commercial data to ACCSP. Within this interface is the ability to schedule transmissions, view submitted data, modify reference tables used in the data translation, and export datasets. The interface was built in coordination with ACCSP staff to ensure data standards were being met and the data has to pass specific QA/QC requirements upon transmission. Since the completion of this interface, the process to submit trip-level commercial data to the ACCSP has worked exceptionally well and the data are submitted monthly. The current proposal is centered around enhancement of this existing interface to include data transmission of fishery-dependent biological data.

Over the years, the NCDMF has been an active participant in transferring selected BDB program data to other regional databases. North Carolina fishery-dependent biological data from the snapper-grouper fishery is provided to the NOAA Fisheries Southeast Fisheries Science Center's (SEFSC) Trip Information Program (TIP) which is a major component of the ACCSP. Many snapper/grouper species are in the top 25% of the biological sampling priority matrix. Other than snapper-grouper data, biological data collected by North Carolina are not currently available in the Data Warehouse; therefore, completion of the proposed project will expedite data availability to managers and stock assessment scientists as well as simplify the process for getting those data to NOAA and provide a simple way for data to be available more frequently than once a year. Due to only receiving NCDMF's TIP data once per year, NOAA staff that use these data for age/growth analyses have to manually verify and enter the trip information into their database when samples are received instead of looking them up in the TIP database. Once North Carolina's biological data are able to be submitted to ACCSP, additional data needed to satisfy TIP program requirements can be incorporated into the transfer so data could be retrieved by SEFSC staff from the ACCSP Data Warehouse, as needed. Depending on the differences between the data elements required by TIP and those required by ACCSP, a separate TIP data transfer could be set up and scheduled to transmit on a monthly basis which will significantly improve timeliness of these data to TIP.

Results and Benefits

Successful fulfillment of this project will provide:

- Access to North Carolina fishery-dependent biological data in the ACCSP Data Warehouse
- Accelerated data availability to fisheries managers for stock assessments and FMPs
- Enhanced access to TIP data by SEFSC staff

Data Delivery Plan

The NCDMF BDB has extensive documentation for each of the sampling programs that are stored in the database. Documentation of the new web interface as well as any relevant stored procedures and data mapping tables will be provided to the ACCSP as part of the grant completion report. Stored procedures created during this project will include documentation on primary function, data tables being accessed, and corresponding variables within the procedure's SQL code.

Approach

Upon completion of the FY2021 grant to reformat NCDMF's BDB into SQL Server, the data will be flagged as fishery-dependent or fishery-independent based on the biological sampling program they were collected from to differentiate between these data types. This will facilitate the transmission of only fishery-dependent data to the ACCSP. Before development begins, NCDMF staff will meet with the contractors to discuss database structure and transfer format requirements for the data to be successfully formatted and transmitted to the ACCSP.

Staff at NCDMF and ACCSP have discussed and agreed that the NCDMF will partner with the ACCSP to successfully execute this project (Julie Defilippi Simpson, ACCSP, pers. comm.). NCDMF will also work directly with NOAA Fisheries staff regarding TIP data transfers (David Gloeckner, NOAA, pers. comm.). The current web interface used to transmit commercial data will be used as the template to build the new interface as described in this proposal, and both modules (i.e., commercial and biological) will be accessible within a single interface. If needed, access to each module can be restricted based on the role of the user which is functionality that is already incorporated into NCDMF's FIN application. The data transfer structure for ACCSP's biological data has already been provided to the principal investigator of this project (Lindsey Aubart, ACCSP, pers. comm.). Before development begins, NCDMF and ACCSP will work on a requirements document to flesh out what is needed and expected in the new interface. Testing to ensure data are accurately being queried and transferred will occur throughout the project by both NCDMF IT staff and ACCSP staff.

NCDMF will attempt to hire the contractor that will be responsible for the main interface and stored procedure creation, whereas ACCSP will hire the contractor responsible for coordinating QA/QC and connections to the Data Warehouse. NC Department of Information Technology contracting processes have changed in recent years making the prospect of obtaining a qualified individual to complete this project simpler, but if NCDMF is unsuccessful in hiring a contractor through state procurement, then ACCSP will handle all contracting for this project. In the past, the ACCSP has demonstrated the ability to secure contractors with the technical programming skills required to successfully accomplish the objectives of this project. NCDMF will not be involved in monitoring expenditures of any contractor hired by ACCSP.

Geographic Location

The geographic range of the data being submitted to ACCSP under this project covers only North Carolina; although many of the species included are managed regionally. This project will be administered from NCDMF Headquarters in Morehead City, North Carolina. This project may be performed remotely and does not require the position to be located in North Carolina.

Milestone Schedule (start date depending on time of grant award):

Task	Month 1	2	3	4	5	6	7	8	9	10	11	12
Hire contractors	X	X	X									
Requirements document will be developed	X	X	X									
NCDMF database structure and caveats will be discussed with contractor		X	X									
Stored procedures to translate NCDMF fields to ACCSP format will be created			X	X	X	X						
Interface for transmitting data to ACCSP will be built. Testing, as needed.			X	X	X	X	X	X	X	X	X	
Documentation will be finalized											X	X

The contractors are not expected to work 40 hours a week on this project. Report writing will follow the requirements of two semi-annual status reports due at the end of the seventh and thirteenth months, respectively, and a final report due at the end of the fifteenth month, depending on time of the grant award.

Project Accomplishments Measurement

Projects	Accomplishments
Develop interface to schedule and transmit biological data to the ACCSP. Testing will occur as needed.	• Interface completed and fully documented • Data can be submitted to ACCSP • Interface is tested and meets data standards
Develop ability to view data submitted to ACCSP. Testing will occur as needed.	• Interface completed and fully documented • Data can be viewed • Interface is tested and meets data standards
Develop separate data transfer to send TIP data to ACCSP, if needed.	• ACCSP received transmitted data • Data were in the correct format and meet standards

Project Personnel

Stephanie McInerny—Section Chief, NCDMF Information Technology
Dee Lupton—NCDMF Deputy Director
Julie Defilippi Simpson—ACCSP Deputy Director
Lindsey Aubart—ACCSP Fisheries Data Coordinator
Larry Beerkircher—NOAA Fisheries Catch Validation and Biosampling Branch Chief
Brett Messner—Applications Systems Analyst II, NCDMF IT Section
Chris Capoccia—Applications Systems Analyst II, NCDMF IT Section
Vacant—Applications Systems Analyst I, NCDMF IT Section

Budget Narrative

The cost summary table below shows an explanation for each budget item. The indirect rate for the Contractor is based on the standard ACCSP indirect rate of 35%. NCDMF will not charge an indirect fee for any contractor hired by NCDMF IT. The contractor hours provided below are estimates and include additional hours that may not be needed to ensure project objectives get completed.

Cost Summary

Category	Expense	Units	Cost	ACCSP Request	State In-Kind	Explanation
Personnel	Contractor (NCDMF)	1	$43,750	$43,750		One Analyst @ $125.00/hr for 350 hrs
	Contractor (ACCSP)	1	$13,500	$13,500		One Analyst @ $135.00/hr for 100 hrs
	IT Section Chief	1			$26,700	$8,900/month for 3 months
	NCDMF IT Staff	3			$18,000	Average salary of $6,000/month for combined 3 months of work (480 hrs)
Subtotal				$57,250	$44,700	
Fringe	Retirement, Social Security, Health Insurance				$14,028	Fringe=29.09% of salary ($11,258) plus $6,647/year for health insurance ($554*5 months combined work=$2,770)
Indirect				$20,037		• Indirect for NCDMF Contractor (if hired by ACCSP)=35% of salary ($15,312) • Indirect for ACCSP Contractor =35% of salary ($4,725) • Indirect for NCDMF Staff or Contractor hired by NCDMF)=$0
Subtotal				$20,037	$14,028	
Travel						
Subtotal						
Supplies	Computer	1	$2,500	$2,500		
	External Hard Drive	1	$100	$ 100		
Subtotal				$2,600		
	Column Totals			$79,887	$58,728	Total project cost = $138,615
	Total Request			**$79,887**		
	Percent			57%	43%	Percentage calculated from total cost

Funding Transition Plan

This project should be completed within the grant cycle and will not require additional funding in subsequent years to be maintained.

Summary of Proposal for Ranking Purposes

Proposal Type: ***New***

Program Priority

Catch and Effort: 0%

Biological Sampling: 100%

100% of all biological data collected by the Division in North Carolina are entered into the Division's Biological Database (BDB). The BDB houses data from over 120 programs and contains over 20 million records. Many snapper/grouper species are in the top 25% of the biological sampling priority matrix. Biological data on these species will be part of the data transmitted as a result of this project. **100%** of the fishery-dependent data in the BDB will be sent to the Data Warehouse after completion of this project. (See pages 3-4)

Bycatch/Species Interactions: 0%

Social and Economic: 0%

Metadata/Data Delivery Plan:

The NCDMF BDB has extensive documentation for each of the sampling programs that are stored in the database. New data mapping tables will be created to document how fields in the BDB will match to the ACCSP Biological data tables. Any new stored procedures created during this project will include documentation on primary function, data tables being accessed, and corresponding variables within the procedure's SQL code. Documentation will be provided as part of the grant completion report. (see page 4)

Project Quality Factors

Multi-Partner/Regional impact including broad applications:

Although this project only covers data for North Carolina, future transmissions of biological data to the ACCSP will benefit other partners as the data will be more readily available for data requests and stock assessments. Many species within North Carolina are managed regionally. Regional management agencies such as the Atlantic States Marine Fisheries Commission (ASMFC) and Mid-Atlantic Fishery Management Council (MAFMC) would benefit from having more access to these fishery-dependent data. NOAA TIP data frequency will improve drastically by moving from yearly to monthly data uploads. Data can also be made available, as needed. As part of this project, NCDMF will be working with NOAA Fisheries to ensure data for TIP are available either from the ACCSP Data Warehouse or from a defined transfer action within the new interface. (see pages 3-4)

Contains funding transition plan/Defined end-point:

The goals defined in this project should be completed within the grant cycle. (see page 7)

In-kind contribution:

43% (See cost table on page 6)

Improvement in data quality/quantity/timeliness:

The project identified in this proposal will greatly improve data quality and timeliness by providing a method for transmitting data to the ACCSP Data Warehouse using existing protocols for data transmission and QA/QC checks for accuracy. As of now, biological data from North Carolina are not submitted to the ACCSP. (see pages 3-4)

Potential secondary module as a by-product:

Bycatch: 100% of all observer data collected by the Division in North Carolina are entered into the Division's Biological Database (BDB). Data from the Division's observer program of the South Atlantic Large Mesh Gillnet Fishery will be part of the data transmitted as a result of this project. **100%** of the fishery-dependent data in the BDB will be sent to the Data Warehouse after completion of this project. (See pages 3-4)

Impact on stock assessment:

Although this project only covers data for North Carolina, transmissions of fishery-dependent biological data to the ACCSP will benefit other partners as the data will be more readily available for data requests and stock assessments. Many species within North Carolina are managed regionally. Regional management agencies such as the Atlantic States Marine Fisheries Commission (ASMFC) and Mid-Atlantic Fishery Management Council (MAFMC) and federal management agencies such as NOAA would benefit from having more access to these fishery-dependent data. NOAA TIP data frequency will improve drastically by moving from yearly to monthly data uploads. Data can also be made available, as needed. As part of this project, NCDMF will be working with NOAA Fisheries to ensure data for TIP are available either from the ACCSP Data Warehouse or from a defined transfer action within the new interface. (see pages 3-4)

Stephanie McInerny

North Carolina Division of Marine Fisheries
3441 Arendell St.
Morehead City, NC 28557
(252) 808-8120
stephanie.mcinerny@ncdenr.gov

EXPERIENCE

Section Chief (Information Technology)

2020 – Current North Carolina Division of Marine Fisheries (NCDMF) Morehead City, NC

- Responsible for management, supervision, and daily operations of the IT Section containing three distinct development and data management teams (i.e., Fisheries Information Network (FIN), Biological Database (BDB), and Geographic Information Systems (GIS)). Manage a total of up to 15 employees but directly supervise 6 permanent and 3 temporary employees including hiring and performance management
- Chair of Software Change Control Board (SCCB) and participate in Biological User Group (BUG) and Mapping Advisory Team (MAT) to identify Division priorities for the IT development team
- Manage large budget from multiple funding sources (i.e., state appropriations, commercial and recreational license receipts, federal aid, contracts, and other grants)
- Manage development and deployment of new web interface for FIN as well as development and database design of new SQL Server version of the BDB
- Create documentation, requirements documents, user stories, standard operating procedures, etc.

Section Chief (License and Statistics Section)

2016 – 2020 North Carolina Division of Marine Fisheries (NCDMF) Morehead City, NC

- Responsible for management, supervision, and daily operations of the License and Statistics Section containing four distinct programs (i.e., License Program, Commercial Statistics Program, Coastal Angling Program, and Fisheries Economics Program. Section employs over 60 part- and full-time personnel including administration, technicians, biologists, and supervisors. Directly supervise 5 permanent employees including hiring and performance management
- Manage a budget totaling $3 million, annually, from state appropriations, commercial and recreational license receipts, federal aid, contracts, and other grants
- Summarize license and commercial landings data for internal and external data requests
- Participate in fisheries management discussion and rulemaking as a member of NCDMF committees (e.g., Management Review Team, Rules Advisory Team, Software Change Control Board, NOV Workgroup)
- Heavily involved with creation and advancement of IT projects to enhance data collection and reporting including projects to rebuild our Fisheries Information Network, automate uploads of electronic trip ticket data, interface to view and print trip ticket submittal data, updates to license daily cash log interface, and development of ACCSP data transmission interface

Marine Fisheries Biologist II (Commercial Statistics Biologist)

2008 – 2016 North Carolina Division of Marine Fisheries (NCDMF) Morehead City, NC

Data, Statistics, and Writing

- Provide commercial data, analyze life history data, write technical reports, and give presentations at data workshops for SEDAR stock assessments for NOAA Fisheries and ASMFC as part of the life history and commercial workgroups (e.g., red drum, black grouper, red grouper, red snapper, Spanish mackerel, blueline tilefish, gray triggerfish, king mackerel, and cobia)

- Run statistical analyses on SEDAR stock assessment input data and plot data using Excel and R (e.g., weight-length regressions, nonlinear growth models, length and age compositions, CV, natural mortality, landings trends)
- Provide commercial data and indices of abundance, write working papers, update sections, and participate in data workshops for NCDMF fishery management plans (e.g., southern flounder, blue crab, bay scallop, striped mullet)
- Perform commercial fishery landings data queries, compilations, and analyses using Mainframe SAS, PC-SAS, SQL, Microsoft Access, and Microsoft Excel for a large variety of species from large commercial landings database containing millions of records
- Access, verify, and perform quality control on ACCSP, NOAA, and NCDMF fisheries data for NC using SAS, SQL, Oracle SQL Developer, and SQL*Plus
- Write species and economic profile reports on species of interest to NC
- Serve on the NCDMF Biological Review Team (BRT) Technical Committee, BRT Biological User Group, BRT Life History Subcommittee, Hook & Line Workgroup, Software Change Control Board, and IT Steering Committee
- Write Standard Operating Procedures for Eel Monitoring, Biological Database Extraction and Analysis, etc.

Lab/Field Work

- Participate in gutted to whole weight conversion factor project by taking biological samples (e.g., length, weight, sex, etc.)

Contract Lab Technician (Aging Lab Technician)
2004 – 2008 National Marine Fisheries Service Beaufort, NC

Data, Statistics, and Writing

- Completed statistical analyses using SAS and Excel (e.g., weight-length regressions, nonlinear growth models, length and age compositions, CV, natural mortality), wrote technical reports, and gave presentations as part of the life history section of SEDAR stock assessments for NOAA Fisheries (e.g., red snapper, greater amberjack, vermilion snapper, Spanish mackerel)
- Wrote age and growth manuscripts for publication
- Maintained and developed large biological sample databases
- Performed data queries and compilations using Oracle SQL Developer from federal fishery database (i.e., TIP)
- Participated in otolith aging workshops (SCDNR, FWC) and otolith processors meetings (FWC, GOM) within the southeastern United States and Gulf of Mexico
- Served as co-coordinator of the 2007 NOAA/NMFS fall seminar series

Lab/Field Work

- Removed, sectioned, and aged otoliths from commercial and recreational fish species
- Removed stomachs and tissue samples for diet, histological, chemical, and DNA analysis
- Participated in NOAA Bridge Net sampling for ichthyoplankton with a neuston plankton net

EDUCATION

July 2007 University of North Carolina Wilmington Wilmington, NC
M.S., Marine Biology with Applied Statistics Certificate

Fall 2006 North Carolina State University Raleigh, NC
Post Baccalaureate Studies – Quantitative Fisheries Management (3 sem. hrs)

December 2002 East Carolina University Greenville, NC
B.S., Biology/Marine Biology

Proposal for Funding made to:
Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 North Highland Street, Suite 200 A-N
Arlington, VA 22201

FY22: DNA and Bycatch Characterization of New Jersey's American Shad Fishery in Delaware Bay

Submitted by;
Heather Corbett
New Jersey Division of Fish and Wildlife
P.O. Box 418
Port Republic, NJ 08241

Proposal for FY2022 ACCSP Funding

Applicant Name:	New Jersey Division of Fish and Wildlife Bureau of Marine Fisheries P.O. Box 418 Port Republic, NJ 08241
Project Title:	DNA and Bycatch Characterization of New Jersey's American Shad Fishery in Delaware Bay
Project Type:	New Project
ACCSP Program Priorities:	1b.) Improvements in Biological Data (80%), 2) Improvements in Releases, discards and protected species data (20%)
Project Supervisor:	Heather Corbett, Supervising Biologist (NJDFW)
Principal Investigator:	Brian Neilan, Senior Biologist (NJDFW)
State Staff:	Assistant Biologist (NJDFW)
Requested Amount:	$88,886.00
Requested Award Period:	September 1, 2021 to August 31, 2022

1. Objectives

- Determine the genetic stock composition of American shad in the directed mixed stock fishery in the lower Delaware Bay in support of understanding the effects of out of basin harvest on river specific American shad stocks through DNA analysis.
- Evaluate by-catch and discards in New Jersey's Delaware Bay gill net fisheries to supplement and verify data collected from commercial harvester reports through on-board fisheries observers.

2. Need

The Atlantic States Marine Fisheries Commission's (ASMFC) 2020 benchmark stock assessment for American shad found the coastwide stock to be depleted compared to historic levels. Out of this stock assessment came several research recommendations including developing an alosine genetics repository that can be used to, "define stock structure, identify stock composition from genetic sampling of American shad catch in mixed-stock fisheries, and provide information on recolonization capabilities in defunct American shad systems.": The genetic data collected through this project from commercial fishermen in Delaware Bay will help meet these research needs that the stock assessment classified as long term and high priority. One of the largest mixed stock fisheries along the coast is executed in the lower Delaware Bay. Defining genetic stock structure of the harvested fish will help to inform managers on ways to eliminate or mitigate the impacts to river specific stocks and the coastwide metapopulation of American shad which has been assessed as depleted. In conformity with the RFP, American shad are a target species in the top quartile of the "Biological Priority Matrix," and collecting biological data on this species addresses Program Goal 1b, "Improvements in biological data."

Additionally, this project will address a pressing need for bycatch and discard data from New Jersey's Delaware Bay gill net fishery. Under New Jersey's current commercial harvest reporting program discard reporting is not mandatory and is done on a voluntary basis. As such, any voluntary reports of discarded protected species such as Atlantic and shortnose sturgeon are considered an underrepresentation of the amount of these species that are actually discarded during the fishing year. On-board observer coverage, which is required as part of the shad limited entry permit, will provide a more accurate representation of the number and biological characteristics of discarded protected species and provide the necessary data for fisheries managers to most effectively managed for the recovery of these imperiled species. In conformity with the RFP, collecting biological data on this protected species addresses Program Goal 1b, "Improvements in Biological Data," and Program Goal 2., "Improvements in Releases, discards and protected species data," for important species such as Atlantic sturgeon and striped bass.

3. Results and Benefits

It is expected that this project will result in a significant increase in the quality and quantity of meaningful fisheries data to be collected from New Jersey's Delaware Bay gillnet fishery. The project will address multiple program priority goals including Program Goal 1b, "Improvements in Biological Data," through the collecting of biological (weight, length, sex, and age) and DNA data for the American shad directed fishery in Delaware Bay and Program Goal 2., "Improvements in Releases, Discards and Protected species data," through the collection of at sea data by on-board observers. These results not only relate directly to the RFP's program goals but have been identified in the ASMFC's 2020 Benchmark Stock Assessment for American shad and 2017 Atlantic Sturgeon Benchmark Stock Assessment as high priority needs. The data collected through this project will supplement and verify New Jersey's commercial discards in the Delaware Bay gillnet fishery that are currently reported on a voluntary basis through State reports and SAFIS eTrips. The data collected from these sampling efforts will benefit future stock assessments by directly addressing high priority research needs for several commercially, recreationally, and ecologically important species. Filling these vital data gaps is necessary to achieving the stock rebuilding goals of these data-poor species.

4. Data Delivery Plan

In addition to the mandatory landings reporting from this fishery, staff will augment the ACCSP's commercial reporting database with the observed discards and bycatch from this fishery. Currently, New Jersey does not require the mandatory reporting of discards and this represents a major data gap from this fishery. The observer coverage and subsequent discard reporting to the ACCSP's commercial reporting database will help to lessen this gap and provide a more accurate picture of how the fishery operates.

Staff will process all data following the completion of the spring directed gill net fishery for American shad. A mixed stock analysis will be conducted using the methods from Bartron and Prasko, 2021. Two semi-annual reports will be completed that will detail the program's progress toward achieving the stated goals. A final report will be prepared and submitted detailing the program's success focusing on the stock composition and regional contributions of the American shad harvest in the spring directed gill net fishery and a summary of the Atlantic sturgeon and striped bass by-catch discards that are observed. The data will also be submitted for consideration for management use in the next stock assessments for American shad, Atlantic sturgeon, and striped bass.

5. Approach

5.A. Fisheries Dependent Sampling Program

10% Allocated Funds

At-Sea Observer Coverage. At-sea observer sampling will consist of 15 planned trips during the directed spring gillnet fishery for American shad, with a minimum goal of 10 successful trips. The extra 5 trips will be planned to account for unsuccessful sampling due to foul weather days or low catch days. These 10 trips represent approximately 10% of the average number of vessels trips per year that are reported in this fishery. Staff will conduct outreach to fisherman prior to the fishing year to coordinate logistics for the planned observer trips. During each sampling effort, staff will record fork length, total length, weight, sex (when possible). Staff will collect fin clips for DNA analysis of a subset of the total amount of American shad caught with a target goal of 50 fin clips per trip. Additionally, any Atlantic sturgeon or striped bass that are incidentally caught and discarded will be recorded including disposition at the time of discard.

5.B. Biological Characterization
82% Allocated Funds

Biological sampling of American shad will be done during the spring 2022 directed gillnet fishery in the eastern half of the Delaware Bay. American shad sampled by NJ are ranked in the top quartile of the biological sampling priority matrix. Effort, either at-sea or dockside, is assigned in accordance with guidelines defined in ASMFC's FMPs for shad. Staff will collect DNA fin clips for analysis at the time of harvest. Fin clips will be taken from the uber lobe of the caudal fin and stored in vials of ethanol for later processing. Data collected from the subsampled shad catch will include fork length, total length, weight, and sex.

Upon completion of the spring gillnet fishery sampling the collected fin clips will be sent to the U.S. Geological Survey Eastern Ecological Center's Leetown Research Laboratory in Kearneysville, West Virginia. A mixed stock analysis will be conducted using the methods recently employed by Bartron and Prasko, 2021, at the USFWS Northeast Fishery Center. Stock origin will be determined using a microsatellite analysis approach using 15 loci. Additionally, all tissue samples will be submitted and catalogued with the Science Center's Alosine Tissue Repository to support broader efforts to assess the impacts of bycatch on coastal stocks.

Currently, a panel of single nucleotide polymorphism (SNP) markers is currently under development for American Shad, which offers the promise of significantly improved resolution for stock assignments. If available in time, we will leverage the new SNP panel in lieu of microsatellite to perform stock assignments using a reduced representation approach such as RADcapture.

5.C. Data Analysis and Report Preparation
8% allocated funds

Staff will process all data following the completion of the spring directed gill net fishery for American shad. Two semi-annual reports will be completed that will

detail the program's progress toward achieving the stated goals. A final report will be prepared and submitted detailing the program's success focusing on the stock composition and regional contributions of the American shad harvest in the spring directed gill net fishery and a summary of the Atlantic sturgeon and striped bass by-catch discards that are observed. The data will also be submitted for consideration for management use in the next stock assessments for American shad, Atlantic sturgeon, and striped bass.

6. Geographic Location

The project will be administered from the New Jersey Department of Environmental Protection (NJDEP), Division of Fish & Wildlife's Nacote Creek Research Station in Port Republic, New Jersey. The scope of the project will cover the eastern half of the Delaware Bay where New Jersey's directed gillnet fishery for American shad takes place.

7. **Milestone Schedule: Month 1 following receipt of grant approval**

Description of Activity	**Month**											
	1	2	3	4	5	6	7	8	9	10	11	12
Contact permitted American Shad fishermen for outreach on the project and to develop logistics for spring sampling	X	X	X	X	X	X	X					
At-sea observers sample the directed spring gillnet fishery for American shad				X	X	X	X					
DNA samples sent off to be processed to determine stock origin							X	X	X	X	X	X
Semi-Annual Report 1							X					
Semi-Annual Report 2											X	
Final Report												X

8. Project Accomplishment Measurements

Project Component	Goal	Measurement
Project Outreach	Contact active commercially permitted shad fisherman to explain the project and develop logistics for successfully planning at-sea observer trips during the spring directed gillnet fishery for American shad.	Fishermen contacted and preparations made for at-sea observer trips in the spring directed gillnet fishery for American shad
Fisheries Dependent At-Sea Observer Program	Conduct the target minimum of 10 successful at-sea observer trip with a maximum goal for 15	Number of successful at-sea observer trips
Biological Characterization	Collect the target number of American shad fin clip samples and record bycatch in the spring directed gillnet fishery for American shad	Number of samples successfully collected
Sample Processing	Process shad fin clips for DNA analysis to determine stock structure in the mixed stock fishery	Number of samples successfully processed
Data Analysis and Report Preparation	Interpret and report on results from DNA analysis	Is stock structure in the in the mixed stock fishery able to be determined to a level useful for management?

9. **FY2022 Budget** (Letters in parenthesis pertain to Federal Grant Object Codes)

Item			**Total NJ DFW in-kind support**
Salaries (NJDFW)	***Cost***	***Amount***	***Total***
Supervising Biologist 5% in-kind (current FTE) (Heather)	$ 102,317.02	5%	$5,116.00
Senior Biologist 5% (current FTE)	$ 70,464.99	5%	$3,523.00
Wildlife Worker 2% (Current FTE)	$ 37,251.71	2%	$745.00
Clerical 1% (current FTE)	$ 56,215.45	1%	$562.00
		salaries subtotal	*$9,946.00*
Fringe Benefits	53.25%		$5,296.00
		Salary & Fringe	$15,242.00
Supplies and Materials	***Cost***	***Amount***	***Total***
Scientific Equipment (Measuring boards, scales, disecting kits)			$300.00
Marterials for collection and storing of biological samples			$300.00
		subtotal	*$600.00*
Other	***Cost***	***Amount***	***Total***
NJDFW indirect costs	22.2%		$3,384.00
Subtotal NJ Funds			**$19,226.00**
Append to ACCSP Adminstrative Grant			
Salaries (NJDFW)	***Cost***	***Amount***	***Total***
Assitant Biologist 30% (Current FTE)	$ 56,855.44	30%	$17,057.00
Fringe Benefits	53.25%		$9,083.00
		Salary & Fringe	$26,140.00
Supplies and Materials	***Cost***	***Amount***	***Total***
Travel (mileage and tolls)			$400.00
DNA Sample Processing			$50,000.00
		subtotal	*$50,400.00*
Other	***Cost***	***Amount***	***Total***
ASMFC Overhead (16.13%)	16%		$12,346.00
ACCSP Admin Grant Project Costs Total			**$88,886.00**
Total Project Costs (includes in-kind)			**$108,112.00**

Budget Narrative

(a). Salaries; Assistant Biologist:

(1) Assistant Biologist, NJDFW FTE.

(b). Benefits of above employees

53.25% of the annual salary for the one Assistant Biologist.

(c). ASMFC Overhead:

16.13% of the sum of budget items a and b.

(d). ACCSP Administrative Grant Project Costs:

Total of (a) through (c) does not include in-kind support. No funds are being directly received by the State of NJ.

The FY2022 budget is in two parts, the first part details the amount that is being provided as in-kind match by NJDFW, while the second part is the amount to requested from the ACCSP Grant.

The in-kind funding provided by NJDFW includes salaries for NJDFW full time employees under the titles of supervising biologist, senior biologist, wildlife worker, and clerical staff. Additional in-kind funds include staff time for at sea sampling, supplies for at sea sampling, vehicle maintenance, data preparation report preparation. Sources of in-kind funding come from the annual state appropriation for the NJ Marine Fisheries Administration (MFA) and from the Atlantic Coastal Grant.

The $88,886.00 covers the processing of American shad fin clips DNA and subsequent stock composition in the mixed stock fishery analysis and the salary for one NJDFW Assistant Biologist position that works out of the NJDFW's field office in Port Republic, NJ. This Assistant Biologist position will be responsible for outreach to the commercially permitted shad fishermen, scheduling and completing at-sea observing trips, data management, and biological sample management. This covers travel, fringe, indirect, and ASMFC's overhead. All other funding for the project will be covered by NJDFW.

Proposal Summary for Ranking Criteria

PROPOSAL TYPE: ***New Project***

PRIMARY PROGRAM PRIORITY:

1b. Biological Data: This project will provide biological data that has been determined to be a long term, high priority need for American shad, striped bass, and Atlantic sturgeon. The increase in quality and quantity of data collected through this project will help to improve the stock assessment process.

PROJECT QUALITY FACTORS (Partners, Funding, and Data):

Partners-

Multi-Partner/Regional impact including broad application:
Although this project focuses on the activities of NJ permitted fishermen, it includes the data collection of species managed regionally American shad, striped bass, and Atlantic sturgeon. Thus, ASMFC will benefit from the biological data collected from this project.

Funding-

Requested Funds:
The funds being requested will be used the processing of American shad fin clips DNA and subsequent stock composition in the mixed stock fishery and the salary for one NJDFW Assistant Biologist position that works out of the NJDFW's field office in Port Republic. This Assistant Biologist position will be responsible for outreach to the commercially permitted shad fishermen, scheduling and completing at-sea observing trips, collecting biological data and samples, data management, and biological sample management.

In-kind Contribution:
NJDFW is providing 17% of the project cost (see section 9).

Data:

Improvement in data quality/quantity:
All biological data collected by NJDFW staff are available for coast-wide stock assessment. The data collected through the execution of this project has be determined by the ASMFC as long term, high priority needs for American shad, striped bass, and Atlantic sturgeon.

SECONDARY PROGRAM PRIORITY:

2. Releases, discards, and protected species data:

PROJECT QUALITY FACTORS (Partners, Funding, and Data):

Partners-

Although this project focuses on the activities of NJ permitted fishermen, it includes the data collection of species managed regionally American shad, striped bass, and Atlantic sturgeon. Thus, ASMFC will benefit from the biological data collected from this project.

Funding-

Requested Funds:
The funds being requested will be used for the salary of an NJDFW Assistant Biologist to perform at-sea observer trips to record the by-catch of striped bass and Atlantic sturgeon in the spring directed gillnet fishery for American Shad in the Delaware Bay. This Assistant Biologist position will be responsible for outreach to the commercially permitted shad fishermen, scheduling and completing at-sea observing trips, recording bycatch data, data management, and biological sample management.

In-kind Contribution:
NJDFW is providing 17% of the project cost (see section 9).

Data:

All discard and by-catch data collected by NJDFW staff are available for coast-wide stock assessment. The data collected through the execution of this project has be determined by the ASMFC as long term, high priority needs for American shad, striped bass, and Atlantic sturgeon.

Brian Neilan

Senior Fisheries Biologist

New Jersey Division of Fish and Wildlife

Education

- Professional Environmental Science Master, Stockton University, 2019
- Bachelor of Science in Marine Science, Richard Stockton College of New Jersey, 2010
  - Concentration in Marine Biology

Employment History

- **New Jersey Division of Fish and Wildlife, Bureau of Marine Fisheries**
  - **Senior Biologist, Fisheries,** March 2017 to present
    - Primary Investigator, River Herring Assessment and Restoration Program
    - State representative for the Delaware River Basin Fish and Wildlife Management Cooperative, ASMFC's Sturgeon Technical Committee, and current Chair of the ASMFC's Shad & River Herring Technical Committee
    - Conducts all field surveys, laboratory analyses, and administrative work involved with maintaining New Jersey's compliance with federal and regional fishery management plans and achieving all program goals for both commercial and recreational fisheries
    - Regional Biologist, all marine and estuarine waters in the Delaware Bay and River
      - Submits official comments regarding development proposals and permit applications in accordance with program goals and protocols
    - Assists in coordinating, developing, and implementing commercial and recreational marine fisheries rules and regulations
    - Grant reviewer and state representative on the Delaware Watershed Conservation Fund Advisory Team
    - Assigns work to and supervises part time employees to achieve program goals
  - **Assistant Biologist, Fisheries**, December 2013 to March 2017
    - Organized assigned fisheries management work and developed effective work methods for the laboratory and the field.
    - Conducted surveys of estuaries and coastal/offshore waters and sampled their fish populations using various gear types
    - Developed and implemented management programs and regulations for the state's fisheries resources.
- **New Jersey Division of Fish and Wildlife, Bureau of Freshwater Fisheries**
  - **Hourly Fisheries Technician**, April 2011 to December 2013
    - Assisted fisheries biologists in completing all field and laboratory program goals
    - Coordinated a federally funded fish ladder project with the goal of monitoring and restoring the American shad population in the Raritan River

Field Work Skills

- Conducts federally-funded fishery dependent and independent surveys of coastal waters
  - Trailers and pilot boats up to 25 feet in length
  - Utilizes gill nets, seine nets, otter trawls, fish pots, etc.
- Organizes and instructs staff to ensure employee safety and survey completion
- Identifies marine and freshwater fish and invertebrates to the lowest taxonomic level
- Performed electrofishing surveys and fish salvages using backpack, streamside, barge, and boat electrofishing equipment

Laboratory Skills

- Processes and ages biological samples to develop population structure and characteristics as part of several regional and federal fishery management plan requirements
- Preserves histological specimens and DNA samples for analysis and for inclusion in reference collections
- Processes and preserves gut samples of marine fish species for diet analysis

Computing Skills

- Microsoft Office suite of programs including Outlook and Access
- Familiar with various database related software (ex., ArcGIS and R statistical software)
- Input large volumes of information, maintain files, and analyze those records to produce summaries, charts, and graphs for writing technical and non-technical reports and articles

Certifications

- ASMFC Introduction to Stock Assessment Training
- ASMFC Intermediate Stock Assessment Training Program
- ASMFC Introduction to R for Fisheries Biologists
- ASMFC Access Point Angler Intercept Survey Training Program
- New Jersey Boating Safety Certificate
- U.S. Department of the Interior Electrofishing Safety Course

References

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August 16, 2021

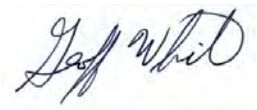
To the members of the Operations and Advisory Committees:

The FY2022 Administrative Budget contains a few changes. ACCSP leadership has made concerted efforts to maximize the potential of the administrative budget by finding additional sources of funding, which are outlined at the end of the proposal. Additionally, we are exploiting opportunities to gain efficiencies, which is evidenced in the budget reductions found in travel and internet connectivity.

The budget includes additional funding for personnel in the form of a Software Developer. Supplemental justification for this personnel change is attached as an appendix to this cover letter. The ASMFC has slightly increased its overhead rate from 16.71% to 16.81%.

Attachment I of the FY2022 Administrative Budget request, the 2019 ASMFC Strategic Plan (Goal 3), provides an overview of the high level tasks and milestones expected for the coming year.

Sincerely,



Geoff White

ACCSP Director

Funding Proposal
FY22 ACCSP Administrative Budget

Applicant Name:	Atlantic States Marine Fisheries Commission
Project Title:	Administrative Support to the Atlantic Coastal Cooperative Statistics Program
Principal Investigator:	Geoff White, Director, ACCSP
Requested Award Amount:	$2,347,039
Request Type:	Maintenance/Administrative
Requested Award Period:	March 1, 2022 through February 28, 2023

A. Goals

The Atlantic Coastal Cooperative Statistics Program (ACCSP) is a state-federal cooperative partnership between 23 entities responsible for fisheries management, and fisheries data collection on the Atlantic Coast: the 15 Atlantic coast states and the District of Columbia, two federal fisheries agencies (Commerce's NOAA Fisheries and Interior's U.S. Fish and Wildlife Service), three regional fisheries management councils (New England, Mid-Atlantic, and South Atlantic), the Potomac River Fisheries Commission, and the Atlantic States Marine Fisheries Commission (ASMFC). Partner agencies are listed in the original ACCSP Memorandum of Understanding.

The Program was established in 1995 to design, implement, and conduct marine fisheries statistics data collection programs and to integrate those data into a single data management system that will meet the needs of fishery managers, scientists, and the general public.

By establishing and maintaining data collection standards and providing a data management system that incorporates state and federal data, ACCSP will ensure that the best available statistics can be used for fisheries management.

B. Objectives

1. Manage and expand a fully integrated data set that represents the best available fisheries-dependent data;
2. Continue working with the program partners to improve fisheries data collection and management in accordance with the evolving ACCSP standards within the confines of limited funds;

3. Explore the allocation of existing Program funds and work with partners to pursue additional funding;
4. Maintain strong executive leadership and collaborative involvement among partners at all committee levels;
5. Monitor and improve the usefulness of products and services provided by the ACCSP;
6. Collaborate with program partners in their funding processes by providing outreach materials and other support to demonstrate the value of ACCSP products and the importance of maintaining base support for fishery-dependent data collection programs to state partners and their executive and legislative branches as well as to all other partner agencies; and,
7. Support nationwide systems as defined in the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

C. Need

Various state and federal fishery management agencies on the Atlantic coast collect data on the status and trends of specific fish populations and the fisheries that utilize these resources; however, it is often difficult to develop sound recommendations to fisheries managers due to inconsistencies in the way data are collected and managed. The various data sets often cannot be integrated to provide accurate information at the state, regional, or coast-wide level. In addition, the disparate manner in which these data are collected and managed places duplicative burdens on fishermen and dealers reporting to multiple state and federal agencies and regions. Due to rapidly changing stock conditions, within-season regulatory changes and catch quotas have become common fishery management strategies. Timely and accurate harvest information for both recreational and commercial fisheries is required to determine the need for and effects of these management measures.

The Atlantic Coastal Fisheries Cooperative Management Act of 1993 mandated a cooperative state-federal program for the conservation of Atlantic coastal fisheries. Section 804 of the Act requires the Secretaries of Commerce and the Interior to develop a program to support state fisheries programs and those of the ASMFC, including improvements in statistics programs. Since the mid-1990s, the ASMFC has provided administrative support for this coordinated effort to improve data collection and management activities.

In 1995 the states, the ASMFC, and the federal fishery management agencies on the Atlantic coast entered into a Memorandum of Understanding (MOU) to develop and implement a cooperative state-federal statistics program that would meet the management needs of all participating agencies. All program partners signed the MOU for the ACCSP at the Commission's 54th Annual Meeting in Charleston, SC. Following signing, an Operations Plan was developed to outline the specific tasks and timetables required to develop and initiate implementation of this program. In October of 2016, an updated MOU was approved that made the ACCSP a program of the ASMFC. This governance change integrates the long-term and annual planning processes with those already in existence for the ASMFC and conform to policy as set by the ACCSP Coordinating Council.

D. Results and Benefits

The ACCSP developed and adopted 1999, 2004 and 2012 versions of the Program Design (now renamed Atlantic Coast Fisheries Data Collection Standards), which document the standards and protocols for collection and management of commercial, recreational, and for-hire fisheries statistics. Program partners developed and approved minimum data elements for collection of catch, effort, biological, social, and economic statistics. The ACCSP also developed standard codes and formats to ensure consistency of all data collected under the Program. These standards require periodic review and revision as the needs of fisheries managers and the state of the art of fisheries science change.

In 2000, the first version of the Data Warehouse was made available to the program partners. Since then, it has grown to encompass almost a 70 year time series of fisheries-dependent catch and effort data. Loading of biological data has begun. These data are constantly reviewed and updated as needed.

In 2004, the first version of the Standard Atlantic Fisheries Information System (SAFIS) eDR (electronic dealer reporting) was deployed, followed in 2008, by eTRIPS (electronic trip reporting). This system is used to collect data from commercial and recreational fishermen and dealers and is now deployed from Maine to Georgia. SAFIS is an ongoing and evolving system, requiring support, review, and revision.

The ACCSP will continue to reduce duplication of effort by dealers and fishermen, make more efficient use of limited funds, promote education of resource users, and provide a more complete information base for formulating management policies, strategies, and tactics for shared resources. An integrated multi-agency program using standard protocols for reporting compatible information will lead to more efficient and cost-effective use of current federally and state funded data collection and management programs. The ACCSP will reduce the burden on the fishing industry to provide information in multiple formats to multiple agencies, and will provide more accurate and timely information to achieve optimum public benefits from the use of fishery resources along the Atlantic coast. The ACCSP will ensure the timely dissemination of accurate data on commercial and recreational fisheries for use in stock assessments and fisheries management through a comprehensive and easily accessible data management system.

E. Approach

The ACCSP is managed collaboratively by committee: the Coordinating Council, composed of high level fisheries policy makers from all the program partners, is the governing body; the Operations Committee provides guidance in standards setting and funding priorities. An Advisory Committee provides industry input into the process. A number of other technical committees provide input into various aspects of the process.

Program planning builds on basic principles related to the goals stated in the ACCSP MOU:

- Development of data collection standards and the implementation of data collection programs will be done cooperatively, across jurisdictional lines;
- Consistent coast-wide data collection standards will be implemented by all program partners that include data on all fishing activities -- commercial, recreational and for-hire fisheries;
- Once achieved, data collection improvements will be maintained;
- These data will be loaded and maintained in a central data repository and provided to data users through a user-friendly query system;
- Program planning will be done collaboratively, by consensus;
- The program will be responsive and accountable to partner and end-user needs; and
- Focus on activities that yield maximum benefit.

Goal 3 of the ASMFC Strategic Plan (Attachment I) details activities to be conducted by ACCSP staff and committees under the FY22 Administrative Budget. As a program of the ASMFC, administrative support of ACCSP activities is funded through indirect charges of all ACCSP awards, including the Administrative Grant. Note that program activities and staff in support of the Marine Recreational Information Program are separately funded and therefore not included in this plan.

The ACCSP initially developed common standards collaboratively, by consensus, then began to work with program partners to implement the standards, according to a commonly agreed upon priority. All ACCSP technical committees, except for the Advisory Committee which is composed of industry and recreational representatives, are comprised of managers and staff of the partner agencies and set policy by consensus. Only the Coordinating Council votes directly on motions.

The standards, known as the Atlantic Coast Fisheries Data Collection Standards, for data collection and management are developed and maintained by ACCSP Technical Committees, with review and oversight by the Operations Committee, and advice from the Advisory Committee. The ACCSP Coordinating Council makes policy level decisions to adopt the program standards. The full-time ACCSP staff coordinates all activities conducted by the ACCSP.

The Atlantic Coast Fisheries Data Collection Standards documents all completed standards and provides the basic framework for full implementation of the ACCSP by all program partners. The ACCSP is continuously evolving as technology and the needs of management and science change over time. Therefore the *Standards* and supporting systems are always developing. Support for the implementation of ACCSP modules is provided by staff in various jurisdictions. To this end, funding is required to provide for full-time staff for all ACCSP activities, as well as for travel and meeting expenses.

The ACCSP Director, reporting to the Executive Director of the ASMFC, provides leadership for the Program, overall programmatic management and guidance, and is responsible for the day-to-day operations. The ACCSP Deputy Director supports the ACCSP Director on operation and development of the Program and is responsible for managing the competitive ACCSP funding process, coordinating cross-team project management, and providing support for a wide range of Program activities. The ACCSP Program Assistant provides assistance to the ACCSP Director and ACCSP Deputy Director, provides staff support for program and technical committees by drafting, maintaining and coordinating program documents, and publicizes the availability and benefits of the Program. The Software Team Leader coordinates the development and management of ACCSP data collection systems. The ACCSP IT Manager manages the information systems infrastructure and security. The Data Team Leader provides guidance for data compilation and dissemination related activities. The Recreational Team Lead coordinates MRIP survey implementation and recreational and for-hire data standards. The Data Coordinators and Developers provide programming services and system support required to develop and fine-tune the data management systems, assist users as they access the system and provide quality management and control. The Data Coordinators also complete custom data requests, QA/QC existing data, maintain data feeds, and directly participate in data intensive activities such as a stock assessment data workshops. The Software Team staff provides expert consultation to partners as they implement new reporting, and licensing/permitting systems. The Software Team will continue to support development of SAFIS.

ACCSP staff will follow Goal 3 of the ASMFC 2019 Strategic Plan during FY22, in consultation with all partners. Specific tasks to be accomplished during the period include initiation and maintenance of Partner data feeds from the commercial, recreational, and biological modules; implement dealer reporting component of SAFIS redesign; maintenance of Federal Information Security Management Act procedures; and support of other partner projects by providing technical expertise as necessary.

The ASMFC has basic responsibility for the logistics of all committee meetings which support the development of the ACCSP, including: the ACCSP Coordinating Council, the ACCSP Operations Committee, the Advisory Committee, the Recreational Technical Committee, the Commercial Technical Committee, the Information Systems Committee, the Biological Review Panel, the Bycatch Prioritization Committee, the Standard Codes Committee. Full-time ACCSP personnel staff these committees for planning of work, providing minutes and other documents, and other follow-up.

The ACCSP has helped foster an improved atmosphere of cooperation among its partners. The Program has succeeded in establishing coast-wide fisheries data standards that all program partners have agreed to adopt. Data collection and management systems will be developed and deployed and maintained as the standards and Partner needs evolve. Program partners remain engaged in the process, and the program has made substantial progress towards its goals.

1. Geographic Location: Atlantic Coast (Maine through Florida); eTRIPS software is deployed in the Gulf of Mexico as part of the SERO For-Hire Program

2. Milestone Schedule: See Goal 3 of the ASMFC 2019 Strategic Plan (Attachment I)

This is a continuation from previous projects. Table 1 contains the base administrative budget amounts by year since implementation began in 1999.

Table 1. Administrative funding for ACCSP from 1999-2020

Year	Funding	Number of Staff
1999	$907,902	3
2000	$681,451	3
2001	$1,054,466	5
2002	$1,178,677	6
2003	$1,302,768	7
2004	$1,298,319	8
2005	$1,409,545	8
2006	$1,380,598	8
2007	$1,489,189	8
2008	$1,447,620	9
2009	$1,527,996	9
2010	$1,509,899	9
2011	$1,530,699	9
2012	$1,509,555	9
2013	$1,582,780	9
2014	$1,718,447	9.5
2015	$1,731,666	9.5
2016	$1,623,360	9.5
2017	$1,855,113	9.5
2018	$1,854,249	9.5
2019	$1,816,503	9.5
2020	$2,012,744	11
2021	$2,069,244	12

3. Cost Summary: The ACCSP requests $2,009,279 for administrative support, committee travel and systems operations during FY22. The addition of the 16.81% indirect rate raises the request to $2,347,039. The increase in request from FY21 reflects the full annual cost of the Data Team Lead position and proposed software staff (see Personnel).

The funds used for the ACCSP shall be accounted for separately from all other ASMFC funds.

4. Personnel

Program personnel funded through this grant, except the Recreational Team Lead, are dedicated 100% to the ACCSP and are full-time employees of the Atlantic States Marine Fisheries Commission. Note that personnel associated with the MRIP state conduct and 85% of the Recreational Team Leader are funded under separate authority and not accounted for in this document. Fringe benefits which include health care, vision, dental, annual and sick leave are calculated at 27%. ASMFC salaries are kept confidential, thus only totals are displayed. Additionally, an agreement has been put in place with NMFS Highly Migratory Species (HMS) to partially fund the Information Systems Specialist responsible for maintaining HMS data feeds. The addition of a software development position would transition some contract support for mobile software maintenance to staff role. Savings have been incorporated to reflect potential vacancies and lower salaries for new hires replacing long-time employees. Every effort is being made to appropriately fill positions as quickly as possible.

- ACCSP Director - Geoff White
- ACCSP Deputy Director – Julie DeFilippi Simpson
- Program Assistant – Marisa Powell
- ACCSP IT Manager and Software Developer – Edward Martino
- Recreational Team Lead (15%) – Alex DiJohnson
- Software Team Lead - Karen Holmes
- Senior Software Developer – Nicolas Mwai (will be vacant September 1)
- Software Developer – VACANT
- Data Team Lead – Mike Rinaldi (started July 16, 2021)
- Data Analyst - Jennifer Ni
- Senior Data Coordinator – Joseph Myers
- Senior Data Coordinator – Heather Konell
- Data Coordinator – Vacant
- Data Coordinator – Lindsey Aubart (will be vacant September 15)

Salaries and Wages	
Total Salary	$ 1,308,231
Benefits @27%	$ 353,222
Total Costs	$ 1,661,453

5. Travel

Travel is broken down into two general categories; committee meetings and staff travel. The bulk of travel is in support of committee meetings. While significant savings have been achieved by using remote meeting technologies (such as online meetings), face-to-face meetings are often required to complete the tasks assigned. In general, each committee will have at least one face-to-face meeting during the year. In addition to staff travel to support committee meetings, staff

travel is needed for implementation planning, data collection activities, outreach efforts, and information system development meetings with partners.

The Program funds fares to and from the meeting site, per diem according to Office of Personnel and Management guidelines and facilities costs for the meeting itself. (The daily rate per meeting includes cost of airfare or mileage, lodging, meals and other travel related expenses.) Reimbursable participants include state fisheries directors and biologists, state and university scientists, law enforcement personnel and citizen advisors from Maine through Florida. Meetings will be held in various locations on the Eastern Seaboard, including but not limited to: Annapolis, MD; Norfolk, VA; Charleston, SC; Philadelphia, PA; Alexandria, VA; Providence, RI; Jacksonville, FL; Washington, D.C.

The travel budget is based on an ASMFC average estimated $275 per day multiplied by meetings multiplied by days multiplied by non-federal membership plus staff.

In FY2022, there is a higher likelihood of virtual meetings considering the new approaches that evolved during the period of telework due to COVID. As such, in-person meeting frequency was reduced for both the Coordinating Council and the Operations Committee, which significantly reduced travel costs from previous years.

Committee Travel	**Meetings**	**Days**	**Membership**	**Total**	**Staff**	**Total**	**Grand Total**
Biological Review panel	1	1.5	15	$6,188	1	$413	$6,600
Bycatch Prioritization	1	1	15	$4,125	1	$275	$4,400
Commercial Technical Committee	1	1	15	$4,125	1	$275	$4,400
Coordinating Council (with ASMFC)	2	0.5	12	$3,300	2	$550	$3,850
Operations and Advisory Committees	1	2.5	20	$13,750	2	$1,375	$15,125
Recreational Technical	1	2	15	$8,250	1	$550	$8,800
Information Systems Committee	1	1	15	$4,125	1	$275	$4,400
Total Committees				$43,863		$3,713	$47,575
Staff Travel							
Partner Coordination	5	2	2	$5,500			
Data Support (Stock Assessment etc)	1	5	2	$2,750			
IT/SAFIS Support	3	1	1	$825			
Outreach/Training	4	1	1	$1,100			
GulfFIN Coordination	2	1.5	1	$825			
Staff Training	2	4	2	$4,400			
Total Staff Travel				$15,400			
Grand Total							$62,975

Attachment II provides the FY21 schedule of the funding cycle and calendar of meetings, which serves as a tentative schedule for FY22.

6. Supplies

Supply costs include supplies not covered by the ASMFC indirect. This includes ACCSP specific materials for outreach, smaller information systems items such as network switches and cables.

Supplies	
Misc Hardware (cables, network hubs etc)	$4,651
Backup Tapes	$1,000
Total	$5,651

7. Equipment

ACCSP maintains several large server systems and related hardware in support of the Data Warehouse, website, SAFIS and administrative functions. These systems typically have a 5 year life cycle after which they require upgrade or replacement. In cases of the larger items, lease options have been explored, but it appears that, in part due to current staffing, it is more cost effective to own and maintain the equipment internally.

Included in the costs are normal life cycle replacements of laptop and desktop systems, assuming replacement of 3 systems annually. Costs are based upon current market surveys and an estimate of our needs. In FY22, we will require replacement of a number of major infrastructure components, one server and multiple routers and firewalls; however, cost savings have been found through diligent sourcing and savings in other areas.

Equipment	
Infrastructure Replacements (servers, UPS systems, etc.)	$16,000
Desktop/Laptop Systems	$4,500
Total	**$20,500**

8. Other Costs

Hardware and software support are supplied by a number of different vendors and includes costs associated with licensing and maintenance fees (such as *Oracle* licensing).

The Program maintains a high speed internet connection and associated infrastructure in support of the server systems. The primary internet connection is covered by ASMFC. The second

connection, using an entirely different technology and provider provides redundancy to the primary connection in case of failure. The system is configured to automatically fail over in the event of a failure of the primary internet connection. A previously maintained ACCSP funded connection dedicated to the NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) to provide full time secure connectivity requested by the Region has been replaced with a VPN connection through NOAA's OCIO office. Coordination of ACCSP with the OCIO has resulted in a permanent decrease in costs in this area by about $10,000.

Outside vendors include Hewlett Packard for systems hardware and software support; Oracle for database management systems support; DLT Solutions and Trident Solutions for hardware support. All pricing is based on the GSA schedule.

Software maintenance and development workload at times exceeds staff's resources. Contract services will be utilized to provide services that staff may be unable to perform.

E-Reporting Support

Funds are requested for electronic reporting outreach and support activities. Interest among state Partners and harvesters has been steadily rising and a steady stream of new users are adopting the system where agencies will accept electronic reports though SAFIS. In addition, recent and pending management actions mandate electronic reporting. SAFIS eTrips in both the mobile and on-line versions are likely to be used by the majority of harvesters as the reporting tool. This will be especially true in late FY2021 and FY2022 as eTRIPS will be the only application on the east coast that will be considered compliant with the One Stop Reporting (OSR) requirements. In addition, the majority of trips will be reported to the SAFIS system regardless of the tool selected.

Funds requested include both costs associated with initial deployment and ongoing support. Initial startup costs include, but are not limited to, in-person and virtual training workshops for harvesters and partner agency personnel and published training guides and videos that will be available via the ACCSP website. ACCSP continues to contract for help desk support for SAFIS which includes 24/7 helpdesk support, a toll free number to contact support personnel, and a helpdesk ticketing program designed to keep track of all requests and provide feedback to the Program. With increases to mandatory electronic federal reporting in 2021 and 2022, additional helpdesk support is anticipated.

Other Expenses	**2022**
Software Support	$60,000
Hardware Support	$7,500
Communications/Internet Connectivity	$16,700
Printing (outreach)	$2,500
Software Development	$90,000
Help Desk Support	$75,000
Total	**$251,700**

Budget Summary

Budget Summary	2022 Prelim	2022 Final
Personnel	**$1,308,231**	**$1,278,231**
Fringe Benefits	**$353,222**	**$345,122**
Travel	**$62,975**	**$62,975**
Equipment	**$27,500**	**$20,500**
Supplies	**$5,651**	**$5,651**
Other	**$251,700**	**$251,700**
Total Program	**$2,009,279**	**$1,964,179**
ASMFC Overhead (16.81%)	**$337,760**	**$330,179**
Total Proposal*	**$2,347,039**	**$2,294,358**

**Total proposal has been reduced by $52,681.*

Resources actively sought to support ACCSP activities in addition to the Administrative Grant

2022 Support	Coverage	Funding Expected
HMS	Partial Data Analyst	$ 40,000
FIS Quality Management FY22 Proposal	Implementation of Automated Data Auditing Validation for Electronic Logbooks	$ 116,810
FIS FIN Development FY22 Proposal	Federal Information Security Management Act Compliance	$ 105,129
MRIP	State Conduct of MRIP APAIS, FHTS ME-GA, and additional surveys in some states (LPIS in ME, Catch Cards in MD & NC, and LPBS in NC). Includes Recreational Team Staff (4).	Total Grant: $5,897,266 ACCSP: $ 617,224

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Appendix I: Justification for personnel changes

Additional Software Developer

The continued success of the ACCSP and the demand for SAFIS software in recent years has resulted in an increase in the resources needed for software development. The growth of the program and expansion of electronic reporting on the Atlantic coast intensifies the need for not just software maintenance, but also for development of new and more flexible features that meet the needs of partners. There is increasing demand for electronic reporting solutions that meet the needs of multiple partners through a single report and reduce the reporting burden on industry. Providing online and mobile tools with consistent data collection fields on compatible timelines is critical to the success of the Program. The successfully implemented redesign of eTRIPS online, mobile, and upload processing has identified resource bottlenecks that will be encountered during the redesign of electronic dealer reporting (eDR). Current levels of staffing are strained under the continuing increase, which results in more reliance on contract support or longer timelines to complete development projects.

An additional staff member on the Software Team will bring more development capability on staff, supporting more maintenance and development of ACCSP software relative to outside contracts. This staff position would also relieve some of the testing of new software features from Partner staff. While providing an economic benefit in the long run, during the first year of onboarding and training the combination of staff and contractors will be more expensive. During year 2, increased productivity and reduced contractor costs are estimated to show organizational benefit.

ATLANTIC STATES MARINE FISHERIES COMMISSION

Five-Year Strategic Plan 2019-2023

The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased and not impaired in value.

Theodore Roosevelt

Introduction

Each state has a fundamental responsibility to safeguard the public trust with respect to its natural resources. Fishery managers are faced with many challenges in carrying out that responsibility. Living marine resources inhabit ecosystems that cross state and federal jurisdictions. Thus, no state, by itself, can effectively protect the interests of its citizens. Each state must work with its sister states and the federal government to conserve and manage natural resources.

Beginning in the late 1930s, the 15 Atlantic coastal states from Maine to Florida took steps to develop cooperative mechanisms to define and achieve their mutual interests in coastal fisheries. The most notable of these was their commitment to form the Atlantic States Marine Fisheries Commission (Commission) in 1942, and to work together through the Commission to promote the conservation and management of shared marine fishery resources. Over the years, the Commission has remained an effective forum for fishery managers to pursue concerted management actions. Through the Commission, states cooperate in a broad range of programs including interstate fisheries management, fisheries science, habitat conservation, and law enforcement.

Congress has long recognized the critical role of the states and the need to support their mutual efforts. Most notably, it enacted the Atlantic Coastal Fisheries Cooperative Management Act (Atlantic Coastal Act) in 1993, which built on the success of the Atlantic Striped Bass Conservation Act of 1984. Acknowledging that no single governmental entity has exclusive management authority for Atlantic coastal fishery resources, the Atlantic Coastal Act recognizes the states' responsibility for cooperative fisheries management through the Commission. The Atlantic Coastal Act charges all Atlantic states with implementing coastal fishery management plans that will safeguard the future of Atlantic coastal fisheries in the interest of both fishermen and the nation.

Accepting these challenges and maintaining their mutual commitment to success, the Atlantic coastal states have adopted this five-year Strategic Plan. The states recognize circumstances today make the work of the Commission more important than ever before. The Strategic Plan articulates the mission, vision, goals, and objectives needed to accomplish the Commission's mission. It serves as the basis for annual action planning, whereby Commissioners identify the highest priority issues and activities to be addressed in the upcoming year. With 27 species currently managed by the Commission, finite staff time, Commissioner time and funding, as well as a myriad of other factors impacting marine resources (e.g., changing ocean conditions, protected species interactions, offshore energy, and aquaculture), Commissioners recognize the absolute need to prioritize activities, dedicating staff time and resources where they are needed most and addressing less pressing issues as resources allow. Efforts will be made to streamline management by using multi-year specifications where possible and increase stability/predictability in fisheries management through less frequent regulatory changes. A

key to prioritizing issues and maximizing efficiencies will be working closely with the three East Coast Regional Management Councils and NOAA Fisheries.

Mission

The Commission's mission, as stated in its 1942 Compact, is:

> *To promote the better utilization of the fisheries, marine, shell and anadromous, of the Atlantic seaboard by the development of a joint program for the promotion and protection of such fisheries, and by the prevention of physical waste of the fisheries from any cause.*

The mission grounds the Commission in history. It reminds every one of the Commission's sense of purpose that has been in place for over 77 years. The constantly changing physical, political, social, and economic environments led the Commission to restate the mission in more modern terms:

> *To promote cooperative management of marine, shell and diadromous fisheries of the Atlantic coast of the United States by the protection and enhancement of such fisheries, and by the avoidance of physical waste of the fisheries from any cause.*

The mission and nature of the Commission as a mutual interstate body incorporate several guiding principles. They include:

- States are sovereign entities, each having its own laws and responsibilities for managing fishery resources within its jurisdiction
- States serve the broad public interest and represent the common good
- Multi-state resource management is complex and dependent upon cooperative efforts by all states involved
- The Commission provides a critical sounding board on issues requiring cross-jurisdictional action, coordinating cooperation, and collaboration among the states and federal government

Vision

The long-term vision of the Commission is:

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Values

The Commission and its member states have adopted the following values to guide its operations and activities. These values affirm the Commission's commitment to sustainable

fisheries management for the benefit of recreational and commercial fishermen and coastal communities. They also acknowledge the growing importance of managing fisheries in a more holistic and adaptive way, seeking solutions to cross cutting resource issues that lead to long-term ecological and socio-economic sustainability.

- Effective stewardship of marine resources through strong partnerships
- Decisions based on sound science
- Long-term ecological sustainability
- Transparency and accountability in all actions
- Timely response to new information through adaptive management
- Balancing resource conservation with the economic success of coastal communities
- Efficient use of time and fiscal resources
- Work cooperatively with honesty, integrity, and fairness

Driving Forces

The Commission and its actions are influenced by a multitude of factors. These factors are constantly evolving and will most likely change over the time period of this Strategic Plan. However, the most pressing factors affecting the Commission today are changing ocean conditions, resource allocation, the quality and quantity of scientific information, competing ocean uses, a growing demand to address ecosystem functions, and interactions between fisheries and protected species. The Strategic Plan, through its goals and broad objectives, will seek to address each of these issues over the next five years.

Changing Ocean Conditions

Changes in ocean temperature, currents, acidification, and sea level rise are affecting nearly every facet of fisheries resources and management at the state, interstate, and federal levels. Potential impacts to marine species include prey and habitat availability, water quality, susceptibility to disease, and spawning and reproductive potential. The distribution and productivity of fishery stocks are often changing at a rate faster than fisheries stock assessments and management can keep pace with. Several Commission species, such as northern shrimp, Southern New England lobster, Atlantic cobia, black sea bass, and summer flounder are already responding to changes in the ocean. In the case of northern shrimp and Southern New England lobster, warming ocean waters have created inhospitable environments for species reproduction and survivability. For cobia, black sea bass, and summer flounder, changing ocean conditions have contributed to shifts in species distributions, with some species expanding their ranges and others moving into deeper and/or more northern waters to stay within preferred temperature ranges. Where shifts are occurring, the Commission may need to reconsider state-by-state allocation schemes and make adjustments to our fishery management plans. For other species depleted due to factors other than fishing mortality (e.g., habitat degradation and availability, predation), the states will need to explore steps that can be taken to aid in species recovery. And, if a stock's viability is compromised, Commission resources and

efforts should be shifted to other species that can be recovered or maintained as a rebuilt stock.

Allocation

As noted above, resource allocation among the states and between various user groups will continue to be an important issue over the next five years. Many of the Commission FMPs divvy up the available harvestable resource through various types of allocation schemes, such as by state, region, season, or gear type. The changing distribution of many species has further complicated the issue of resource allocation with traditional allocation schemes being challenged and a finite amount of fishery resources to be shared. Discussion may be difficult and divisive, with some states (and their stakeholders) wanting to maintain their historic (traditional) allocations, while others are seeking a greater share of the resource given increased abundance and availability in their waters. States will need to seek innovative ways to reallocate species so that collectively all states feel their needs are met. What will be required to successfully navigate these discussions and decisions is the commitment of the states to work through the issues with honesty, integrity, and fairness, seeking outcomes that balance the needs of the states and their stakeholders with the ever changing realities of shifting resource abundance and availability.

Science as the Foundation

Accurate and timely scientific information form the basis of the Commission's fisheries management decision-making. Continued investments in the collection and management of fishery-dependent and -independent data remain a high priority for the Commission and its member states. The challenge will be to maintain and expand data collection efforts in the face of shrinking state and federal budgets. Past and current investments by state, regional and federal partners of the Atlantic Coastal Cooperative Statistics Program (ACCSP) have established the program as the principal source of marine fishery statistics for the Atlantic coast. State and regional fishery-independent data collection programs, in combination with fishery statistics, provide the scientific foundation for stock assessments. Many data collection programs will continue to be strained by budget restrictions, scientists' workload capacities, and competing priorities. The Commission remains committed to pursuing long-term support for research surveys and monitoring programs that are critical to informing management decisions and resource sustainability.

Ecosystem Functions

Nationally, there has been a growing demand for fisheries managers to address broader ecosystem functions such as predator-prey interactions and environmental factors during their fisheries management planning. Ecosystem science has improved in recent years, though the challenges of comprehensive data collection continue. A majority of the Commission's species are managed and assessed on a single species basis. When ecosystem information is available, the Commission has managed accordingly to provide ecosystem services. The Commission remains committed to seeking ecological sustainability over the long-term through continuing its work on multispecies assessment modeling and the development of ecosystem-based reference points in its fisheries management planning process.

Competing Ocean Uses

Marine spatial planning has become an increasingly popular method of balancing the growing demands on valuable ocean resources. More specifically, the competing interests of commercial and recreational fishing, renewable energy development, aquaculture, marine transportation, offshore oil exploration and drilling, military needs, and habitat restoration are all components that must be integrated into successful ocean use policies. The Commission has always emphasized cooperative management with our federal partners; however, the states' authorities in their marine jurisdictions must be preserved and respected. The Commission will continue to prioritize the successful operation of its fisheries, but it will be imperative to work closely with federal, state, and local governments on emerging ocean use conflicts as they diversify into the future.

Protected Species

Like coastal fishery resources, protected species, such as marine mammals, sea turtles, and listed and candidate fish species, traverse both state and federal waters. The protections afforded these species under the Marine Mammal Protection Act and Endangered Species Act can play a significant role in the management and prosecution of Atlantic coastal fisheries. The Commission and the states have a long history of supporting our federal partners to minimize interactions with and bycatch of marine mammals and sea turtles. The listing of Atlantic sturgeon under the Endangered Species Act has added a whole new level of complexity in the ability of the Commission and its member states to carry out their stewardship responsibilities for these important diadromous species. The species spends the majority of its life in state waters and depend on estuarine and riverine habitat for their survival. Listing has the potential to jeopardize the states' ability to effectively monitor and assess stock condition, as well as impact fisheries that may encounter listed species. It is incumbent upon the Commission and its federal partners to work jointly to assess stock health, identify threats, and implement effective rebuilding programs for listed and candidate species.

More recently, the depleted status of the Northern right whale population and the potential impacts to this population by entanglement in fishing gear, particularly lobster and crab gear, has heighted concern for both whales and the lobster industry.

Increased Cooperation and Collaboration among the States and between the States and Our Federal Partners

Demands for ecosystem-based fisheries management, competing and often conflicting ocean uses, and legislative mandates to protect marine mammals and other protected species, further complicate fisheries management and require quality scientific information to help guide management decisions. There is a growing concern among fishery managers that some "control" over fisheries decisions and status has been diminished due to political intervention and our inability to effect changing ocean conditions and other environmental factors that impact marine resources. Fisheries management has never been more complex or politically charged. State members are pulled between what is best for their stakeholders versus what is best for the resource and the states as a whole.

While the issues may seem daunting, they are not insurmountable. In order for the Commission to be successful, the states must recommit to their collective vision of "Sustainable and Cooperative Management of Atlantic Coastal Fisheries," recognizing that their strength lies in working together to address the fisheries issues that lie ahead. Given today's political and environmental realities, the need for cooperation among the states has never been more important. It is also critical the states and their federal partners seek to strengthen their cooperation and working relationships, providing for efficient and effective fisheries management across all agencies. No one state or federal agency has the resources, authority, or ability to do it alone.

GOALS & OBJECTIVES

The Commission will pursue the following eight goals and their related strategies during the five-year planning period, from 2019 through 2023. It will pursue these goals through specific objectives, targets, and milestones outlined in an annual Action Plan, which is adopted each year at the Commission's Annual Meeting to guide the subsequent year's activities. Throughout the year, the Commission and its staff will monitor progress in meeting the Commission's goals, and evaluate the effectiveness of the strategies. While committed to the objectives included in this plan, the Commission is ready to adopt additional objectives to take advantage of new opportunities and address emerging issues as they arise.

Goal 1 - Rebuild, maintain, fairly allocate, and promote sustainable Atlantic coastal fisheries

Goal 1 focuses on the responsibility of the states to conserve and manage Atlantic coastal fishery resources for sustainable use. Commission members will advocate decisions to achieve the long-term benefits of conservation, while balancing the socio-economic interests and needs of coastal communities. Inherent in this is the recognition that healthy and vibrant resources benefit stakeholders. The states are committed to proactive management, with a focus on integrating ecosystem services, socio-economic impacts, habitat issues, bycatch and discard reduction measures, and protected species interactions into well-defined fishery management plans. Fishery management plans will also address fair allocation of fishery resources among the states. Understanding changing ocean conditions and their impact on fishery productivity and distribution is an elevated priority. Successful management under changing ocean conditions will depend not only on adjusting management strategies, but also in reevaluating and revising, as necessary, the underlying conservation goals and objectives of fishery management plans. Improving cooperation and coordination with federal partners and stakeholders can streamline efficiency, transparency, and, ultimately, success. In the next five years, the Commission is committed to ending overfishing and working to rebuild overfished Atlantic coast fish stocks, while promoting sustainable harvest of and access to rebuilt fisheries. Where possible, the Commission will seek to aid in the rebuilding of depleted stocks, whose recovery is hindered by factors other than fishing pressure.

Annual action planning will be guided by the following objectives:

- Manage interstate resources that provide for productive, sustainable fisheries using sound science
- Strengthen state and federal partnerships to improve comprehensive management of shared fishery resources
- Adapt management to address emerging issues
- Practice efficient, transparent, and accountable management processes
- Evaluate progress towards rebuilding fisheries
- Promote sustainable harvest of and access to rebuilt fisheries
- Strengthen interactions and input among stakeholders, technical, advisory, and management groups

Goal 2 – Provide sound, actionable science to support informed management actions

Sustainable management of fisheries relies on accurate and timely scientific advice. The Commission strives to produce sound, actionable science through a technically rigorous, independently peer-reviewed stock assessment process. Assessments are developed using a broad suite of fishery-independent surveys and fishery-dependent monitoring, as well as research products developed by a broad network of fisheries scientists at state, federal, and academic institutions along the coast. The goal encompasses the development of new, innovative scientific research and methodology, and the enhancement of the states' stock assessment capabilities. It provides for the administration, coordination, and expansion of collaborative research and data collection programs. Achieving the goal will ensure sound science is available to serve as the foundation for the Commission's evaluation of stock status and adaptive management actions.

Annual action planning will be guided by the following objectives:

- Conduct stock assessments based on comprehensive data sources and rigorous technical analysis;
- Characterize the risk and uncertainty associated with the scientific advice provided to decision-makers
- Provide training to enhance the expertise and involvement of state and staff scientists in the development of stock assessments
- Streamline data assimilation within individual states, and among states and ASMFC
- Proactively address research priorities through cooperative state and regional data collection programs and collaborative research projects, including stakeholder involvement
- Explore the use of new technologies to improve surveys, monitoring, and the timeliness of scientific products
- Promote effective communication with stakeholders to ensure on-the-water observations and science are consistent

- Utilize ecosystem and climate science products to inform fisheries management decisions

Goal 3 - Produce dependable and timely marine fishery statistics for Atlantic coast fisheries

Effective management depends on quality fishery-dependent data and fishery-independent data to inform stock assessments and fisheries management decisions. While Goal 2 of this Action Plan focuses on providing sound, actionable science and fishery-independent data to support fisheries management, Goal 3 focuses on providing timely, accurate catch and effort data on Atlantic coast recreational, for-hire, and commercial fisheries.

Goal 3 seeks to accomplish this through the activities of the Atlantic Coastal Cooperative Statistics Program (ACCSP), a cooperative state-federal program that designs, implements, and conducts marine fisheries statistics data collection programs and integrates those data into data management systems that will meet the needs of fishery managers, scientists, and fishermen. ACCSP partners include the 15 Atlantic coast state fishery agencies, the three Atlantic Fishery Management Councils, the Potomac River Fisheries Commission, NOAA Fisheries, and the U.S. Fish and Wildlife Service.

Annual action planning will be guided by the following objectives:

- Focus on activities that maximize benefits, are responsive and accountable to partner and end-user needs, and are based on available resources.
- Cooperatively develop, implement, and maintain coastwide data standards through cooperation with all program partners
- Provide electronic applications that improve partner data collection
- Integrate and provide access to partner data via a coastwide repository
- Facilitate fisheries data access through an on-line, user-friendly, system while protecting confidentiality
- Support technological innovation

Goal 4 – Protect and enhance fish habitat and ecosystem health through partnerships and education

Goal 4 aims to conserve and improve coastal, marine, and riverine habitat to enhance the benefits of sustainable Atlantic coastal fisheries and resilient coastal communities in the face of changing ecosystems. Habitat loss and degradation have been identified as significant factors affecting the long-term sustainability and productivity of our nation's fisheries. The Commission's Habitat Program develops objectives, sets priorities, and produces tools to guide fisheries habitat conservation efforts directed towards ecosystem-based management.

The challenge for the Commission and its state members is maintaining fish habitat under limited regulatory authority for habitat protection or enhancement. Therefore, the Commission will work cooperatively with state, federal, and stakeholder partnerships to achieve this goal. Much of the work to address habitat is conducted through the Commission's Habitat and Artificial Reef Committees. In order to identify fish habitats of concern for Commission managed species, each year the Habitat Committee reviews existing reference documents for Commission-managed species to identify gaps or updates needed to describe important habitat types and review and revise species habitat factsheets. The Habitat Committee also publishes an annual issue of the *Habitat Hotline Atlantic*, highlighting topical issues that affect all the states.

The Commission and its Habitat Program endorses the National Fish Habitat Partnership, and will continue to work cooperatively with the partnership to improve aquatic habitat along the Atlantic coast. Since 2008, the Commission has invested considerable resources, as both a partner and administrative home, to the Atlantic Coastal Fish Habitat Partnership (ACFHP), a coastwide collaborative effort to accelerate the conservation and restoration of habitat for native Atlantic coastal, estuarine-dependent, and diadromous fishes. As part of this goal, the Commission will continue to provide support for ACFHP, under the direction of the National Fish Habitat Partnership Board.

Annual action planning will be guided by the following objectives:

- Identify fish habitats of concerns through fisheries management programs and partnerships
- Educate Commissioners, stakeholders, and the general public about the importance of habitat to healthy fisheries and ecosystems
- Better integrate habitat information and data into fishery management plans and stock assessments
- Engage local state, and regional governments in mutually beneficial habitat protection and enhancement programs
- Foster partnerships with management agencies, researchers, and habitat stakeholders to leverage scientific, regulatory, political, and financial support
- Work with ACFHP to foster partnerships with like-minded organizations at local levels to further common habitat goals

Goal 5 – Promote compliance with fishery management plans to ensure sustainable use of Atlantic coast fisheries

Fisheries managers, law enforcement personnel, and stakeholders have a shared responsibility to promote compliance with fisheries management measures. Activities under the goal seek to increase and improve compliance with fishery management plans. This requires the successful coordination of both management and enforcement activities among state and federal agencies. Commission members recognize that adequate and consistent enforcement of fisheries rules is required to keep pace with increasingly complex

management activity and emerging technologies. Achieving the goal will improve the effectiveness of the Commission's fishery management plans.

Annual action planning will be guided by the following objectives:

- Develop practical compliance requirements that foster stakeholder buy-in
- Evaluate the enforceability of management measures and the effectiveness of law enforcement programs
- Promote coordination and expand existing partnerships with state and federal natural resource law enforcement agencies
- Enhance stakeholder awareness of management measures through education and outreach
- Use emerging communication platforms to deliver real time information regarding regulations and the outcomes of law enforcement investigations

Goal 6 – Strengthen stakeholder and public support for the Commission

Stakeholder and public acceptance of Commission decisions are critical to our ultimate success. For the Commission to be effective, these groups must have a clear understanding of our mission, vision, and decision-making processes. The goal seeks to do so through expanded outreach and education efforts about Commission programs, decision-making processes, and its management successes and challenges. It aims to engage stakeholders in the process of fisheries management, and promote the activities and accomplishments of the Commission. Achieving the goal will increase stakeholder participation, understanding, and acceptance of Commission activities.

Annual action planning will be guided by the following objectives:

- Increase public understanding and support of activities through expanded outreach at the local, state, and federal levels
- Clearly define Commission processes to facilitate stakeholder participation, as well as transparency and accountability
- Strengthen national, regional, and local media relations to increase coverage of Commission actions
- Use new technologies and communication platforms to more fully engage the broader public in the Commission's activities and actions

Goal 7 – Advance Commission and member states' priorities through a proactive legislative policy agenda

Although states are positioned to achieve many of the national goals for marine fisheries through cooperative efforts, state fisheries interests are often underrepresented at the national level. This is due, in part, to the fact that policy formulation is often disconnected from the processes that provide the support, organization, and resources necessary to implement the policies. The capabilities and input of the states are an important aspect of

developing national fisheries policy, and the goal seeks to increase the states' role in national policy formulation. Additionally, the goal emphasizes the importance of achieving management goals consistent with productive commercial and recreational fisheries and healthy ecosystems.

The Commission recognizes the need to work with Congress in all phases of policy formulation. Several important fishery-related laws will be reauthorized over the next couple of years (i.e., Atlantic Coastal Act, Magnuson-Stevens Fishery Conservation and Management Act, Interjurisdictional Fisheries Act, Atlantic Striped Bass Conservation Act, and Anadromous Fish Conservation Act). The Commission will be vigilant in advancing the states' interests to Congress as these laws are reauthorized and other fishery-related pieces of legislation are considered.

Annual action planning will be guided by the following objectives:

- Increase the Commission's profile and support in the U.S. Congress by developing relationships between Members and their staff and Commissioners, the Executive Director, and Commission staff
- Maintain or increase long term funding for Commission programs through the federal appropriations process and other available sources.
- Engage Congress on fishery-related legislation affecting the Atlantic coast
- Promote member states' collective interests at the regional and national levels
- Promote economic benefits of the Commission's actions (return on investment)

Goal 8 – Ensure the fiscal stability & efficient administration of the Commission

Goal 8 will ensure that the business affairs of the Commission are managed effectively and efficiently, including workload balancing through the development of annual action plans to support the Commission's management process. It also highlights the need for the Commission to efficiently manage its resources. The goal promotes the efficient use of legal advice to proactively review policies and react to litigation as necessary. It also promotes human resource policies that attract talented and committed individuals to conduct the work of the Commission. The goal highlights the need for the Commission as an organization to continually expand its skill set through training and educational opportunities. It calls for Commissioners and Commission staff to maintain and increase the institutional knowledge of the Commission through periods of transition. Achieving this goal will build core strengths, enabling the Commission to respond to increasingly difficult and complex fisheries management issues.

Annual action planning will be guided by the following objectives:

- Conservatively manage the Commission's operations and budgets to ensure fiscal stability
- Utilize new information technology to improve meeting and workload efficiencies, and enhance communications

- Refine strategies to recruit professional staff, and enhance growth and learning opportunities for Commission and state personnel
- Fully engage new Commissioners in the Commission process and document institutional knowledge.
- Utilize legal advice on new management strategies and policies, and respond to litigation as necessary.

Atlantic Coastal Cooperative Statistics Program

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This list includes dates for fiscal year 2021, including ACCSP committee meetings, relevant dates of the funding cycle, as well as meetings or conferences ACCSP typically attends or which may be of interest to our partners. Due to the restrictions from COVID-19, some in-person meetings may be held virtually. If you have any questions or comments on this calendar please do not hesitate to contact the ACCSP staff at info@accsp.org.

Jan 20-21:	APAIS South Atlantic Training – Webinar
Jan 26-27:	APAIS Mid-Atlantic Training – Webinar
Jan 26-28:	NEFMC Meeting – Webinar
Feb 1-4:	ASMFC Meeting/Coordinating Council Meeting – Webinar
Feb 9-10:	APAIS North Atlantic Training - Webinar
Feb 17:	Biological Review Panel Annual Meeting – Webinar
Feb 18:	Bycatch Prioritization Committee Annual Meeting –Webinar
Feb 10-11:	MAFMC Meeting – Webinar
Mar 1:	Start of ACCSP FY21
Mar 1-5:	SAFMC Meeting – Webinar
Week of Mar 23:	Commercial Technical Committee Annual Meeting – Webinar*
Week of Mar 23:	Information Systems Committee Annual Meeting – Webinar*
Apr 6-8:	MAFMC Meeting – Galloway, NJ
Week of April 13:	Operations and Advisory Committees Spring Meeting – Webinar*
Week of Apr 13:	Recreational Technical Committee – Webinar *
Apr 13-15:	NEFMC Meeting – Mystic, CT
May 3-6:	ASMFC/Coordinating Council Meeting – Arlington, VA
May 11:	ACCSP issues request for proposals
Late May:	APAIS Wave 2 Meeting - Webinar
Jun 8-10:	MAFMC Meeting – Virginia Beach, VA
Jun 14-18:	SAFMC Meeting – Ponte Vedra Beach, FL
Jun 12:	Initial proposals are due
Jun 19:	Initial proposals are distributed to Operations and Advisory Committees
Jun 22-24:	NEFMC Meeting – Portland, ME
July 6:	Any initial written comments on proposals due
Week of Jul 13:	Review of initial proposals by Operations and Advisory Committees – Webinar
July 20:	If applicable, any revised written comments due
Week of Jul 27:	Feedback submitted to principal investigators
Late July:	APAIS Wave 3 Meeting – Webinar
Aug 3-5:	ASMFC Meeting/Coordinating Council Meeting – Arlington, VA
Aug 9-12:	MAFMC Meeting – Philadelphia, PA
Aug 14:	Revised proposals due

Our vision is to produce dependable and timely marine fishery statistics for Atlantic coast fisheries that are collected, processed, and disseminated according to common standards agreed upon by all program partners.

Aug 21:	Revised proposals distributed to Operations and Advisory Committees
Week of Sep 7:	Preliminary ranking exercise for Advisors and Operations Members – Webinar
Sep 13-17:	SAFMC Meeting – Charleston, SC
Week of Sep 21:	Annual Advisors/Operations Committee Joint Meeting (TBD)
Sep 28-30	NEFMC Meeting – Plymouth, MA
Late September:	APAIS Wave 4 Meeting – Webinar
Oct 5-7:	MAFMC Meeting – New York, NY
Oct 19-21:	ASMFC Annual Meeting/Coordinating Council Meeting – Long Branch, NJ
Nov 6-10:	AFS 151st Annual Meeting – Baltimore, MD
Dec 6-10:	SAFMC Meeting – Beaufort, NC
Dec 7-9:	NEFMC Meeting – Newport, RI
Dec 13-16:	MAFMC Meeting – Annapolis, MD

* *Indicates meetings not yet scheduled.*

Funding Decision Process
Atlantic Coastal Cooperative Statistics Program
May 2021

The Atlantic Coastal Cooperative Statistics Program (the Program) is a state-federal cooperative initiative to improve recreational and commercial fisheries data collection and data management activities on the Atlantic coast. The program supports further innovation in fisheries-dependent data collection and management technology through its annual funding process.

Each year, ACCSP issues a Request for Proposals (RFP) to its Program Partners. The ACCSP Operations and Advisory Committees review submitted project proposals and make funding recommendations to the Deputy Director and the Coordinating Council.

This document provides an overview of the funding decision process, guidance for preparing and submitting proposals, and information on funding recipients' post-award responsibilities, including providing reports on project progress.

Overview of the Funding Decision Process

Funding Decision Process Timeline

April- Operations and Advisory Committees develop annual funding priorities, criteria and allocation targets (maintenance vs. new projects)

May- Coordinating Council issues Request for Proposals (RFP)

June- Partners submit proposals

July- Operations and Advisory Committees review initial proposals, PIs are invited (not mandatory) to this meeting to answer questions and hear feedback; ACCSP staff provide initial review results to submitting Partner

August- Final proposals are submitted. Final proposals must be submitted electronically to the Deputy Director, and/or designee by close of business on the day of the specified deadline. Final proposals received after the RFP deadline will not be considered for funding.

September- Operations and Advisory Committees review and rank final proposals

October- Funding recommendations presented to Coordinating Council; Coordinating Council makes final funding decision

ACCSP Staff submits notification to submitting Partner of funded projects and notification of approved projects to appropriate grant funding agency (e.g. NOAA Fisheries Regional Grants Program Office, "NOAA Grants") by Partner

As Needed- Operation and/or Leadership Team and Coordinating Council review and make final decision with contingencies (e.g. scope of work, rescissions, no-cost extensions, returned unused funds, etc.)

Detailed Steps of Funding Decision Process

1. Develop Annual Funding Priorities, Criteria and Allocation Targets (maintenance vs. new projects).

Prior to issuing the Request for Proposals, the Coordinating Council will approve the annual funding criteria and allocation targets. These will be used to rank projects and allocate funding between maintenance and new projects respectively.

In FY16, a long-term funding strategy policy was instituted to limit the duration of maintenance projects. Maintenance projects are now subject to a funding reduction following their fourth year of maintenance funding.

- For maintenance projects entering year 5 of ACCSP funding in FY20, a 33 percent funding cut was applied to whichever sum was larger: the project's prior two-year-average base funding set in FY16, or the average annual sum received during the project's four years of full *maintenance* funding. In year 6, a further 33 percent cut will be applied and funding will cease in year 7. Please see Appendix A for a list of maintenance projects entering year 6 in FY20 and the maximum funds available for these projects.

- For more recent maintenance projects (i.e., those entering year 5 of maintenance funding after FY20), the base funding will be calculated as the average of funding received during the project's four years as a *maintenance* project. These projects will receive a 33 percent cut in year 5, a further 33 percent cut in year 6, and funding will cease in year 7.

- In consideration of the unique situation COVID 19 has created, the step down process will be paused in FY22. This means that all maintenance projects that would have progressed out of eligibility have the opportunity to submit proposals for funding up to the FY21 level. All of these maintenance project submissions are required to submit an appendix to the proposal indicating that they would like to request funding under the extension, a summary of why the additional funding is needed, and if there are any

funds from the previous year that were not spent. The relevant projects are reflected in Appendix A, which has a list of those maintenance projects entering year 6 as of FY21 and the maximum funding available to them.

2. Issue Request for Proposals

An RFP will be sent to all Program Partners and Committees no later than the week after the spring Coordinating Council meeting. The RFP will include the ranking criteria, allocation targets approved by the Coordinating Council, and general Program priorities taken from Goal 3 of the current ASMFC Five-Year Strategic Plan. The RFP and related documents will also be posted on the Program's website here.

All proposals MUST be submitted either by a Program Partner, jointly by several Program Partners, or through a Program Committee. The public has the ability to work with a Program Partner to develop and submit a proposal. Principle investigators are strongly encouraged to work with their Operations Committee member in the development of any proposal. All proposals must be submitted electronically to the Deputy Director, and/or designee, in the standard format.

3. Review initial proposals

Proposals will be reviewed by staff and the Operations and Advisory Committees. Committee members are encouraged to coordinate with their offices and/or constituents to provide input to the review process. Operations Committee members are also encouraged to work with staff in their offices who have submitted a proposal in order to represent the proposal during the review. Project PIs will be invited to attend the initial proposal review, held in July. The review and evaluation of all written proposals will take into consideration the ranking criteria, funding allocation targets and the overall Program Priorities as specified in the RFP. Proposals may be forwarded to relevant Program technical committees for further review of the technical feasibility and statistical validity. Proposals that fail to meet the ACCSP standards may be recommended for changes or rejected.

4. Provide initial review results to submitting Partner

Program staff will notify the submitting Partner of suggested changes, requested responses, or questions arising from the review. The submitting Partner will be given an opportunity to submit a final proposal incorporating suggested changes in the same format previously described in Step 2(b) by the final RFP deadline.

5. Review and rank final proposals

The review and ranking of all proposals will take into consideration the ranking criteria, funding allocation targets, and overall Program Priorities as specified in the RFP**.** The Deputy Director and the Advisory and Operations Committees will develop a list of prioritized recommended proposals and forward them for discussion, review, and approval by the Coordinating Council.

6. Proposal approval by the Coordinating Council

The Coordinating Council will review a summary of all submitted proposals and prioritized recommended proposals from the Operations and Advisory Committees. Each representative on the Coordinating Council will have one vote during final prioritization of project proposals. Projects to be funded by the Program will be approved by the Coordinating Council by the end of November each year. The Deputy Director will submit a pre-notification to the appropriate NOAA Grants office of the prioritized proposals to expedite processing when those offices receive Partner grant submissions.

7. Confirmation of final funding amounts

The Director and Deputy Director will be notified by NOAA Fisheries of any federal grant adjustments (e.g. additions or rescissions). Additional funds will generally go to the next available ranked project. Reductions may include, but are not limited to:

- Lower than anticipated amounts from any source of funding
- Rescission of funding after initial allocations have been made
- Partial or complete withdrawal of funds from any source

If these or other situations arise, the Operations Committee will notify Partners with approved proposals to reduce their requested budgets or to withdraw a proposal entirely. If this does not reduce the overall requested amount sufficiently, the Director, Deputy Director, the Operations Committee Chair and Vice-Chair, and the Advisory Committee Chair will develop a final recommendation and forward to the ACCSP Leadership Team of the Coordinating Council. These options to address funding contingencies may include:

- Eliminating the lowest-ranked proposal(s)
- A fixed percentage cut to all proposals' budgets
- A directed reduction in a specific proposal(s)

8. Notification to submitting Partner of funded projects and submittal of project documents to appropriate grants agency (e.g. NOAA Grants) by Partner.

Notification detailing the Coordinating Council's actions relevant to a Partner's proposal will be sent to each Partner by Program staff.

- Approved projects from Non-federal Partners must be submitted as full applications (federal forms, project and budget narratives, and other attachments) to NOAA Grants via www.grants.gov. These documents must reflect changes or conditions approved by the Coordinating Council.
- Non-federal Partners must provide the Deputy Director with an electronic copy of the narrative and either an electronic or hard copy of the budget of the grant application as submitted to the grants agency (e.g. NOAA Grants).
- Federal Partners do not submit applications to NOAA Grants.

9. Operation and/or Leadership Team and Coordinating Council review and final decision with contingencies or emergencies.

Committee(s) review and decide project changes (e.g. scope of work, rescissions, no-cost extensions, returned unused funds, etc.) during the award period.

Proposal Guidance

- General Proposal Guidelines
- Format
- Budget Template

General Proposal Guidelines

- The Program is predicated upon the most efficient use of available funds. Many jurisdictions have data collection and data management programs which are administered by other fishery management agencies. Detail coordination efforts your agency/Committee has undertaken to demonstrate cost-efficiency and non-duplication of effort.

- All Program Partners conducting projects for implementation of the program standards in their jurisdictions are required to submit data to the Program in prescribed standards, where the module is developed and formats are available. Detail coordination efforts with Program data management staff with projects of a research and/or pilot study nature to submit project information and data for distribution to all Program Partners and archives.

- If appropriate to your project, please detail your agency's data management capability. Include the level of staff support (if any) required to accomplish the proposed work. If contractor services are required, detail the level and costs.

- Before funding will be considered beyond year one of a project, the Partner agency shall detail in writing how the Partner agency plans to assume partial or complete funding or, if not feasible, explain why.

- If appropriate to your project, detail any planned or ongoing outreach initiatives. Provide scope and level of outreach coordinated with either the Program Assistant and/or Deputy Director.

- Proposals including a collection of aging or other biological samples must clarify Partner processing capabilities (i.e., how processed and by whom).

- Provide details on how the proposal will benefit the Program as a whole, outside of benefits to the Partner or Committee.

- Proposals that request funds for law enforcement should confirm that all funds will be allocated towards reporting compliance.

- Proposals must detail any in-kind effort/resources, and if no in-kind resources are included, state why.

- Proposals must meet the same quality as would be appropriate for a grant proposal for ACFCMA or other federal grant.

- Assistance is available from Program staff, or an Operations Committee member for proposal preparation and to insure that Program standards are addressed in the body of a given proposal.

- Even though a large portion of available resources may be allocated to one or more jurisdictions, new systems (including prototypes) will be selected to serve all Partners' needs.

- Partners submitting pilot or other short-term programs are encouraged to lease large capital budget items (vehicles, etc.) and where possible, hire consultants or contractors rather than hire new permanent personnel.

- The Program will not fund proposals that do not meet Program standards. However, in the absence of approved standards, pilot studies may be funded.

- Proposals will be considered for modules that may be fully developed but have not been through the formal approval process. Pilot proposals will be considered in those cases.

- The Operations Committee may contact Partners concerning discrepancies or inconsistencies in any proposal and may recommend modifications to proposals subject to acceptance by the submitting Partner and approval by the Coordinating Council. The Operations Committee may recommend changes or conditions to proposals. The Coordinating Council may conditionally approve proposals. These contingencies will be documented and forwarded to the submitting Partner in writing by Program staff.

- Any proposal submitted after the initial RFP deadline will not be considered, in addition to any proposal submitted by a Partner which is not current with all reporting obligations.

Proposal Format

Applicant Name: Identify the name of the applicant organization(s).

Project Title: A brief statement to identify the project.

Project Type: Identify whether new or maintenance project.

> *New Project – Partner project never funded by the Program. New projects may not exceed a duration of one year.*
>
> *Maintenance Project – Project funded by the Program that conducts the same scope of work as a previously funded new or maintenance project. These proposals may not contain significant changes in scope (e.g., the addition of bycatch data collection to a catch/effort dealer reporting project). PIs must include in the cover letter whether there are any changes in the current proposal from prior years' and, if so, provide a brief summary of those changes. At year 5 of maintenance funding, a project's base funding will be calculated as the average of funding received during the project's four years as a* maintenance *project.*

Requested Award Amount: Provide the total requested amount of proposal. Do not include an estimate of the NOAA grant administration fee.

Requested Award Period: Provide the total time period of the proposed project. The award period typically will be limited to one-year projects.

Objective: Specify succinctly the "why", "what", and "when" of the project.

Need: Specify the need for the project and the association to the Program.

Results and Benefits: Identify and document the results or benefits to be expected from the proposed project. Clearly indicate how the proposed work meets various elements outlined in the ACCSP Proposal Ranking Criteria Document (Appendix B). Some potential benefits may include: fundamental in nature to all fisheries; region-wide in scope; answering or addressing region-wide questions or policy issues; required by MSFCMA, ACFCMA, MMPA, ESA, or other acts; transferability; and/or demonstrate a practical application to the Program.

Data Delivery Plan: Include coordinated method of the data delivery plan to the Program in addition to module data elements gathered. The data delivery plan should include the frequency of data delivery (i.e. monthly, semi-annual, annual) and any coordinate delivery to other relevant partners.

Approach: List all procedures necessary to attain each project objective. If a project includes work in more than one module, identify approximately what proportion of effort is comprised within each module (e.g., catch and effort 45%, biological 30% and bycatch 25%).

Geographic Location: The location where the project will be administered and where the scope of the project will be conducted.

Milestone Schedule: An activity schedule in table format for the duration of the project, starting with Month 1 and ending with a three-month report writing period.

Project Accomplishments Measurement: A table showing the project goals and how progress towards those goals will be measured. In some situations the metrics will be numerical such as numbers of anglers contacted, fish measured, and/or otoliths collected, etc.; while in other cases the metrics will be binary such as software tested and software completed. Additional details such as intermediate metrics to achieve overall proposed goals should be included especially if the project seeks additional years of funding.

Cost Summary (Budget): Detail all costs to be incurred in this project in the format outlined in the budget guidance and template at the end of this document. A budget narrative should be included which explains and justifies the expenditures in each category. Provide cost projections for federal and total costs. Provide details on Partner/in-kind contribution (e.g., staff time, facilities, IT support, overhead, etc.). Details should be provided on start-up versus long-term operational costs.

> **In-kind** - [1]Defined as activities that could exist (or could happen) without the grant. [2]In-kind contributions are from the grantee organization. In-kind is typically in the form of the value of personnel, equipment and services, including direct and indirect costs.
>
> [1] The following are generally accepted as in-kind contributions:
>
> i. Personnel time given to the project including state and federal employees
>
> ii. Use of existing state and federal equipment (e.g. data collection and server platforms, Aging equipment, microscopes, boats, vehicles)

Overhead rates may not exceed 25% of total costs unless mandated by law or policy. Program Partners may not be able to control overhead/indirect amounts charged. However, where there is flexibility, the lowest amount of overhead should be charged. When this is accomplished indicate on the 'cost summary' sheet the difference between the overhead that could have been charged and the actual amount charged, if different. If overhead is charged to the Program, it cannot also be listed as in-kind.

Maintenance Projects: Maintenance proposals must provide project history table, description of completed data delivery to the ACCSP and other relevant partners, table of total project cost by year, a summary table of metrics and achieved goals, and the budget narrative from the most recent year's funded proposal.

Principal Investigator: List the principal investigator(s) and attach curriculum vitae (CV) for each. Limit each CV to two pages. Additional information may be requested.

Budget Guidelines & Template

All applications must have a detailed budget narrative explaining and justifying the expenditures by object class. Include in the discussion the requested dollar amounts and how they were derived. A spreadsheet or table detailing expenditures is useful to clarify the costs (see template below). The following are highlights from the NOAA Budget Guidelines document to help Partners formulate their budget narrative. The full Budget Guidelines document is available here.

Object Classes:

Personnel: include salary, wage, and hours committed to project for each person by job title. Identify each individual by name and position, if possible.

Fringe Benefits: should be identified for each individual. Describe in detail if the rate is greater than 35 % of the associated salary.

Travel: all travel costs must be listed here. Provide a detailed breakdown of travel costs for trips over $5,000 or 5 % of the award. Include destination, duration, type of transportation, estimated cost, number of travelers, lodging, mileage rate and estimated number of miles, and per diem.

Equipment: equipment is any single piece of non-expendable, tangible personal property that costs $5,000 or more per unit and has a useful life of more than one year. List each piece of equipment, the unit cost, number of units, and its purpose. Include a lease vs. purchase cost analysis. If there are no lease options available, then state that.

Supplies: purchases less than $5,000 per item are considered by the federal government as supplies. Include a detailed, itemized explanation for total supplies costs over $5,000 or 5% of the award.

Contractual: list each contract or subgrant as a separate item. Provide a detailed cost breakdown and describe products/services to be provided by the contractor. Include a sole source justification, if applicable.

Other: list items, cost, and justification for each expense.

Total direct charges

Indirect charges: If claiming indirect costs, please submit a copy of the current approved negotiated indirect cost agreement. If expired and/or under review, a copy of the transmittal letter that accompanied the indirect cost agreement application is requested.

Totals of direct and indirect charges

Example. Budget narrative should provide further detail on these costs.

Description	Calculation	Cost
Personnel (a)		
Supervisor	Ex: 500 hrs x $20/hr	$10,000
Biologist		
Technician		
Fringe (b)		
Supervisor	Ex: 15% of salary	$1500
Biologist		
Technician		
Travel (c)		
Mileage for sampling trips	Ex: Estimate 2000 miles x $0.33/mile	$660
Travel for meeting		
Equipment (d)		
Boat	Ex: $7000, based on current market research	$7000
Supplies (e)		
Safety supplies		$1200
Sampling supplies		$1000
Laptop computers	2 laptops @$1500 each	$3000
Software		$500
Contractual (f)		
Data Entry Contract	Ex: 1000 hrs x $20/hr	$20,000
Other (h)		
Printing and binding		
Postage		
Telecommunications charges		
Internet Access charges		
Totals		
Total Direct Charges (i)		
Indirect Charges (j)		
Total (sum of Direct and Indirect) (k)		

Post-award Responsibilities

Changing the Scope of Work

Partners shall submit requests for amendments to approved projects in writing to the Deputy Director. The Coordinating Council member for that Partner must sign the request.

When Partners request an amendment to an approved project, the Deputy Director will contact the Chair and Vice Chair of the Operations Committee. The Deputy Director and Operations Committee Chairs will determine if the requested change is minor or substantial. The Chairs and Deputy Director may approve minor changes.

For substantial proposed changes, a decision document including the opinions of the Chairs and the Deputy Director will be sent to the Operations Committee and the ACCSP Leadership Team of the Coordinating Council for review.

The ACCSP Leadership Team will decide to approve or reject the request for change and notify the Deputy Director, who will send a written notification to the Partner's principal investigator with a copy to the Operations Committee.

When a requested major amendment is submitted shortly before a Coordinating Council meeting, the approval of the amendment will be placed on the Council Agenda.

The Deputy Director will notify NOAA Grants of any change in scope of work for final approval for non-federal proposals, and the Partner will need to request a Change in Scope through Grants Online. Necessary communications will be maintained between the concerned Partner, the Program and NOAA Grants. Any changes must be approved through the normal NOAA Grants process.

Requesting a No-cost Extension

If additional time is needed to complete the project, Program Partners can request a no-cost extension to their award period. Partners should let the Program know of the need for additional time and then request the extension as an Award Action Request through NOAA Grants Online at least 30 days before the end date of the award.

Necessary communications will be maintained between the concerned Partner, the Program, and NOAA Grants office. Any changes must be approved through the normal NOAA Grants process.

Declaring Unused/Returned Funds

In an effort to limit the instances in which funds are not completely used during the award period, draw down reports from the NOAA Grants offices indicating remaining grant balances will be periodically reviewed during each fiscal year.

While effort should be made to complete the project as proposed, if Program Partners find that they will not be able to make use of their entire award, they should notify the Program and their NOAA Federal Program Officer as soon as possible. Depending on the timing of the action, the funds may be able to be reused within the Program, or they may have to be returned to the U.S. Treasury.

Program Partners must submit a written document to the Deputy Director outlining unused project funds potentially being returned. The Partner must also notify their Coordinating Council member (if applicable) for approval to return the unused funds. If the funding is available for re-use within the Program, the Director and Deputy Director will confer with the Operations Committee Chair and Vice-Chair and the Advisory Committee Chair, and then submit a written recommendation to the ACCSP Leadership Team of the Coordinating Council for final approval on the plan to distribute the returned money.

Necessary communications will be maintained between the concerned Partner, the Program, and NOAA Grants office. Any changes must be approved through the normal NOAA Grants process.

Reporting Requirements

Program staff will assess project performance.

The Partner project recipients must abide by the NOAA Regional Grant Programs reporting requirements and as listed below. All semi-annual and final reports are to include a table showing progress toward each of the progress goals as defined in Step 2b and additional metrics as appropriate. Also, all Partner project recipients will submit the following reports based on the project start date to the Deputy Director:

- Semi-annual reports (due 30 days after the semi-annual period) throughout the project period including time periods during no-cost extensions,
- One final report (due 90 days after project completion).
- Federal Partners must submit reports to the Deputy Director, and State Partners must submit reports to both the Deputy Director and the appropriate NOAA Grants office.

Program staff will conduct an initial assessment of the final report to ensure the report is complete in terms of reporting requirements. Program staff will serve as technical monitors to review submitted reports. NOAA staff also reviews the reports submitted via Grants Online.

A project approved on behalf of a Program Committee will be required to follow the reporting requirements specified above. The principle investigator (if not the Chair of the Committee) will submit the report(s) to the Chair and Vice Chair of the Committee for review and approval. The Committee Chair is responsible for submitting the required report(s) to the Program.

Joint projects will assign one principle investigator responsible for submitting the required reports. The principle investigator will be identified within the project proposal. The submitted reports should be a collaborative effort between all Partners involved in the joint project.

Project recipients will provide all reports to the Program in electronic format.

Partners who receive no-cost extensions must notify the Deputy Director within 30 days of receiving approval of the extension. Semi-annual and final reports will continue to be required through the extended grant period as previously stated.

Partners that have not met reporting requirements for past/current projects may not submit a new proposal.

A verbal presentation of project results may be requested. Partners will be required to submit copies of project specifications and procedures, software development, etc. to assist other Program Partners with the implementation of similar programs.

Report Format

Semi-Annual(s) – Progress Reports: (3-4 pages)

- Title page - Project name, project dates (semi-annual period covered and complete project period), submitting Partner, and date.
- Objective
- Activities Completed – bulleted list by objective.
- Progress or lack of progress of incomplete activities during the period of semi-annual progress – bulleted list by objective.
- Activities planned during the next reporting period.
- Metrics table
- Milestone Chart – original and revised if changes occurred during the project period.

Final Report:

- Title page – Project name, project dates, submitting Partner, and date.
- Abstract/Executive Summary (including key results)
- Introduction
- Procedures

- Results:
    - Description of data collected.
    - The quality of the data pertaining to the objective of the project (e.g. representative to the scope of the project, quantity collected, etc.).
    - Compiled data results.
    - Summary of statistics.
- Discussion:
    - Discuss the interpretation of results of the project by addressing questions such as, but not limited to:
    - What occurred?
    - What did not occur that was expected to occur?
    - Why did expected results not occur?
    - Applicability of study results to Program goals.
    - Recommendations/Summary/Metrics
- Summarized budget expenditures and deviations (if any).

Programmatic review

Project reports will inform Partners of project outcomes. This will allow the Program as a whole to take advantage of lessons learned and difficulties encountered. Staff will provide final reports to the appropriate Committee(s). The Committees then can discuss the report(s) and make recommendations to modify the Data Collection Standards as appropriate. The recommendations will be submitted through the Program committee(s) review process.

Appendix A: Maximum Funding for Maintenance Projects Entering Year 5 or 6/7 of Funding in FY22

Projects in Year 6/7 of Maintenance Funding	**Calculated Base** (formula used)	Maximum Funding Year 5	**Maximum Funding Year 6/7**
ME DMR: Portside commercial catch sampling and bycatch sampling for Atlantic herring, Atlantic mackerel, and Atlantic menhaden	**$133, 452.50** (2-year base)	$88,968.33	**$44,484.17**
ME DMR: Managing Mandatory Dealer Reporting in Maine	**$183, 934.50** (4-year avg)	$122,623.00	**$61,311.50**
RI DEM: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	**$82,563.50** (2-year base)	$55,042.33	**$27,521.17**
NJ DFW: Electronic Reporting and Biological Characterization of New Jersey Commercial Fisheries	**$163,803.75** (4-year avg)	$109,202.50	**$54,601.25**
SC DNR: ACCSP Data Reporting from South Carolina's Commercial Fisheries	**$170,770.00** (2-year base)	$113,846.67	**$56,923.33**
SEFSC: Continued processing and ageing of biological samples collected from U.S. South Atlantic commercial and recreational fisheries	**$266,792.00 (4-year avg)**	$177,861.33	**$88,930.67**

Appendix B: Ranking Criteria Spreadsheet for Maintenance and New Projects

Ranking Guide – Maintenance Projects:

Primary Program Priority	**Point Range**	**Description of Ranking Consideration**
Catch and Effort Biological Sampling Bycatch/Species Interactions Social and Economic	0 – 10 0 – 10 0 – 6 0 – 4	Rank based on range within module and level of sampling defined under Program design. When considering biological, bycatch or recreational funding, rank according priority matrices.
Data Delivery Plan	+ 2	Additional points if a data delivery plan to Program is supplied and defined within the proposal.

Project Quality Factors	**Point Range**	**Description of Ranking Consideration**
Multi-Partner/Regional impact including broad applications	0 – 5	Rank based on the number of Partners involved in project OR regional scope of proposal (e.g. geographic range of the stock).
> yr 2 contains funding transition plan and/or justification for continuance	0 – 4	Rank based on defined funding transition plan away from Program funding or viable justification for continued Program funding.
In-kind contribution	0 – 4	1 = 1% - 25% 2 = 26% - 50% 3 = 51% - 75% 4 = 76% - 99%
Improvement in data quality/quantity/timeliness	0 – 4	1 = Maintain minimum level of needed data collections ↓ 4 = Improvements in data collection reflecting 100% of related module as defined within the Program design. Metadata is provided and defined within proposal if applicable.
Potential secondary module as a by-product (In program priority order)	0 – 3 0 – 3 0 – 3 0 – 1	Ranked based on additional module data collection and level of collection as defined within the Program design of individual module.
Impact on stock assessment	0 – 3	Rank based on the level of data collection that leads to new or greatly improved stock assessments.

Other Factors	Point Range	Description of Ranking Consideration
Properly Prepared	-1 – 1	Meets requirements as specified in funding decision document Step 2b and Guidelines
Merit	0 – 3	Ranked based on subjective worthiness

Ranking Guide – Maintenance Projects: (*to be used only if funding available exceeds total Maintenance funding requested*)

Ranking Factors	Point Range	Description of Ranking Consideration
Achieved Goals	0 – 3	Proposal indicates project has consistently met previous set goals. Current proposal provides project goals and if applicable, intermediate metrics to achieve overall achieved goals.
Data Delivery Plan	0 – 2	Ranked based if a data delivery plan to Program is supplied and defined within the proposal.
Level of Funding	-1 – 1	-1 = Increased funding from previous year 0 = Maintained funding from previous year 1 = Decreased funding from previous year
Properly Prepared	-1 – 1	-1 = Not properly prepared 1 = Properly prepared
Merit	0 – 3	Ranked based on subjective worthiness

Ranking Guide – New Projects:

Primary Program Priority	Point Range	Description of Ranking Consideration
Catch and Effort Biological Sampling Bycatch/Species Interactions Social and Economic	0 – 10 0 – 10 0 – 6 0 – 4	Rank based on range within module and level of sampling defined under Program design. When considering biological, bycatch or recreational funding, rank according priority matrices.
Data Delivery Plan	+ 2	Additional points if a data delivery plan to Program is supplied and defined within the proposal.

Project Quality Factors	Point Range	Description of Ranking Consideration
Multi-Partner/Regional impact including broad applications	0 – 5	Rank based on the number of Partners involved in project OR regional scope of proposal (e.g. fisheries sampled).
Contains funding transition plan / Defined end-point	0 – 4	Rank based on quality of funding transition plan or defined end point.
In-kind contribution	0 – 4	1 = 1% - 25% 2 = 26% - 50% 3 = 51% - 75% 4 = 76% - 99%
Improvement in data quality/quantity/timeliness	0 – 4	1 = Maintain minimum level of needed data collections ↓ 4 = Improvements in data collection reflecting 100% of related module as defined within the Program design. Metadata is provided and defined within proposal if applicable.
Potential secondary module as a by-product (In program priority order)	0 – 3 0 – 3 0 – 3 0 – 1	Ranked based on additional module data collection and level of collection as defined within the Program design of individual module.
Impact on stock assessment	0 – 3	Rank based on the level of data collection that leads to new or greatly improved stock assessments.

Other Factors	Point Range	Description of Ranking Consideration
Innovative	0 – 3	Rank based on new technology, methodology, financial savings, etc.
Properly Prepared	-1 – 1	Meets requirements as specified in funding decision document Step 2b and Guidelines
Merit	0 – 3	Ranked based on subjective worthiness

Funding Decision Process
Atlantic Coastal Cooperative Statistics Program
May 2021

The Atlantic Coastal Cooperative Statistics Program (the Program) is a state-federal cooperative initiative to improve recreational and commercial fisheries data collection and data management activities on the Atlantic coast. The program supports further innovation in fisheries-dependent data collection and management technology through its annual funding process.

Each year, ACCSP issues a Request for Proposals (RFP) to its Program Partners. The ACCSP Operations and Advisory Committees review submitted project proposals and make funding recommendations to the Deputy Director and the Coordinating Council.

This document provides an overview of the funding decision process, guidance for preparing and submitting proposals, and information on funding recipients' post-award responsibilities, including providing reports on project progress.

Overview of the Funding Decision Process

Funding Decision Process Timeline

April- Operations and Advisory Committees develop annual funding priorities, criteria and allocation targets (maintenance vs. new projects)

May- Coordinating Council issues Request for Proposals (RFP)

June- Partners submit proposals

July- Operations and Advisory Committees review initial proposals, PIs are invited (not mandatory) to this meeting to answer questions and hear feedback; ACCSP staff provide initial review results to submitting Partner

August- Final proposals are submitted. Final proposals must be submitted electronically to the Deputy Director, and/or designee by close of business on the day of the specified deadline. Final proposals received after the RFP deadline will not be considered for funding.

September- Operations and Advisory Committees review and rank final proposals

October- Funding recommendations presented to Coordinating Council; Coordinating Council makes final funding decision

ACCSP Staff submits notification to submitting Partner of funded projects and notification of approved projects to appropriate grant funding agency (e.g. NOAA Fisheries Regional Grants Program Office, "NOAA Grants") by Partner

As Needed- Operation and/or Leadership Team and Coordinating Council review and make final decision with contingencies (e.g. scope of work, rescissions, no-cost extensions, returned unused funds, etc.)

Detailed Steps of Funding Decision Process

1. Develop Annual Funding Priorities, Criteria and Allocation Targets (maintenance vs. new projects).

Prior to issuing the Request for Proposals, the Coordinating Council will approve the annual funding criteria and allocation targets. These will be used to rank projects and allocate funding between maintenance and new projects respectively.

In FY16, a long-term funding strategy policy was instituted to limit the duration of maintenance projects. Maintenance projects are now subject to a funding reduction following their fourth year of maintenance funding.

- For maintenance projects entering year 5 of ACCSP funding in FY20, a 33 percent funding cut was applied to whichever sum was larger: the project's prior two-year-average base funding set in FY16, or the average annual sum received during the project's four years of full *maintenance* funding. In year 6, a further 33 percent cut will be applied and funding will cease in year 7. Please see Appendix A for a list of maintenance projects entering year 6 in FY20 and the maximum funds available for these projects.

- For more recent maintenance projects (i.e., those entering year 5 of maintenance funding after FY20), the base funding will be calculated as the average of funding received during the project's four years as a *maintenance* project. These projects will receive a 33 percent cut in year 5, a further 33 percent cut in year 6, and funding will cease in year 7.

- In consideration of the unique situation COVID 19 has created, the step down process will be paused in FY22. This means that all maintenance projects that would have progressed out of eligibility have the opportunity to submit proposals for funding up to the FY21 level. All of these maintenance project submissions are required to submit an appendix to the proposal indicating that they would like to request funding under the extension, a summary of why the additional funding is needed, and if there are any

funds from the previous year that were not spent. The relevant projects are reflected in Appendix A, which has a list of those maintenance projects entering year 6 as of FY21 and the maximum funding available to them.

2. Issue Request for Proposals

An RFP will be sent to all Program Partners and Committees no later than the week after the spring Coordinating Council meeting. The RFP will include the ranking criteria, allocation targets approved by the Coordinating Council, and general Program priorities taken from Goal 3 of the current ASMFC Five-Year Strategic Plan. The RFP and related documents will also be posted on the Program's website here.

All proposals MUST be submitted either by a Program Partner, jointly by several Program Partners, or through a Program Committee. The public has the ability to work with a Program Partner to develop and submit a proposal. Principle investigators are strongly encouraged to work with their Operations Committee member in the development of any proposal. All proposals must be submitted electronically to the Deputy Director, and/or designee, in the standard format.

3. Review initial proposals

Proposals will be reviewed by staff and the Operations and Advisory Committees. Committee members are encouraged to coordinate with their offices and/or constituents to provide input to the review process. Operations Committee members are also encouraged to work with staff in their offices who have submitted a proposal in order to represent the proposal during the review. Project PIs will be invited to attend the initial proposal review, held in July. The review and evaluation of all written proposals will take into consideration the ranking criteria, funding allocation targets and the overall Program Priorities as specified in the RFP. Proposals may be forwarded to relevant Program technical committees for further review of the technical feasibility and statistical validity. Proposals that fail to meet the ACCSP standards may be recommended for changes or rejected.

4. Provide initial review results to submitting Partner

Program staff will notify the submitting Partner of suggested changes, requested responses, or questions arising from the review. The submitting Partner will be given an opportunity to submit a final proposal incorporating suggested changes in the same format previously described in Step 2(b) by the final RFP deadline.

5. Review and rank final proposals

The review and ranking of all proposals will take into consideration the ranking criteria, funding allocation targets, and overall Program Priorities as specified in the RFP**.** The Deputy Director and the Advisory and Operations Committees will develop a list of prioritized recommended proposals and forward them for discussion, review, and approval by the Coordinating Council.

6. Proposal approval by the Coordinating Council

The Coordinating Council will review a summary of all submitted proposals and prioritized recommended proposals from the Operations and Advisory Committees. Each representative on the Coordinating Council will have one vote during final prioritization of project proposals. Projects to be funded by the Program will be approved by the Coordinating Council by the end of November each year. The Deputy Director will submit a pre-notification to the appropriate NOAA Grants office of the prioritized proposals to expedite processing when those offices receive Partner grant submissions.

7. Confirmation of final funding amounts

The Director and Deputy Director will be notified by NOAA Fisheries of any federal grant adjustments (e.g. additions or rescissions). Additional funds will generally go to the next available ranked project. Reductions may include, but are not limited to:

- Lower than anticipated amounts from any source of funding
- Rescission of funding after initial allocations have been made
- Partial or complete withdrawal of funds from any source

If these or other situations arise, the Operations Committee will notify Partners with approved proposals to reduce their requested budgets or to withdraw a proposal entirely. If this does not reduce the overall requested amount sufficiently, the Director, Deputy Director, the Operations Committee Chair and Vice-Chair, and the Advisory Committee Chair will develop a final recommendation and forward to the ACCSP Leadership Team of the Coordinating Council. These options to address funding contingencies may include:

- Eliminating the lowest-ranked proposal(s)
- A fixed percentage cut to all proposals' budgets
- A directed reduction in a specific proposal(s)

8. Notification to submitting Partner of funded projects and submittal of project documents to appropriate grants agency (e.g. NOAA Grants) by Partner.

Notification detailing the Coordinating Council's actions relevant to a Partner's proposal will be sent to each Partner by Program staff.

- Approved projects from Non-federal Partners must be submitted as full applications (federal forms, project and budget narratives, and other attachments) to NOAA Grants via www.grants.gov. These documents must reflect changes or conditions approved by the Coordinating Council.
- Non-federal Partners must provide the Deputy Director with an electronic copy of the narrative and either an electronic or hard copy of the budget of the grant application as submitted to the grants agency (e.g. NOAA Grants).
- Federal Partners do not submit applications to NOAA Grants.

9. Operation and/or Leadership Team and Coordinating Council review and final decision with contingencies or emergencies.

Committee(s) review and decide project changes (e.g. scope of work, rescissions, no-cost extensions, returned unused funds, etc.) during the award period.

Proposal Guidance

- General Proposal Guidelines
- Format
- Budget Template

General Proposal Guidelines

- The Program is predicated upon the most efficient use of available funds. Many jurisdictions have data collection and data management programs which are administered by other fishery management agencies. Detail coordination efforts your agency/Committee has undertaken to demonstrate cost-efficiency and non-duplication of effort.

- All Program Partners conducting projects for implementation of the program standards in their jurisdictions are required to submit data to the Program in prescribed standards, where the module is developed and formats are available. Detail coordination efforts with Program data management staff with projects of a research and/or pilot study nature to submit project information and data for distribution to all Program Partners and archives.

- If appropriate to your project, please detail your agency's data management capability. Include the level of staff support (if any) required to accomplish the proposed work. If contractor services are required, detail the level and costs.

- Before funding will be considered beyond year one of a project, the Partner agency shall detail in writing how the Partner agency plans to assume partial or complete funding or, if not feasible, explain why.

- If appropriate to your project, detail any planned or ongoing outreach initiatives. Provide scope and level of outreach coordinated with either the Program Assistant and/or Deputy Director.

- Proposals including a collection of aging or other biological samples must clarify Partner processing capabilities (i.e., how processed and by whom).

- Provide details on how the proposal will benefit the Program as a whole, outside of benefits to the Partner or Committee.

- Proposals that request funds for law enforcement should confirm that all funds will be allocated towards reporting compliance.

- Proposals must detail any in-kind effort/resources, and if no in-kind resources are included, state why.

- Proposals must meet the same quality as would be appropriate for a grant proposal for ACFCMA or other federal grant.

- Assistance is available from Program staff, or an Operations Committee member for proposal preparation and to insure that Program standards are addressed in the body of a given proposal.

- Even though a large portion of available resources may be allocated to one or more jurisdictions, new systems (including prototypes) will be selected to serve all Partners' needs.

- Partners submitting pilot or other short-term programs are encouraged to lease large capital budget items (vehicles, etc.) and where possible, hire consultants or contractors rather than hire new permanent personnel.

- The Program will not fund proposals that do not meet Program standards. However, in the absence of approved standards, pilot studies may be funded.

- Proposals will be considered for modules that may be fully developed but have not been through the formal approval process. Pilot proposals will be considered in those cases.

- The Operations Committee may contact Partners concerning discrepancies or inconsistencies in any proposal and may recommend modifications to proposals subject to acceptance by the submitting Partner and approval by the Coordinating Council. The Operations Committee may recommend changes or conditions to proposals. The Coordinating Council may conditionally approve proposals. These contingencies will be documented and forwarded to the submitting Partner in writing by Program staff.

- Any proposal submitted after the initial RFP deadline will not be considered, in addition to any proposal submitted by a Partner which is not current with all reporting obligations.

Proposal Format

Applicant Name: Identify the name of the applicant organization(s).

Project Title: A brief statement to identify the project.

Project Type: Identify whether new or maintenance project.

> *New Project – Partner project never funded by the Program. New projects may not exceed a duration of one year.*
>
> *Maintenance Project – Project funded by the Program that conducts the same scope of work as a previously funded new or maintenance project. These proposals may not contain significant changes in scope (e.g., the addition of bycatch data collection to a catch/effort dealer reporting project). PIs must include in the cover letter whether there are any changes in the current proposal from prior years' and, if so, provide a brief summary of those changes. At year 5 of maintenance funding, a project's base funding will be calculated as the average of funding received during the project's four years as a* maintenance *project.*

Requested Award Amount: Provide the total requested amount of proposal. Do not include an estimate of the NOAA grant administration fee.

Requested Award Period: Provide the total time period of the proposed project. The award period typically will be limited to one-year projects.

Objective: Specify succinctly the "why", "what", and "when" of the project.

Need: Specify the need for the project and the association to the Program.

Results and Benefits: Identify and document the results or benefits to be expected from the proposed project. Clearly indicate how the proposed work meets various elements outlined in the ACCSP Proposal Ranking Criteria Document (Appendix B). Some potential benefits may include: fundamental in nature to all fisheries; region-wide in scope; answering or addressing region-wide questions or policy issues; required by MSFCMA, ACFCMA, MMPA, ESA, or other acts; transferability; and/or demonstrate a practical application to the Program.

Data Delivery Plan: Include coordinated method of the data delivery plan to the Program in addition to module data elements gathered. The data delivery plan should include the frequency of data delivery (i.e. monthly, semi-annual, annual) and any coordinate delivery to other relevant partners.

Approach: List all procedures necessary to attain each project objective. If a project includes work in more than one module, identify approximately what proportion of effort is comprised within each module (e.g., catch and effort 45%, biological 30% and bycatch 25%).

Geographic Location: The location where the project will be administered and where the scope of the project will be conducted.

Milestone Schedule: An activity schedule in table format for the duration of the project, starting with Month 1 and ending with a three-month report writing period.

Project Accomplishments Measurement: A table showing the project goals and how progress towards those goals will be measured. In some situations the metrics will be numerical such as numbers of anglers contacted, fish measured, and/or otoliths collected, etc.; while in other cases the metrics will be binary such as software tested and software completed. Additional details such as intermediate metrics to achieve overall proposed goals should be included especially if the project seeks additional years of funding.

Cost Summary (Budget): Detail all costs to be incurred in this project in the format outlined in the budget guidance and template at the end of this document. A budget narrative should be included which explains and justifies the expenditures in each category. Provide cost projections for federal and total costs. Provide details on Partner/in-kind contribution (e.g., staff time, facilities, IT support, overhead, etc.). Details should be provided on start-up versus long-term operational costs.

> **In-kind** - [1]Defined as activities that could exist (or could happen) without the grant. [2]In-kind contributions are from the grantee organization. In-kind is typically in the form of the value of personnel, equipment and services, including direct and indirect costs.
>
> [1] The following are generally accepted as in-kind contributions:
>
> i. Personnel time given to the project including state and federal employees
>
> ii. Use of existing state and federal equipment (e.g. data collection and server platforms, Aging equipment, microscopes, boats, vehicles)

Overhead rates may not exceed 25% of total costs unless mandated by law or policy. Program Partners may not be able to control overhead/indirect amounts charged. However, where there is flexibility, the lowest amount of overhead should be charged. When this is accomplished indicate on the 'cost summary' sheet the difference between the overhead that could have been charged and the actual amount charged, if different. If overhead is charged to the Program, it cannot also be listed as in-kind.

Maintenance Projects: Maintenance proposals must provide project history table, description of completed data delivery to the ACCSP and other relevant partners, table of total project cost by year, a summary table of metrics and achieved goals, and the budget narrative from the most recent year's funded proposal.

Principal Investigator: List the principal investigator(s) and attach curriculum vitae (CV) for each. Limit each CV to two pages. Additional information may be requested.

Budget Guidelines & Template

All applications must have a detailed budget narrative explaining and justifying the expenditures by object class. Include in the discussion the requested dollar amounts and how they were derived. A spreadsheet or table detailing expenditures is useful to clarify the costs (see template below). The following are highlights from the NOAA Budget Guidelines document to help Partners formulate their budget narrative. The full Budget Guidelines document is available here.

Object Classes:

Personnel: include salary, wage, and hours committed to project for each person by job title. Identify each individual by name and position, if possible.

Fringe Benefits: should be identified for each individual. Describe in detail if the rate is greater than 35 % of the associated salary.

Travel: all travel costs must be listed here. Provide a detailed breakdown of travel costs for trips over $5,000 or 5 % of the award. Include destination, duration, type of transportation, estimated cost, number of travelers, lodging, mileage rate and estimated number of miles, and per diem.

Equipment: equipment is any single piece of non-expendable, tangible personal property that costs $5,000 or more per unit and has a useful life of more than one year. List each piece of equipment, the unit cost, number of units, and its purpose. Include a lease vs. purchase cost analysis. If there are no lease options available, then state that.

Supplies: purchases less than $5,000 per item are considered by the federal government as supplies. Include a detailed, itemized explanation for total supplies costs over $5,000 or 5% of the award.

Contractual: list each contract or subgrant as a separate item. Provide a detailed cost breakdown and describe products/services to be provided by the contractor. Include a sole source justification, if applicable.

Other: list items, cost, and justification for each expense.

Total direct charges

Indirect charges: If claiming indirect costs, please submit a copy of the current approved negotiated indirect cost agreement. If expired and/or under review, a copy of the transmittal letter that accompanied the indirect cost agreement application is requested.

Totals of direct and indirect charges

Example. Budget narrative should provide further detail on these costs.

Description	Calculation	Cost
Personnel (a)		
Supervisor	Ex: 500 hrs x $20/hr	$10,000
Biologist		
Technician		
Fringe (b)		
Supervisor	Ex: 15% of salary	$1500
Biologist		
Technician		
Travel (c)		
Mileage for sampling trips	Ex: Estimate 2000 miles x $0.33/mile	$660
Travel for meeting		
Equipment (d)		
Boat	Ex: $7000, based on current market research	$7000
Supplies (e)		
Safety supplies		$1200
Sampling supplies		$1000
Laptop computers	2 laptops @$1500 each	$3000
Software		$500
Contractual (f)		
Data Entry Contract	Ex: 1000 hrs x $20/hr	$20,000
Other (h)		
Printing and binding		
Postage		
Telecommunications charges		
Internet Access charges		
Totals		
Total Direct Charges (i)		
Indirect Charges (j)		
Total (sum of Direct and Indirect) (k)		

Post-award Responsibilities

Changing the Scope of Work

Partners shall submit requests for amendments to approved projects in writing to the Deputy Director. The Coordinating Council member for that Partner must sign the request.

When Partners request an amendment to an approved project, the Deputy Director will contact the Chair and Vice Chair of the Operations Committee. The Deputy Director and Operations Committee Chairs will determine if the requested change is minor or substantial. The Chairs and Deputy Director may approve minor changes.

For substantial proposed changes, a decision document including the opinions of the Chairs and the Deputy Director will be sent to the Operations Committee and the ACCSP Leadership Team of the Coordinating Council for review.

The ACCSP Leadership Team will decide to approve or reject the request for change and notify the Deputy Director, who will send a written notification to the Partner's principal investigator with a copy to the Operations Committee.

When a requested major amendment is submitted shortly before a Coordinating Council meeting, the approval of the amendment will be placed on the Council Agenda.

The Deputy Director will notify NOAA Grants of any change in scope of work for final approval for non-federal proposals, and the Partner will need to request a Change in Scope through Grants Online. Necessary communications will be maintained between the concerned Partner, the Program and NOAA Grants. Any changes must be approved through the normal NOAA Grants process.

Requesting a No-cost Extension

If additional time is needed to complete the project, Program Partners can request a no-cost extension to their award period. Partners should let the Program know of the need for additional time and then request the extension as an Award Action Request through NOAA Grants Online at least 30 days before the end date of the award.

Necessary communications will be maintained between the concerned Partner, the Program, and NOAA Grants office. Any changes must be approved through the normal NOAA Grants process.

Declaring Unused/Returned Funds

In an effort to limit the instances in which funds are not completely used during the award period, draw down reports from the NOAA Grants offices indicating remaining grant balances will be periodically reviewed during each fiscal year.

While effort should be made to complete the project as proposed, if Program Partners find that they will not be able to make use of their entire award, they should notify the Program and their NOAA Federal Program Officer as soon as possible. Depending on the timing of the action, the funds may be able to be reused within the Program, or they may have to be returned to the U.S. Treasury.

Program Partners must submit a written document to the Deputy Director outlining unused project funds potentially being returned. The Partner must also notify their Coordinating Council member (if applicable) for approval to return the unused funds. If the funding is available for re-use within the Program, the Director and Deputy Director will confer with the Operations Committee Chair and Vice-Chair and the Advisory Committee Chair, and then submit a written recommendation to the ACCSP Leadership Team of the Coordinating Council for final approval on the plan to distribute the returned money.

Necessary communications will be maintained between the concerned Partner, the Program, and NOAA Grants office. Any changes must be approved through the normal NOAA Grants process.

Reporting Requirements

Program staff will assess project performance.

The Partner project recipients must abide by the NOAA Regional Grant Programs reporting requirements and as listed below. All semi-annual and final reports are to include a table showing progress toward each of the progress goals as defined in Step 2b and additional metrics as appropriate. Also, all Partner project recipients will submit the following reports based on the project start date to the Deputy Director:

- Semi-annual reports (due 30 days after the semi-annual period) throughout the project period including time periods during no-cost extensions,
- One final report (due 90 days after project completion).
- Federal Partners must submit reports to the Deputy Director, and State Partners must submit reports to both the Deputy Director and the appropriate NOAA Grants office.

Program staff will conduct an initial assessment of the final report to ensure the report is complete in terms of reporting requirements. Program staff will serve as technical monitors to review submitted reports. NOAA staff also reviews the reports submitted via Grants Online.

A project approved on behalf of a Program Committee will be required to follow the reporting requirements specified above. The principle investigator (if not the Chair of the Committee) will submit the report(s) to the Chair and Vice Chair of the Committee for review and approval. The Committee Chair is responsible for submitting the required report(s) to the Program.

Joint projects will assign one principle investigator responsible for submitting the required reports. The principle investigator will be identified within the project proposal. The submitted reports should be a collaborative effort between all Partners involved in the joint project.

Project recipients will provide all reports to the Program in electronic format.

Partners who receive no-cost extensions must notify the Deputy Director within 30 days of receiving approval of the extension. Semi-annual and final reports will continue to be required through the extended grant period as previously stated.

Partners that have not met reporting requirements for past/current projects may not submit a new proposal.

A verbal presentation of project results may be requested. Partners will be required to submit copies of project specifications and procedures, software development, etc. to assist other Program Partners with the implementation of similar programs.

Report Format

Semi-Annual(s) – Progress Reports: (3-4 pages)

- Title page - Project name, project dates (semi-annual period covered and complete project period), submitting Partner, and date.
- Objective
- Activities Completed – bulleted list by objective.
- Progress or lack of progress of incomplete activities during the period of semi-annual progress – bulleted list by objective.
- Activities planned during the next reporting period.
- Metrics table
- Milestone Chart – original and revised if changes occurred during the project period.

Final Report:

- Title page – Project name, project dates, submitting Partner, and date.
- Abstract/Executive Summary (including key results)
- Introduction
- Procedures

- Results:
    - Description of data collected.
    - The quality of the data pertaining to the objective of the project (e.g. representative to the scope of the project, quantity collected, etc.).
    - Compiled data results.
    - Summary of statistics.
- Discussion:
    - Discuss the interpretation of results of the project by addressing questions such as, but not limited to:
    - What occurred?
    - What did not occur that was expected to occur?
    - Why did expected results not occur?
    - Applicability of study results to Program goals.
    - Recommendations/Summary/Metrics
- Summarized budget expenditures and deviations (if any).

Programmatic review

Project reports will inform Partners of project outcomes. This will allow the Program as a whole to take advantage of lessons learned and difficulties encountered. Staff will provide final reports to the appropriate Committee(s). The Committees then can discuss the report(s) and make recommendations to modify the Data Collection Standards as appropriate. The recommendations will be submitted through the Program committee(s) review process.

Appendix A: Maximum Funding for Maintenance Projects Entering Year 5 or 6/7 of Funding in FY22

Projects in Year 6/7 of Maintenance Funding	**Calculated Base** (formula used)	Maximum Funding Year 5	**Maximum Funding Year 6/7**
ME DMR: Portside commercial catch sampling and bycatch sampling for Atlantic herring, Atlantic mackerel, and Atlantic menhaden	**$133, 452.50** (2-year base)	$88,968.33	**$44,484.17**
ME DMR: Managing Mandatory Dealer Reporting in Maine	**$183, 934.50** (4-year avg)	$122,623.00	**$61,311.50**
RI DEM: Maintenance and Coordination of Fisheries Dependent Data Feeds to ACCSP from the State of Rhode Island	**$82,563.50** (2-year base)	$55,042.33	**$27,521.17**
NJ DFW: Electronic Reporting and Biological Characterization of New Jersey Commercial Fisheries	**$163,803.75** (4-year avg)	$109,202.50	**$54,601.25**
SC DNR: ACCSP Data Reporting from South Carolina's Commercial Fisheries	**$170,770.00** (2-year base)	$113,846.67	**$56,923.33**
SEFSC: Continued processing and ageing of biological samples collected from U.S. South Atlantic commercial and recreational fisheries	**$266,792.00 (4-year avg)**	$177,861.33	**$88,930.67**

Appendix B: Ranking Criteria Spreadsheet for Maintenance and New Projects

Ranking Guide – Maintenance Projects:

Primary Program Priority	**Point Range**	**Description of Ranking Consideration**
Catch and Effort Biological Sampling Bycatch/Species Interactions Social and Economic	0 – 10 0 – 10 0 – 6 0 – 4	Rank based on range within module and level of sampling defined under Program design. When considering biological, bycatch or recreational funding, rank according priority matrices.
Data Delivery Plan	+ 2	Additional points if a data delivery plan to Program is supplied and defined within the proposal.

Project Quality Factors	**Point Range**	**Description of Ranking Consideration**
Multi-Partner/Regional impact including broad applications	0 – 5	Rank based on the number of Partners involved in project OR regional scope of proposal (e.g. geographic range of the stock).
> yr 2 contains funding transition plan and/or justification for continuance	0 – 4	Rank based on defined funding transition plan away from Program funding or viable justification for continued Program funding.
In-kind contribution	0 – 4	1 = 1% - 25% 2 = 26% - 50% 3 = 51% - 75% 4 = 76% - 99%
Improvement in data quality/quantity/timeliness	0 – 4	1 = Maintain minimum level of needed data collections ↓ 4 = Improvements in data collection reflecting 100% of related module as defined within the Program design. Metadata is provided and defined within proposal if applicable.
Potential secondary module as a by-product (In program priority order)	0 – 3 0 – 3 0 – 3 0 – 1	Ranked based on additional module data collection and level of collection as defined within the Program design of individual module.
Impact on stock assessment	0 – 3	Rank based on the level of data collection that leads to new or greatly improved stock assessments.

Other Factors	Point Range	Description of Ranking Consideration
Properly Prepared	-1 – 1	Meets requirements as specified in funding decision document Step 2b and Guidelines
Merit	0 – 3	Ranked based on subjective worthiness

Ranking Guide – Maintenance Projects: (*to be used only if funding available exceeds total Maintenance funding requested*)

Ranking Factors	Point Range	Description of Ranking Consideration
Achieved Goals	0 – 3	Proposal indicates project has consistently met previous set goals. Current proposal provides project goals and if applicable, intermediate metrics to achieve overall achieved goals.
Data Delivery Plan	0 – 2	Ranked based if a data delivery plan to Program is supplied and defined within the proposal.
Level of Funding	-1 – 1	-1 = Increased funding from previous year 0 = Maintained funding from previous year 1 = Decreased funding from previous year
Properly Prepared	-1 – 1	-1 = Not properly prepared 1 = Properly prepared
Merit	0 – 3	Ranked based on subjective worthiness

Ranking Guide – New Projects:

Primary Program Priority	Point Range	Description of Ranking Consideration
Catch and Effort Biological Sampling Bycatch/Species Interactions Social and Economic	0 – 10 0 – 10 0 – 6 0 – 4	Rank based on range within module and level of sampling defined under Program design. When considering biological, bycatch or recreational funding, rank according priority matrices.
Data Delivery Plan	+ 2	Additional points if a data delivery plan to Program is supplied and defined within the proposal.

Project Quality Factors	Point Range	Description of Ranking Consideration
Multi-Partner/Regional impact including broad applications	0 – 5	Rank based on the number of Partners involved in project OR regional scope of proposal (e.g. fisheries sampled).
Contains funding transition plan / Defined end-point	0 – 4	Rank based on quality of funding transition plan or defined end point.
In-kind contribution	0 – 4	1 = 1% - 25% 2 = 26% - 50% 3 = 51% - 75% 4 = 76% - 99%
Improvement in data quality/quantity/timeliness	0 – 4	1 = Maintain minimum level of needed data collections ↓ 4 = Improvements in data collection reflecting 100% of related module as defined within the Program design. Metadata is provided and defined within proposal if applicable.
Potential secondary module as a by-product (In program priority order)	0 – 3 0 – 3 0 – 3 0 – 1	Ranked based on additional module data collection and level of collection as defined within the Program design of individual module.
Impact on stock assessment	0 – 3	Rank based on the level of data collection that leads to new or greatly improved stock assessments.

Other Factors	Point Range	Description of Ranking Consideration
Innovative	0 – 3	Rank based on new technology, methodology, financial savings, etc.
Properly Prepared	-1 – 1	Meets requirements as specified in funding decision document Step 2b and Guidelines
Merit	0 – 3	Ranked based on subjective worthiness

Atlantic States Marine Fisheries Commission

Atlantic Menhaden Management Board

October 19, 2021
1:15 – 5:15 p.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Call to Order (*S. Woodward*)	1:15 p.m.
2. Board Consent • Approval of Agenda • Approval of Proceedings from August 2021	1:15 p.m.
3. Public Comment	1:20 p.m.
4. Provide Guidance to the Technical Committee and Ecological Reference Points Work Group on Priorities for Completing Next Benchmark Stock Assessment (*M. Cieri*) **Possible Action**	1:30 p.m.
5. Break	2:30 p.m.
6. Progress Update on Development of Draft Addendum I to Amendment 3 (*K. Rootes-Murdy*) **Possible Action**	2:45 p.m.
7. Update on 2020-2021 Atlantic Menhaden Mortality Events (*J. Brust*)	4:30 p.m.
8. Other Business/Adjourn	5:15 p.m.

The meeting will be held via webinar, click here for details.

MEETING OVERVIEW

Atlantic Menhaden Management Board
Tuesday, October 19, 2021
1:15 – 5:15 p.m.
Webinar

Chair: Spud Woodward (GA) Assumed Chairmanship: 03/20	Technical Committee Chair: Josh Newhard (USFWS)	Law Enforcement Committee Representative: Robert Kersey (MD)
Vice Chair: Mel Bell (SC)	Advisory Panel Chair: Meghan Lapp (RI)	Previous Board Meeting: August 4, 2021
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (18 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 4, 2021

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Provide Guidance to the Technical Committee and Ecological Reference Points Work Group on Priorities for Completing Next Benchmark Stock Assessment (1:30-2:30 p.m.) Possible Action

Background

- In February, the Board tasked the Technical Committee (TC) and Ecological Reference Points Work Group (ERP WG) with identifying data and modelling needs to develop a spatially-explicit model that could help inform management in the Chesapeake Bay.
- The TC and ERP WG met in March and discussed data needs and potential timelines depending on the management objectives the Board wants the next benchmark stock assessment to address. (**Briefing Materials**)
- The Board had a preliminary discussion in August on priorities and considerations for the completing the next benchmark stock assessment.

Presentations

- Decision Tree for Guiding next Benchmark Stock Assessment by M. Cieri

Board Actions for Consideration

- Provide Guidance to the TC & ERG WG on the next benchmark stock assessment.

5. Break

6. Progress Report on Development of Draft Addendum I to Amendment 3 (2:45-4:30 p.m.) Possible Action
Background • In August, the Board initiated a draft addendum to consider changes to commercial allocations, the episodic event set aside (EESA) program, and the incidental catch and small-scale fisheries provision. The action responds to the Board work group (WG) report on potential strategies to evaluating in changing provisions of the current management program. • The Menhaden Plan Development Team (PDT) met six times in September and October to develop a memo outlining draft statement of the problem, objectives, considerations, and management alternatives for each topic based on the Board WG Report **(Supplemental Materials)**. The memo is intended for the Board to review and provide guidance to the PDT in further developing the draft addendum.
Presentations • Progress Report on Draft Addendum I by K. Rootes-Murdy
Board Actions for Consideration • Provide Guidance to the PDT on further development of the draft addendum.

7. Update on 2020-2021 Atlantic Menhaden Mortality Events (4:30-5:15 p.m.)
Background • In August the Board received public comment on a number of menhaden mortality events that have occurred in multiple states this year. The Board requested staff work with U.S. Fish and Wildlife Service to provide a summary of these events at the Annual Meeting.
Presentations • 2020-2021 Atlantic Menhaden Mortality Events by J. Brust

8. Other Business/Adjourn

Atlantic Menhaden

Activity level: High

Committee Overlap Score: High (SAS, ERP WG overlaps with American eel, striped bass, northern shrimp, Atlantic herring, horseshoe crab, weakfish)

Committee Task List

- TC, SAS, ERP WG – various taskings relating to management response to the 2019 benchmark stock assessments
- TC,SAS, ERP WG- begin work to complete 2022 stock assessment update
- TC – April 1st: Annual compliance reports due

TC Members: Josh Newhard (USFWS, Chair), Corrin Flora (NC), Joey Ballenger (SC), Jason McNamee (RI), Eddie Leonard (GA), Jeff Brust (NJ), Matt Cieri (ME), Ellen Cosby (PRFC), Micah Dean (MA), Kurt Gottschall (CT), Caitlin Craig (NY), Shanna Madsen (VMRC), Chris Swanson (FL), Ray Mroch (NMFS), Amy Schueller (NMFS), Alexei Sharov (MD), Jeff Tinsman (DE), Kristen Anstead (ASMFC), Kirby Rootes-Murdy (ASMFC)

SAS Members: Amy Schueller (NMFS, SAS Chair), Matt Cieri (ME), Micah Dean (MA), Robert Latour (VIMS), Chris Swanson (FL), Ray Mroch (NMFS), Jason McNamee (RI), Alexei Sharov (MD), Jeff Brust (NJ) Kristen Anstead (ASMFC), Kirby Rootes-Murdy (ASMFC), Joey Ballenger (SC)

ERP WG Members: Jason Boucher (NOAA), Matt Cieri (ME,ERP Chair), Michael Celestino (NJ), David Chagaris (FL), Micah Dean (MA), Rob Latour (VIMS), Jason McNamee (RI), Amy Schueller (NFMS), Alexei Sharov (MD), Howard Townsend (NFMS), Jim Uphoff (MD), Kristen Anstead (ASMFC), Katie Drew (ASMFC), Sara Murray (ASMFC)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

ATLANTIC MENHADEN MANAGEMENT BOARD

Webinar
August 4, 2021

These minutes are draft and subject to approval by the Atlantic Menhaden Management Board.
The Board will review the minutes during its next meeting.

TABLE OF CONTENTS

INDEX OF MOTIONS

ATTENDANCE

Board Members

Megan Ware, ME, proxy for Pat Keliher (AA)
Sen. David Miramant, ME (LA)
Cheri Patterson, NH (AA)
Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Nichola Meserve, MA, proxy for Dan McKiernan (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Conor McManus, RI, proxy for Jason McNamee (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Rep. Sosnowski (LA)
Justin Davis, CT (AA)
Rob LaFrance, CT, proxy for B. Hyatt (GA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
Emerson Hasbrouck, NY (GA)
John McMurray, NY, proxy for Sen. Kaminsky (LA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Houghtaling (LA)
Kris Kuhn, PA, proxy for T. Schaeffer (AA)
Loren Lustig, PA (GA)
G. Warren Elliott, PA (LA)
John Clark, DE (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Lynn Fegley, MD, proxy for B. Anderson (AA)
Russell Dize, MD (GA)
Allison Colden, MD, proxy for Del. Stein (LA)
Pat Geer, VA, proxy for S. Bowman (AA)
Chris Batsavage, NC, proxy for K. Rawls (AA)
Jerry Mannen, NC (GA)
Bill Gorham, NC proxy for Rep. Steinberg (LA)
Mel Bell, SC, proxy for P. Maier (AA)
Malcolm Rhodes, SC (GA)
Doug Haymans, GA (AA)
Spud Woodward, GA (GA)
Erika Burgess, FL, proxy for J. McCawley (AA)
Marty Gary, PRFC
Max Appelman, NMFS
Mike Millard, USFWS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Joshua Newhard, Technical Committee Chair

Staff

Bob Beal
Toni Kerns
Laura Leach
Maya Drzewicki
Tina Berger
Pat Campfield
Lisa Carty
Kristen Anstead
Lindsey Aubart
Emilie Franke
Lisa Havel
Chris Jacobs
Jeff Kipp
Heather Konell
Kirby Rootes-Murdy
Sarah Murray
Joe Myers
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Michael Academia, WMU
Fred Akers, Newtonville, NJ
Mike Armstrong, MD DMF
Pat Augustine, Coram, NY
Joe Ballenger, SC DNR
Robert Begin
John Bello, CCA VA
Colleen Bouffard, CT DEP
Karen Bradbury, Ofc. of Sen. Whitehouse, RI
Jeff Brust, NJ DEP
Mike Celestino, NJ DEP
Benson Chiles
Matt Cieri, EM DMR
Peter Clark, NJ DEP
Richard Cody, NOAA
Nicole Lengyel Costa, RI DEM
Heather Corbett, NJ DEP
Robert Crockett, Advantus Strategies
Jessica Daher, NJ DEP
Lorena de la Garza, NC DENR

These minutes are draft and subject to approval by the Atlantic Menhaden Management Board.
The Board will review the minutes during its next meeting.

Guests (continued)

Taylor Deihl, Omega Protein
Monty Deihl, Ocean Fleet Svcs.
Greg DiDomenico, Cape May NJ
James Fletcher, Wanchese Fish Co
Anthony Friedrich, SGA
David Frulla, Kelley Drye
Alexa Galvan, VMRC
Shaun Gehan, Gehan Law
Lewis Gillingham, VMRC
Jon Hare, NOAA
Hannah Hart, FL FWC
Gregg Hartley, HB Strategies
Helen Takade-Heumacher, EDF
Peter Himchak, Cooke Aqua
Jesse Hornstein, NYS DEC
Edward Houde, UMCES
Bill Hyatt, CT (GA)
Jeff Kaelin, Lund's Fisheries
Pat Keliher, ME (AA)
Adam Kenyon, VMRC
Tom Lilly
Tom Little, Ofc. Asm. Houghtaling
Carl LoBue, TNC
Mike Luisi, MD DNR
Chip Lynch, NOAA
Shanna Madsen, VMRC
Alyson Martin, CBF
Dan McKiernan, MA DMF
Steve Meyers, Williamsburg, VA
Chris Moore, CBF
Allison Murphy, NOAA
Brian Neilan, NJ DEP
Kennedy Neill
Gerry O'Neill, Cape Seafoods
Derek Orner, NOAA
Patrick Paquette, MA SBA
Michael Plaia
Janice Plante, NEFMC
Nick Popoff, FL FWS
Will Poston, SGA
Jill Ramsey, VMRC
Stephanie Rekemeyer, NYSDEC
Kathy Rawls, NC (AA)
Harry Rickabaugh, MD DNR
Tara Scott, NOAA
Olivia Siegal, VMRC
David Sikorski, CCA MD
Jared Silva, MA DMR
Lincoln Simmons
Ethan Simpson, VMRC
Tom Sminkey, NOAA
Joseph Smith
Art Smith
Somers Smott, VMRC
Rene St. Amand, CT DEEP
David Stormer, DE DFW
Kevin Sullivan, NH FGD
Jim Uphoff, MD DNR
Mike Waine, ASA
Lowell Whitney, US FWS
Kate Wilke, TNC
John Williams
Chris Wright, NOAA
Phil Zalesak, Timbers, MD
Erik Zlokovitz
Rene Zobel, NH FGD

The Atlantic Menhaden Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Wednesday, August 4, 2021, and was called to order at 1:50 p.m. by Chair Spud Woodward.

CALL TO ORDER

CHAIR SPUD WOODWARD: Good afternoon everyone; this is Spud Woodward, Governor's Appointee from Georgia. I am your Chair of the Atlantic Menhaden Management Board. I want to call our August 4th meeting to order.

APPROVAL OF AGENDA

CHAIR WOODWARD: Everyone has a draft agenda. I wanted to make a few brief comments about that agenda, before I ask for any suggested modifications and hear from staff.

We have one action item, which is at the end of our agenda. We've got two informational presentations; the first which will be to review the data needs for spatially explicit management of Atlantic menhaden in the Chesapeake Bay. That will be presented by Josh Newhard. I just want to emphasize that this is something we were scheduled to have received back in May at our meeting.

We did not have the time for it, so it was postponed and brought forward to this meeting. It is for informational purposes, and an opportunity for questions. We're not going to take any specific action on this agenda item at this meeting. Instead, I want folks to have an opportunity to think about it, and to come back at the annual meeting, hopefully in person in October, and make some specific recommendations on a path forward, for improving our ecosystem-based management of Atlantic menhaden.

Also, we'll receive a report from our Work Group, and I want to give a shout out to the folks that were on that Work Group, and Megan Ware, Nichola Meserve, Joe Cimino, Allison Colden, Pat Geer, Chris Batsavage and Rob LaFrance was our Chair. They've done some great work. I think everybody will be impressed with the results of their activities, and it certainly will help us focus our discussions for our next possible management action. Are there any recommended or requested changes to the agenda? Any hands, Toni?

MS. TONI KERNS: NO hands.

CHAIR WOODWARD: Is there any opposition to adopting the agenda as presented? If so, raise your hand.

MS. KERNS: I see no hands.

CHAIR WOODWARD: All right, then we will consider the agenda accepted by unanimous consent.

APPROVAL OF PROCEEDINGS

CHAIR WOODWARD: The next order of business is the approval of the proceedings from our May, 2021 meeting. Are there any edits, corrections, changes to the proceedings as presented in the briefing materials? If so, raise your hand.

MS. KERNS: I see no hands.

CHAIR WOODWARD: All right, is there any opposition to accepting the proceedings as presented?

MS. KERNS: I see no hands.

CHAIR WOODWARD: All right, we'll consider the proceedings again accepted by unanimous consent.

PUBLIC COMMENT

CHAIR WOODWARD: This is the time on our agenda for public comment. I know we have at least two folks, Kirby. What is our public comment head count?

MR. KIRBY ROOTES-MURDY: As of right now I believe we have Tom Lilly and Peter Himchak.

CHAIR WOODWARD: All right, just in recognition of the fact that we're starting late. We have a schedule to go until 5:15, but I'll just ask folks to be brief, and this is comments on items not on the agenda from this meeting. Please, if you will keep your comments to three minutes, and again just a reminder, this is for items not on the agenda. Mr. Lilly, I'll call on you first.

MS. KERNS: Just really quick, I just wanted to let you know that you have two additional hands that are raised, Phil and Michael Academia.

CHAIR WOODWARD: All right, we'll stick with the three minutes, but I would appreciate you keeping it within, or certainly under the three minutes. We've got a counter of minutes, to let you know how time is elapsing. Tom, if you'll go ahead.

MR. TOM LILLY: Fishing in Chesapeake Bay right now is the worst it has been in memory. This has been going on, steady decreases for the last 15 years, all the data shows that. This was the one thing that at least a million Marylanders did together, to get away from it all, just to go fishing. They aren't fishing very much anymore.

It isn't working anymore. As you know, the question really right now, is what is on your minds right now as you sit there, how to take care of Omega Protein? Will you take the necessary steps to get the benefits of menhaden to Maryland's six million people, especially the 50,000 people protecting Marylanders from COVID, and risking their lives to do so?

Four hundred thousand Maryland veterans, and a million of their family members, need and deserve a much-improved Bay experience. You can start that process right now, to bring Chesapeake Bay wildlife back from the brink. Each of you has been entrusted with a unique power to diminish or improve the lives of all Marylanders, and these deserving people. As you and only you control their food supply. The last day research was wrapped up when your consultant said that you don't need totals. You don't need more research. You can fairly allocate and protect the Bay, by using time and area controls. You have the mail from George, a New York angler, showing the spectacular improvements that have happened there when they outlawed purse seine in their waters.

Our seasons are closing, a moratorium on striped bass is being discussed, but they have spectacular striped bass fishing. In New York the ospreys are flourishing, ours are dying out, due to a lack of menhaden. The question here for every Board member. You can follow the same well-known path of New York, and every Atlantic state but Virginia has taken to protect its environment and its people, requiring the factory fishing be in the U.S. Atlantic Zone.

Maryland can't control what happens in Virginia. That is what you are here for, You delegates, that is what you're here for. You can start that process to protect Chesapeake Bay and Marylanders right now at this meeting, by starting to consider what Dr. Maguire said about the potential benefits of time and area closures. That is what you can do to protect Maryland, and the people that deserve that protection so much.

CHAIR WOODWARD: All right, thank you, Tom, appreciate that. Pete Himchak, you are up.

MR. PETE HIMCHAK: Okay, my name is Peter Himchak. I'm a fishery scientist for Omega Protein, and I would like to talk to the Board about the occurrence of menhaden fish kills in 2020 and 2021. Now I'm not just talking about peanut bunker that get trapped in the confined space by a predator, and die from asphyxiation. We are now seeing older fish dying in the spring and the fall in open marine waters, between New Jersey and Rhode Island.

New Jersey has identified a bacterium of the genus vibrio, that is known to cause whirling disease in hatcheries as the culprit for fish kills in Raritan Bay

and the Navesink and Shrewsbury River. Whirling disease can wipe out an entire hatchery raceway or pond, and it is that fish are characterized by swimming erratically in circles at the surface of the water.

This is unmistakable behavior for whirling disease. I am confounded how whirling disease exists in open marine waters. I know it is a horrible threat to hatcheries. I'm asking the Board to direct the Technical Committee to start compiling some of these fish kill events. Yes, we all experience peanut bunker kills, but it's these older fish that appear to be more worrisome to me.

The Technical Committee, I've been in contact with ASMFC staff and some Technical Committee members are documenting occurrences of this whirling disease phenomenon, and I think the Board needs to direct them to do a thorough investigation on why whirling disease is occurring in menhaden bigger fish out in the open ocean or in bays. Thank you very much.

CHAIR WOODWARD: Thank you, Pete. That is interesting and concerning all at the same time. I've made a note that time allowing, we can maybe discuss that under other business today, in terms of tasking the Technical Committee to do some data gathering and bring a report back.

MR. HIMCHAK: Thank you very much.

CHAIR WOODWARD: You're welcome. Next up is Mr. Zalesak. Go ahead.

MR. PHIL ZALESAK: Good afternoon, my name is Phil Zalesak; I'm from Southern Maryland. I just have one question. What is the mission of this Board, and how is it going? According to the latest fishery management plan, the goals and objectives are as follows. You are to manage the Atlantic menhaden fishery in a manner which equitably allocates ecological and economic benefits between user groups, and you basically have three user groups. You've got recreational fishermen and charter captains in one group, you've got the reduction fishing and the bait fishermen in another group, and then you have people whose livelihood just depends on the health of marine ecosystems. Based on this Board's and Virginia's allocation, Omega Protein, a Canadian owned reduction fishery, is allocated over 70 percent of the total allowable catch for the entire Atlantic coast.

Is this an equitable distribution of American ecological and economic benefit? Is this allocation based on the latest science and empirical data? According to the latest science, which was published January of 2020, predator fish such as striped bass, bluefish and weakfish, are highly dependent on Atlantic menhaden for their survival.

This Board lowered the total allowable catch for the entire Atlantic coast by 10 percent, to lower the mortality rate of these predator fish. However, this Board did nothing to reduce the reduction fishery cap in the Virginia portion of the Chesapeake Bay, and this cap represents 26 percent of the total allowable catch for the entire Atlantic coast.

Clearly, isn't this overharvesting Atlantic menhaden in the Chesapeake Bay? Does this make any sense at all? What does the empirical data say regarding the commercial harvest for striped bass, bluefish, and weakfish over the last 22 years in the Chesapeake Bay and Potomac? The commercial catch for striped bass is down 34 percent.

The commercial catch for bluefish is down 76 percent. The commercial catch for weakfish is down 98 percent. Are we starving these fish to death? What is the latest assessment of the technical group looking into how to measure the Atlantic menhaden biomass in the Chesapeake Bay? The group stated that it will take from five to ten years to determine if the proposed methodologies are valid.

They have also asked additional guidance from this Board. Given the poor state of striped bass coastwide, do we have five to ten years to find out if any one of these methodologies is valid? Finally,

given the science and the empirical data, how do you think this Board is doing in meeting its mission? I thank you for your time and consideration.

CHAIR WOODWARD: Thank you, Mr. Zalesak. Who was our fourth speaker Toni?

MS. KERNS: It was Michael.

CHAIR WOODWARD: Okay, go ahead, Mike.

MR. MICHAEL ACADEMIA: First of all, thank you, members of the Board, for listening. Ospreys, also known as fish hawks, are one of our most iconic and cherished birds of prey. However, they can no longer sustain themselves within the main stem of Chesapeake Bay. Like the proverbial canary in the coal mine, ospreys are warning us of dangerous levels of overfishing.

I'm a graduate student at William and Mary, and represent the Center for Conservation Biology. My Master thesis focuses on the osprey/menhaden relationship. Many birds, such as pelicans, bald eagles, heron, loons, and gannets, depend on menhaden. But out of all of the bird species, osprey stand alone, and are inextricably linked to menhaden.

Due to this dependency, ospreys represent one of the best and highly visible ecological reference points available to science. The Center for Conservation Biology has conducted field work on osprey throughout the Chesapeake Bay for 50 years, and evidence gathered demonstrates ongoing impacts.

Through four generations of Graduate Students, the Center has documented shifts in osprey diet, and reduction in productivity. For example, delivery rates of fish were three times higher in 1975, compared to 2006. Menhaden, once the dominant prey species in the diet, now represents less than 30 percent.

Most importantly, depletion of menhaden has caused osprey productivity to decline to the levels below the DDT era. No other fish species available provides the energy content of menhaden. They provide critical ecosystem services within Chesapeake Bay and beyond. We request that the needs of the broader ecosystem be considered when setting harvest policy, and menhaden populations be maintained at levels that support a healthy ecosystem in Chesapeake Bay. Thank you for your time and consideration.

CHAIR WOODWARD: Thank you very much, Michael. We appreciate that. All right, any other hands up for public comment, Toni?

MS. KERNS: No other hands.

CHAIR WOODWARD: All right, thank you very much.

REVIEW DATA NEEDS FOR SPATIALLY EXPLICIT MANAGEMENT OF ATLANTIC MENHADEN IN THE CHESAPEAKE BAY

CHAIR WOODWARD: We'll proceed with the agenda. Next up we've got Josh Newhard, and he's going to give us a presentation on the data needs for spatially explicit management of Atlantic menhaden in the Chesapeake Bay. You should have all received a written report on this subject. We'll let Josh go through his presentation, and then we'll have opportunity for questions at the end of it. Josh, go right ahead, and thank you for being here.

MR. JOSH NEWHARD: I will just briefly go over the memo that was sent to the Board back in May, and I'll start off with a little background. Back in the 2021 winter meeting, the Board asked some questions about what specifically a spatially explicit model may look like. Now that was a research recommendation for a number of iterations of the assessment, going back a number of years. Just some details into what that meant with that. The TC and the ERP Work Group met to discuss things such as data needs, how long different models may take, what they might look like, and then ultimately the Board also wanted to see if a spatial model could address or answer some Chesapeake Bay management questions, as it relates to the

coastwide population. The TC and the ERP Work Group met, and developed some preliminary approaches, had some discussions on what relatively simple approaches might look like. I use that term very literally, and all the way to fully realized fine scale spatial models.

These approaches vary, you know on their complexity, the data needs, how long they're going to stay, and they each provide some different level of information that may be questions of interest to management. Again, these, I'll say a lot probably, but the data needs, the timelines and the model considerations are very preliminary.

They are just based on our current understanding of feasibility, you know for example once if the TC and ERP Work Groups got into data, found out the data that are available that we know of aren't very good. That would obviously change the timeline for implementation for any of the model approaches.

The right approach will ultimately depend on the management goals, the desires of the Board, and then once the TC and ERP get that feedback, then of course it will depend on data and funding availability as well. Again, over the range of approaches from a coarse broad scale that may require some minimum additional data requirements, all the way to fully realized fine scale spatial single species, as well as multispecies models.

I won't go over the right column there, because we'll go over those more in detail as we move forward. If we start with the most basic approach that we came up would, would actually maintain a coastwide single species and multispecies model, so we would still keep the single species BAM and the NWACS-MICE for the multispecies model. We would still have coastwide ERPs, but we would supplement it with some Chesapeake Bay specific information. To do that we would be able to provide some level of insight to Chesapeake Bay related harvest, and how it relates to the coastwide TAC. That would require some supplemental Bay information, specifically menhaden abundance estimates in the Bay. One example of what that might look like is, you know five to seven years of an aerial survey. We could use some supplemental Bay multispecies indicators, using some existing datasets that are around.

That would only provide a qualitative context of the Bay Cap, not a quantitative one. Again, this kind of approach would take estimated, maybe five to seven years, given some targeted funding for surveys and personnel availability, if that was targeted for funding, could perhaps, potentially increase that timeline. Moving on. If we were to take a little bit more refined look, we could actually provide info on a broad spatial scale, so some sort of regional scale.

The example listed there, New York, Mid and South Atlantic. We could add a Chesapeake Bay Region. Note that that Chesapeake Bay Region would include coastal waters that harvest, and those Chesapeake Bay states would be lumped into that Chesapeake Bay Region. This kind of approach could be explored with some existing data. Some of the uncertainty that would surround that would be that we don't know differential migration rates by age. We would have to assume that all ages would migrate at the same rates and spatial scale as well. That could provide info for the Chesapeake Bay Cap, as well as potential regional allocations, if the Board desired to go in that direction. That timeline would also be within five to seven years, and again, that depends on the data, how good the data are that are out there, and finding the personnel availability. Stop me if you've heard that one before, you'll hear it again.

If we had a coarse spatial BAM, we could take it two different approaches. Where we have a coarse spatial single-species model combined with a coastwide multispecies model. That would still produce the coarse spatial dynamics for just

menhaden alone. Whereas, with the multispecies model we would still have coastwide ERPs.

We could do it the other way, where we have coarse spatial, both single species and multispecies models. If we had some more complex spatial approaches, again we would just be narrowing down those scales. We could perhaps have a Chesapeake Bay specific region that does not include coastal waters.

The ERPs could either be coastwide or spatially refined. This type of approach, as you might expect, would take quite some time for development, we're talking a decade or more perhaps. Again, if we have targeted funding for some of the survey data that may be missing, or some data mining funding personnel, these timelines can be adjusted.

But a refined spatial single species model, with the multispecies ERPs, we would need those fine scale migration rates at age between the regions of interest. Whatever those regions were determined by the Board. You know you're talking perhaps a new comprehensive tagging study, some pretty extensive data collection there.

We would also need some seasonal spatial distribution maps, some trends in abundance within whatever those regions are, as well as catch-specific data. This type of approach is not even feasible, until those movement data are even available. We have our most complex approach would be a really detailed spatial single species and multispecies model.

We have detailed spatial ERPs. This would be the whole shebang. It's a fully realized fine-scale model, and we don't even know potentially what that could look like. It could be the NWAC-MICE model for multispecies, it could be an entirely new modeling approach. This type of thing would be quite labor intensive, you're talking fine scale spatial resolution that have habitat gradients built in, jurisdictional boundaries.

The spatially temporal maps need to be developed on some sort of scale that is appropriate for management. We would also need a lot of multispecies interactions, data, different movement data, as well as diets as well. That would actually require some software development, which of course that is adding to that decade plus time scale.

Again, this isn't feasible until we have vetted that fine scale spatial data. Just to sum up, this is a table of going from, at the top is our least complex broad approach, all the way down to the bottom where we have a detailed single species and multispecies model. The timeline there is kind of what I suggested, and then you can see a process going from left to right. If it offers some single species Chesapeake Bay reference, some information. That is that first column, and you can see what kind of information each model type may provide. The single access there would just indicate that we're only looking at, like a qualitative information, not quantitative. Again, these time scales are really rough, depending on personnel funding, as well as data quality. Obviously, the most that you get would be the detailed.

You can get single species and multispecies Chesapeake Bay related information. You get information on regional allocation, and you get fine scale spatial models. If the goal of the Board is just to get single-species Chesapeake Bay information on menhaden alone that could be provided by the least complex approach.

Again, the funding needs. We had some talk about what type of things should be funded or could be funded to help speed things up. Again, that is going to depend on the approach, and the approach is going to depend on the desires of the Board. If we had some funding directed solely for model development, that could shorten those timelines that were just presented.

The Chesapeake Bay Menhaden Abundance Survey is something that has been brought to the TC

before, where it's been an aerial survey that has been approved. We would need the abundance survey information for coastwide ERPs, but with the Chesapeake Bay abundance approach, we would need that information on menhaden abundance.

That also could be beneficial for some of the other approaches as well though, so it wouldn't just be solely for that coastwide ERP single species approach. We would need some spatially and seasonally explicit diet data, as well as spatial temporal maps for the key predator and prey species that are in the multispecies model.

That would be useful for the coarse approach, but we could potentially use that coarse spatial model without the spatial and seasonal diet data. Lastly, we would need some fine scale migration rates between regions by age. Now that would be needed for any refined or detailed approaches for those most complex models that I mentioned.

Really what the TC and ERP groups would need from the Board is, what is the primary goal for this spatially explicit modeling? Is it solely to inform the Chesapeake Bay Cap, or how Chesapeake Bay related harvest influenced the coastwide population? Is it the Board want to move towards regional allocation and need some information on that?

Is it something else that we haven't thought of? We really need to get that, if we're going to move toward a spatial model. Then if there are any secondary goals of that, that would help inform the modeling approach that we would attempt as well. Then lastly, this is a big one too. What tradeoff is the willing to accept, given the desired goals, as well as the timeline for implementation?

You know if, for example, you wanted it done quickly, are you willing to put off the next benchmark stock assessment. Some of those tradeoffs really need to be considered, to help the TC and ERP Work Group move forward. I think that is the last slide, and I could take any questions. Oh, I've got one more. I might have kind of mentioned it, but yes. The ecosystem objectives, you know if they are Chesapeake Bay specific questions, are those exactly the same as coastwide ERPs? Maybe it's different predators, there are different, obviously, predator/prey dynamics with that occurring within the Chesapeake Bay separate from the coastwide population. You know with the Board, I mentioned that in some of these approaches the Chesapeake Bay Region would include coastal waters, and would that be acceptable by the Board, or would you want just the Chesapeake Bay specific region, and not include those coastal waters? With that one I could take any questions.

CHAIR WOODWARD: Thanks, Josh. Thanks a lot, to the TC and the Work Group for distilling this down to a clear, concise document for our purposes. I appreciate the fact that it is mentioned repeatedly that it is contingent on data, quality data, and personnel and funding. That is something that we all have to keep in consideration.

We moved into an era of ecosystem-based fisheries management, knowing that it relies on a tremendous amount of timely and quality inputs. You know it kind of reminds me that you don't run a top fuel dragster on stale lawnmower gas, you just can't do it. Those are things we're going to have to bear in mind. I would open up the floor for questions right now, so if you will raise your hand, and we will get everybody in the queue.

MS. KERNS: Mr. Chair, I'll give you three names for now; Allison Colden, Justin Davis, and Marty Gary.

CHAIR WOODWARD: Okay, all right go ahead, Allison.

MS. ALLISON COLDEN: I just have to say, I always appreciate and enjoy your metaphors, so thank you for that, and thank you, Josh, for the presentation and the work of the TC and the ERP Work Group on this. It really is a tremendous amount of

information, and putting forward a lot for the Board to consider.

One thing I'm sort of curious about, in terms of the goals in moving forward in a spatially explicit is, I would be curious if you could comment on what the Technical Committee's motivation might have been in including it in their research recommendation. Is what you presented to the Board what the Technical Committee was envisioning when including that research recommendation, fall under one of these options, or was it purely a recommendation based on model performance?

Was it a recommendation based on acknowledging that the spatial distribution is an important dynamic that is not currently captured in the model? I'm just sort of wondering what the Technical Committee's original motivations were, in putting it in the recommendations, and where that falls on the spectrum that was presented. Thanks.

MR. NEWHARD: I can try to answer it. I don't know if ASMFC staff is onboard, so I know it's been in there for some time. But you know ultimately, I think it was just to refine perhaps some of our estimates. You know what is presented to the Board is probably more refined than even at the species scale, which is dire. But it was useful in that it started the conversations now, instead of waiting years from now, of what that may look like. I know the recommendations have, at least the priorities have changed. I would offer that if ASFMC staff is onboard, if they want to chime in too.

DR. KATIE DREW: Yes, this is Katie. I can take a stab at that and just say, you know I agree with Josh's comments. I think the ERP Work Group and the TC kind of see incorporating spatial dynamics into the model as a logical next step for the development of this model, to kind of improve our estimates, and improve the model overall.

I think kind of the degree to which we pursue that, the degree to which we accelerate and dedicate time and funding to that, will determine the degree to which the final product resembles something on this list. I think we see it as a natural evolution of where we are with this ERP model, and that is why it's included as a research recommendation.

CHAIR WOODWARD: Do you need follow upon that, Allison?

MS. COLDEN: No, that was very helpful, thank you.

CHAIR WOODWARD: All right, Justin, you're up, and then Marty is on deck.

DR. JUSTIN DAVIS: I think this probably follows from Allison's question. When looking at that table that was presented towards the end of the presentation there, which sort of outlined, as you moved from the most basic approach down to the most complex, and sort of what you would get from that.

I just wanted to clarify my understanding of that. It seems like until you get to the break point, where you're making the multispecies model spatially explicit, you are not going to get essentially advice out of the modeling approach that is going to provide regional TACs or reginal sort of targets for the fishery.

But before that, in that sort of intermediate level, in which you're incorporating spatial dynamics into the BAM single species model, but you're still considering the multispecies model on a coastwide basis, and saying coastwide ERPs. The primary benefit there, as I understand it, would be the model might more accurately capture the dynamics of the population in the fishery, because you're taking into account differences spatially along the coast.

But that ultimately at the end of the day, we would still end up with a coastwide TAC that we measure performance against, and that sort of from the first row of the table on down, it is sort of baked in that we would be doing that Chesapeake Bay Aerial

Survey, or something similar, that gives us advice on abundance in Chesapeake Bay, so it would help us have better context for the Bay Cap. Is that all accurate?

MR. NEWHARD: I think most of it, yes. Yes, the first one of course, yes that would be just to provide some level of context for the Chesapeake Bay Cap. I think I might have misheard you, but it's not necessarily influencing how the Chesapeake Bay influences the coastwide, you know the fishery necessarily. If that is what you meant. You can correct me if I'm wrong. But you are right in that, you know not until we get more refined spatial scale, whether that is some sort of broad multispecies approach or not, will you begin to get that multispecies regional ERP. We would mostly maintain that that coastwide ERP, while taking a more regional look at the single species, with some level of Chesapeake Bay related information. I think the one thing too that it would ultimately depend on the goals.

I know it is not necessarily that we would have to always have some index of abundance for Chesapeake Bay abundance. If there are some existing datasets that I mentioned we could look at that may provide some insight, if the goal was not necessarily to inform the Chesapeake Bay Cap, does that make sense?

DR. DAVIS: It does.

MR. NEWHARD: I think each one does not necessarily need the same level of additional data. It's not like just because the first one says we need some abundance estimates in the Chesapeake Bay, it doesn't necessarily apply to other modeling approaches. It would help, but.

CHAIR WOODWARD: Do you need follow up, Justin? I guess not. Marty. Who is on the list, Toni?

MS. KERNS: After Marty, we will have Conor, and then Joe Cimino, and then Lynn Fegley.

CHAIR WOODWARD: Good, go ahead, Marty and Conor, you are on deck.

MR. MARTIN GARY: Thank you, Josh for your presentation, it's a lot of information to process. I feel like a goalie that just saw five shots go by him, and just trying to figure out what happened, but on the theme of spatial resolution more generally speaking. A question that I get asked quite a bit by our constituents.

In trying to better understand this species utilization of Potomac River habitat, which widely varies based on flows, salinity, temperature, and seasonal hypoxia which is a serious force in the river during the warmer months. Is there a level of spatial resolution, Josh, that will allow us to understand how this species utilizes the Potomac or portions of the Potomac to some degree?

Is that really kind of just a matter of default in the priority and we have the boundaries. Is that attainable, I guess? This, I guess is asked. This question is asked of me, because folks often link predator availability hand in hand with it, and I'm not sure if it's exactly the case all the time, but they certainly seem to observe predator species like Spanish mackerel showed up in the river two years ago.

We're 50 miles up the river, and nobody could remember the last time they saw something like that. They were linking that to a large group of menhaden that were in the river. Whether that is true or not, I don't know. But I guess ultimately my question is, what do you say if there is funding in time for the next, would you be able to spatially address some of those ??? Thank you.

MR. NEWHARD: I think, I didn't catch if you asked part of your timeframe. You kind of broke up there. But I got the gist of your question, and I think, you know ultimately, there is a modeling approach that would address the question. Now, you know I'll say it again. The modeling approach would totally be based on the goals of the Board. We would need to have, if the goal was to have some sort of regional allocations with seasonal, you know multispecies.

That is going to be one of those more refined models that is going to take some time to develop. But I think ultimately, we could answer your question, of seasonal availability of predators and prey. You know that would be a fully realized, detailed, fine-scale spatial model. But it could potentially be done. A timeframe of ten plus years is pretty broad. But given the data, it could be done.

MR. GARY: Thank you very much, Josh, I appreciate. It sounds like it's kind of codependent on some hard wiring with some of the Board's needs and desires, so thank you. Thank you, Mr. Chairman.

CHAIR WOODWARD: You're welcome. All right, Conor, you're up, and Joe Cimino, you are on deck.

MR. CONOR McMANUS: Thank you, Josh, for your presentation. Just thinking in the context of priorities and balance and competing needs, for research and work. I guess my first question was, trying to think through, you know depending on the goal, and looking at the approaches in Table 1.

Is there an opportunity for some of these to not be mutually exclusive, and build upon them sequentially? Perhaps one of the tools be this five-to-seven-year mark estimated. But in that time, you're also somewhat building towards the more refined spatial BAM or NWACS-MICE model for ERPs?

Then I guess my second question is, if one of these elements were chosen for a direction, would that still allow for reevaluating multispecies models for ERPs, which was a discussion when we first looked at the ERPs. That might be challenging, based on workload for the TC and the ERP Working Group. I just wanted to get a better sense of what allows us to keep evaluating and improving the multispecies model, while pursuing these additional spatial data needs.

MR. NEWHARD: The first part of your question, I mean definitely some of these could build upon one to the next. I mean clearly if we had some idea of menhaden day abundance that would help inform, you know other modeling approaches. You know the tricky side of that is, you know like you mentioned with time and staff availability.

There is no sense in necessarily moving towards a regional allocation model, if the Board is not going to manage the fishery as such, of course. You know these things, it's hard to separate any one approach and say, well that is the ideal approach, because it totally depends on the goals, of course. While some of them, yes, I think any of the data collected in one would likely inform the other. Again, if anybody wants, an ERP group or TC staff wants to chime in that's fine. I think that answers your question. The second part of your question is honestly, just quite difficult to answer. Like you said, if they could be given time and staff availability, all the timeframes for the next benchmark. That one is hard to answer without any real clear, definitive questions from the Board to answer.

CHAIR WOODWARD: Okay, Joe, and then Lynn, you're on deck.

MR. JOE CIMINO: I want to give my gratitude to the TC and the ERP group on this. I appreciate all the hard work. We talk a lot at ASMFC about how things have been changing, and in an allocation sense we're going to have those conversations. But I've had concern for some time that this Board seems to have tunnel vision on the importance of the Chesapeake Bay, when we continuously talk about how much things have changed.

My question to the groups would be, you know what are the dangers of ignoring or not paying attention to the very possible examples, that there are nursery areas that are of growing importance north of the Chesapeake Bay, and I agree with Katie, that you know a spatially explicit model is probably the next logical step. But if we're only tasking you to focus on the Bay, what are the dangers of ignoring other areas?

MR. NEWHARD: That one is hard to answer. I mean the simple answer would be, I mean if we're spending time looking at the Bay, we perhaps may not be spending time looking at other stuff. But that all depends on the approach as well. If it's just something relatively simple.

I mean that TC has looked at and approved aerial survey designs a number of years ago, for the Chesapeake Bay specific, and it didn't seem to detract away too much from coastwide issues. You know the quick answer is, I mean I don't really know. But there is opportunity there to do both, given again, that all goes back to staff and time availability though.

CHAIR WOODWARD: Lynn, you're up.

MS. LYNN FEGLEY: Thank you so much, Josh, for this presentation. I had a question, and then I wanted to make two points. My question really has to do with this idea of ERPs. No matter how much modeling or data we have, an ERP still has, you know it's a value judgment at the end of the day. You know this Board worked really hard to develop those coastal ERPs, we started with the beginnings of a management strategy evaluation, to develop goals that went to years of modeling.

We made a decision, a consensus decision on what we felt was the appropriate level of harvest to conserve enough fish for its role as forage. My question to you really is, I'm hoping that you can clarify a little bit for the Board that, no matter where we go with this Chesapeake Bay data, that we're still going to have that issue within Chesapeake Bay about deciding how much is ultimately enough, because we're going to have.

You know, we have people in the Bay who, rightly so, are extremely concerned about our ecosystem in the Bay. I think that their argument would be, you know what, we need to leave every single available fish in the water, to serve as forage. But then the other extreme would be, well maybe we only need to leave just enough to make sure that the striped bass population is ticking along at its biomass target. I'm hoping, and if you'll indulge me, Mr. Chair, with a follow up. My first question really is to Josh, just if you can help the Board just confirm or deny that there is this value judgment component to an ERP.

MR. NEWHARD: Well, I mean I guess to a degree, because it is up to the Board to ultimately decide on these model-adopted things. Obviously, some of it is left on the table with the, there is other predators and prey, you know that are included in the model. We're still working it under this to better refine those multispecies models, and the ERPs as well. You know that might be almost a better question to the Board, in terms of that. I'm not sure if I answered your question there or not, but happy to take the follow up.

MS. FEGLEY: No, I think that was a good try. I'm just thinking about the rainbow plot that we have, and I really just want to make sure we all understand that there may not be one firm right answer at the end of the day. I just wanted to follow that up by saying that given that, and I might be jumping the gun.

But from the state of Maryland's perspective, I think that we have zero desire to delay the benchmark. I think the ecosystem reference points that we put in place are one of the most important things we've done, to safeguard our ecosystem. I really would hate to see that delayed.

Then I just wanted to close by saying that I think if we're at the point where us as the Chesapeake Bay states need to figure out a way to rally some resources, and really understand how we can start producing Chesapeake Bay specific data on menhaden. This is our largest estuary in the United States.

It's an incredibly important body of water for many of the species that we manage. I would just sort of like to go on the record to say that, you know we're going to make a commitment, to see if we can figure out a way and rally some resources, to really

start getting some of this abundance in diet data for our Chesapeake that can represent our area. Thank you for that.

CHAIR WOODWARD: Any other hands, Toni?

MS. KERNS: Mr. Chair, you have Dennis Abbott, Max Appelman, and then Allison Colden, I think is looking for a second bite at the apple. I'm not 100 percent sure if Justin Davis had a follow up or not. His light went on, and I think we ended up talking over him. Then Pat Geer just put his hand up as well. Then you do have some members of the public, if you want to take public comment on this.

CHAIR WOODWARD: Well, I'm going to refrain from that for the time being. We need to judicially use our time. Dennis, go ahead, and Max you're on deck.

MR. DENNIS ABBOTT: I have some comments and a question. The question might be, if we were to embark on a study program that might take five-to-seven years in its simple form, or ten years in its complex form. Following the completion of that study, would it not be important to continue the study, as things are constantly changing? That is a question for the presenter, but the concern that I have is, as I was listening to the presentation, was that if we move ahead with this, which is probably a good idea. We would be looking at a period of time to authorize it, and then we would be conducting the study in five or seven years, maybe, which probably means it would take longer.

Then when we received the results, it would probably be another year or two before the Commission would take action, and then we would have an implementation period. This all adds up to 10 or 15 years down the road. I would venture to guess that 95 percent of the people listening to this conversation as Board members, won't be around. I know I won't be around, because I'm 80 years old, so I probably won't see the results of this. I'm also concerned about whether this study is going to take away from us dealing with the issue of the Chesapeake Bay problem today. Lynn Fegley made a lot of good points about, in Maryland they have people that may want to leave every menhaden in the water, and vice-versa.

But I'm up in New Hampshire, and I'm a long way from the Chesapeake Bay, but I'm very concerned that for the health of the striped bass that head this way every summer. I think that we have to deal today with a real or perceived problem of the Chesapeake Bay Cap. My telephone is ringing, so I'll stop there and say that in a parallel course we should be dealing with this study, but we should also be dealing with the Chesapeake Bay problem today. Thank you.

CHAIR WOODWARD: I think you had a question in the front of that. Do you still have that in your head, Josh?

MR. NEWHARD: A little bit. I got a little sidetracked. But I will say that I think some of this stuff, well again, we go back to funding and personnel availability, if you have some dedicated model development that kind of shortens some of the timeframes potentially. But additionally, you know some of this information would help inform, you know if they are able to go concurrently.

You know abundance estimates in the Chesapeake Bay would help inform the current modeling, as well as migration rate at ages would help inform ongoing modeling. You know, there could be some added benefit given staff and funding availability, that they could inform each other but, while model development you know more complex modeling is going on.

CHAIR WOODWARD: Okay, I have Max. I think you want to talk, so you can make sure that that blank check that NOAA Fisheries is going to send us for all this needed work gets to the right place, is that correct?

MR. MAX APPELMAN: Thank you, Mr. Chair. I guess I should start by managing expectations on our commitment for funding and personnel time, so I'll put that out there. But I wanted to add on to a line of thought that I think it was Allison, right at the beginning, about the TC and ERP Work Group, their initial rationale for having this sort of research recommendation in there. I appreciate the Chair's remarks at the start, to let this marinate a little bit before we start considering actions. With that in mind, I think it would be really helpful for me, and maybe for others, to elaborate a little bit more on, you know if this line of tasking wasn't going on right now, where would the TC and ERP Work Group be going with the spatial information, given the data that they know to be available now, and the modeling capabilities that are available now? You know, what would be the next step from your perspective, given the internal conversations that are happening amongst those committees?

MR. NEWHARD: Katie, that might be a better question for you, if you don't mind.

DR. DREW: Sure. Yes, that is a good question. I think on the ERP Work Group's list, I think for the next benchmark assessment, Number 1 would be resolving kind of the seasonal issue that we identified, as sort of some of the uncertainty, when we were initially setting these reference points. Kind of resolving the seasonal issue would be our first priority. I think we would be interested in looking at a coarser spatial scale than the coastwide level.

But I think it would be hard to say, you know what that would look like with the available data, and it's not really something that we could finish for the next benchmark assessment. I think that is something we could start looking at, as well as potentially, you know start looking at some alternative formulations for the ERPs, in addition to the existing NWCS-MICE Model, do we want to refine the multispecies catch-at-age model, or things like that, or continue to refine those models as we go forward.

I think there is the coarse spatial resolution, very coarse spatial resolution would probably be one of our next steps, for sure, to look at this, but not something that could be done for the next benchmark. Unless the Board identified that as a very high priority, and wanted to give us a little extras time to shift that benchmark back, and focus a lot more time and resources on that particular question, which is one of the options here. But I think it is kind of a longer-term goal of the Committee in the end.

CHAIR WOODWARD: Any follow up with that, Max?

MR. APPELMAN: No, I mean that was really helpful. Again, I appreciate that we're buying ourselves some time here, and letting all this information sink in. I'm just letting it marinate a little bit more. That was definitely helpful, thank you.

CHAIR WOODWARD: All right, Allison and then Justin. Sorry if I missed you earlier. I'll call on you after Allison.

MS. COLDEN: I appreciate the second round here. I just wanted to call the TCs attention, if they didn't already discuss it in the meetings. There is some existing work that was funded in the Chesapeake Bay Region, to develop specific forage indicators, as well as Chesapeake Bay specific menhaden abundance estimates.

I'm not sure what the protocols are. I know in the past there have been external studies that have been reviewed by the TC, and the ERP Work Group, to be pulled into the ASMFC process. But I just wanted to flag that there has been some funded work, I believe, by the NOAA Chesapeake Bay office, that could possibly have some management or technical implications here. But I do know one thing I want to flag, which is related to all of the caveats that Josh has been so diligently giving us about data availability and the feasibility is, it's my understanding that the funded study to develop a menhaden abundance estimate for Chesapeake Bay

was not actually able to move forward, because industry was unwilling to provide the data to the PIs who were funded to do that project.

I think that that is an absolute shame, and that we had an opportunity there to move something forward, and there was a lack of cooperation that caused that to stall out. I want to flag that we're going to need that type of cooperation, if these improvements to the model and to our management structure are going to move forward, and hopefully flag those studies for the TC, if they weren't already aware of them. Thanks.

MR. NEWHARD: Thanks Allison, yes, of course we would welcome any external data or studies that would improve the modeling.

CHAIR WOODWARD: Justin, you're up, and I guess Pat you're on deck.

DR. DAVIS: No need to apologize for before, that was operator error on my part with the mute button. I just had a comment quickly. I can certainly appreciate the advice from the Technical Committee that we would want to wait five-to-seven years before incorporating new information from an aerial survey in Chesapeake Bay about abundance.

I worry that those members of the public who might be listening to this meeting, and have real concerns about localized depletion in Chesapeake Bay, might sort of think that is completely unacceptable, that we are going to have to essentially wait the better part of a decade before possibly taking action to change the Bay Cap, or have better scientific advice on how to manage the Bay fishery.

You know I would just hope that this Board, out of a sense of precautionary management, if there is strong indication from ecological indicators, or possibly other sources of information, like Allison just mentioned. There is strong reason to believe there might be localized depletion going on in the Bay. I'm hoping this Board could take some precautionary action on a more urgent timeline.

I think about what we're doing with striped bass right now in Amendment 7, where we're contemplating changing fishery measures next year, to protect the 2015-year class. That is absent any information from a stock assessment model, that suggests that current measures are inadequate to protect the 2015-year class, or current fishing rates are too high on that year class. We're doing it out of a sense of being precautionary, so I would hope that we could apply that same spirit for menhaden management. Thanks.

CHAIR WOODWARD: All right, Pat, go ahead.

MR. GEER: I just wanted to agree with what Joe Cimino was saying, about yes, we need to look at the Chesapeake Bay, but we're seeing a large increase in harvest and abundance up in the New England states, and we need to be looking at that as well. I agree with Lynn, I do not want to see the stock assessment delayed. I think the general public wants to see that stock assessment done on schedule, and I think we need to stick with that. But I agree with Lynn also, that as a Chesapeake Bay state, we need to start looking at ways to get this information. We need to work together and try to do what we can, and that Chesapeake Bay program project that Allison mentioned, we worked very hard to try to get access to those data.

They didn't refuse access to it; they just didn't want to be the first species that they are doing. They are going to hopefully be doing this on one or two species every couple of years, and they just didn't want to be the so-called guinea pig for the first time around. Omega staff, I think Pete is going to be sitting on that group, reviewing the striped bass process, to see how it goes. They didn't refuse, they didn't want to be the guinea pig on that. I am hopeful that down the line, those datasets would be made available to help answer some of those questions.

CHAIR WOODWARD: Before I catch up with the hands, I'm going to use Chairman's discretion. I've got a question myself. For either you, Josh, or

Katie, and that is, can you just remind us of the relationship between the BAM model assessment of menhaden, and the timing of the predator species in the NWCS-MICE model assessments?

In terms of do they need to be synchronized, you know if they are not in synchrony, how does that effect the model inputs and the model outputs, because I think that might have some ultimate bearing on the decisions we make about when do we do our assessments, and the consequences thereof.

MR. NEWHARD: I don't have the timeline in front of me. I do know that the multispecies models are not in sync, and I believe that was a recommendation following the multispecies assessment. I'll let ASMFC staff chime in on that as well, they might have the timeline a little bit more in their heads.

DR. DREW: Yes, so we would get the best information out of the multispecies model, if we had the single species assessments for the predators and alternative prey species complete, all the way up through the same terminal year as the menhaden assessment. We would need a little bit of tweaking to the schedules to get them to all line up exactly right, to have the most up to date information available in that regards.

I mean I think it is something we can deal with if necessary. But it is kind of making sure they are aligned, and making sure we have the most up to date information for those other species, gives us the best information out of the NWCS-MICE model, or whatever other ERP model we're using.

CHAIR WOODWARD: All right, Toni, hands?

MS. KERNS: I think you have exhausted the hands of the Board. Pat Geer, is that a hand that stayed from before? Yes, it was. That is all the Board members.

CHAIR WOODWARD: All right, very good. Thank you all for the questions and the comments. At this point, what I would strongly urge the Board to do is to take the memo, and give particular attention to Page 6, where it says Management Input Needs, because that is what we're going to need to do when we convene again in October, is to look at that list, and think hard on that list, and think is there something on there that is missing, so that we can give clear guidance to the TC and the Work Group on how to move forward. I think that list needs to be looked at with the realities of consequences of delay, and the consequences if funding is not available to acquire the data we need. It's always difficult to lower one's expectations because of those realities. I think that is something we're going to have to be burdened with. At that point, are there any final comments or questions about this agenda item?

MS. SARAH MURRAY: Hi Spud, this is Sarah Murray. I just wanted to chime in, if that's okay, because I have the stock assessment schedule in front of me.

CHAIR WOODWARD: Please, do.

MS. MURRAY: I do want to note that while not perfectly aligned, given our current schedule, the ERP benchmark is reasonably well aligned with the other species that go into it, so that could not be the case if it got shifted. It might be that it happens to fall on another year, where it does align well, but currently it's in a reasonably good space with lining up with the other assessments.

CHAIR WOODWARD: Thank you, I appreciate that. Again, any last comments, questions? If not, I recommend that we take a short break, a biological break right here. Let's take five minutes for a biological break, and then we'll come back and get into our next agenda item, which is Review the Work Group Report on Commercial Quota Reallocation and Other Provisions of Amendment 3. You have a counter on the screen.

(Whereupon a biological break was taken.)

REVIEW WORK GROUP REPORT ON COMMERCIAL QUOTA REALLOCATION AND OTHER PROVISIONS OF AMENDMENT 3

CHAIR WOODWARD: Okay, it looks like our break time is up. Our next agenda item is Item Number 5. Are we queued up and ready for Rob's presentation?

MR. ROB LaFRANCE: I'm just waiting on our presentation, and I will move on from there. But while I'm waiting for that, I just wanted to thank you, Spud, for having the confidence in me, to allow me to Chair this Committee. It has been really, quite a learning experience for me, and I really appreciate the hard work of all the members. We'll get into a little bit more of what they did when we get the presentation up. I'll just hang for a second, and then we can get going.

CHAIR WOODWARD: Thank you, Rob, taking on the task of a work group is never easy, and you did a great job, as did all the members of the work group. I certainly very much appreciate it. I can't imagine this Board having to have wrestled with things to the degree of detail that you all did. It would have taken many hours, so thanks again.

MR. LaFRANCE: Okay, I see we've got the presentation up, and maybe we can jump into the next slide. We just put forward an outline. This is sort of the same outline that we put forward in the report, which everyone got in their supplemental materials. Effectively, we started from a Board motion from the last meeting. We will talk about that and lay that out in a little bit more detail. The Working Group was appointed by the Committee Chair, and included the states that you see above up there. What we did with the report itself, we set up the background about some of what the issues are, and then really got into what are really the main topics of the report. Allocation, which fortunately for me, I was very happy to have different members of the Working Group take lead roles on this, and on the allocation section, Megan Ware, of Maine, was the lead.

On the incidental catch and small-scale fisheries, I had Allison Colden taking the lead on that on the report. On the episodic event set aside, Nichola Meserve was the lead there, and then on additional strategies to address the amendment options, Amendment 3 provisions, we had Joe Cimino.

Kirby did a great job, and I just can't thank him enough for all of his additional information, providing everything he did to me, laid out some of the real issues surrounding quota transfers, which we'll get into in a little greater detail. Finally, I just want to make certain I recognize Pat Geer and Chris Batsavage from North Carolina, for their very helpful and informative information.

This is the Board motion that we had from the last meeting; move to create a work group to develop an allocation of options, to better align jurisdictions commercial quotas with current landings, and fishability, while providing a level of access to the fishery by all Atlantic Coast jurisdictions.

To review the incidental catch provisions, including gear type, eligibility, and reduce the need for quota transfers. As a Working Group, our job was to lay out a number of different options, so that is what we really tried to do. In each one of these categories that we saw before, we gave a little bit of history about what was happening in those particular areas, and then we offered up different options.

We're looking at Amendment Number 3, and the current provisions. Those provisions included jurisdictional allocation, so the allocations were basically set out for each jurisdiction as a percentage of the overall TAC. In addition to that we had this incidental catch and small-scale fisheries provision, which small scale fisheries is something we'll definitely have to delve into a little bit more detail.

The episodic event set aside program, and then sort of everybody needs to recognize that we're looking

at a total available catch, which has now been reduced from where we used to be, of about 216,000 metric tons. Now under the new ERPs, we're down to 194,400 metric tons. As we get into the allocation issues to see how that change impacted.

MR. ROOTES-MURDY: Hey Rob, we're having some issues hearing you. If you could speak into your microphone a little bit closer, that would be great.

MR. LaFRANCE: Thanks, Kirby, I appreciate that. Sort of reading off of this here as well. Anyways, the point is that the TAC, we're going to have to revisit the TAC going into the future, and some of the changing dynamics that we're seeing, particularly on allocation, is that there has been an increase in landings in the Gulf of Maine. Now the issue as to why that's happening, we could maybe talk about, but my sense of it is, is there has been more bait landings up there, really responsive to the lobster fishery and the need to capture bait for lobster, that used to be herring, and now is more and more relying on menhaden. I think this quote really came from Megan Ware. We have a mismatch right now between quota and fish availability, and in essence, we're going to take a look at the allocation provisions in just a second.

But the change in state fisheries and landings since 2009 and 2011, which is the time period that the allocations were based upon, has really sort of shifted, particularly in the northern states. The seasonality of fisheries presents the issue around quota transfers as well. As people fish the species under their existing allocations, if they run out of an allocation, they need to see quota transfers from other states.

In our report, we actually lay out some of the history of what has happened, and what states have transferred quota from certain states to other states. Certain states, and most of the states have gone from a variety of states up to the northernmost states. Then fixed minimum quotas has resulted in latent or unused quota.

I think that was something that we were all being asked to take a closer look at, as part of the Working Group. The fixed minimum, again the fixed minimum could vary in each year, depending upon the value of the TAC. That is another thing that folks needed to recognize. These are set out in percentages, the allocations are set out in percentages of the TAC, and so if you change the TAC, you're going to change the actual quota or the amount of landings that can happen in each state.

This is probably the most significant chart that we worked on through the Working Group. Effectively it shows what the allocations were. Those were that 2009 to 2011, you can see the allocation percentages in each one of those. Then in Amendment 3, every state got a minimum allocation of 0.5 percent.

The issue there really becomes, how much of that 0.5 percent is really not being utilized under the now-existing total allowable catch, which has been adjusted for ecological reference points. I know we heard a little bit more about how that may play out in the Chesapeake. I think those are issues that will be separated from this.

We were really trying to focus on the existing standards, and some of the mismatches that existed, particularly in northern states. When we took a look at the allocation, we're really focused on that chart above, and we started to figure out what kind of strategies could we put forward. In looking at those, the question that really came up was, how are those percentages developed? Could we look at changing them in a different way?

One of the approaches, and this is something that the PDT ultimately, I would imagine, would look at, was considering a 50/50 split between the current allocation and something in more recent years. The idea being, that the utilization of the fishery has changed from one place to another, and maybe we have to take a look at historic landings at one level, but also take a look at current landings, to find out

whether or not there is a shift there that makes more sense, given the current utilization of the resource. Another would just be to say, listen, we're not going to do the 50/50. We're not going to look historically and go forward in a different way. We just need to update the landings, and update the allocations based upon that. Another was to take a look at a longer timeframe, basically going and looking at a longer timeframe, and examining landings over a longer period of time.

These are all potential strategies to determine whether or not the current percentage allocations of the TAC could be shifted in some way, to more closely align themselves with what states are actually doing. The other thing was to try and figure out whether or not, so when you took a look at the allocations earlier, you saw that everybody got some fixed minimum amount.

The question was posed as a strategy is whether or not we should consider a tiered approach, to basically adjust some of the fixed minimums, depending perhaps on what those states are actually landing, depending upon, there could be a number of factors that you could look at to determine how you would move from say a half a percent to one percent, for those states that just are working off the fixed minimum, but something that a tiered approach would get you to take a closer look at.

Next would be to take a look at a jurisdiction's best year landings, in a time series as opposed to an average. Would a base allocation be based upon a particular jurisdiction's best year, and then allocated according to that? That is another option to take a look at. In terms of how frequently to review these allocations.

I think the Work Group agreed that we need to continue to review allocation regularly, because of shifts of what we see in the fishery. Fisheries are changing as a result of fish moving, some of the climate issues, but also fish needs changing. Bait fishery needs changing, potentially, reduction fishery needs changing, and also recreational uses as well.

Another idea here is to limit the percentage reduction in allocation for jurisdictions, so this was sort of a transitional issue, as to whether or not a particular jurisdiction, based upon some public comment that we got, that there is an interest in making certain that investments made that are actually part of the landings system, if you will, aren't overly burdened by a quick transfer of allocation.

We're going to go into the incidental catch in small fisheries. But when we go to questions at the end of this, I would ask that Megan Ware can maybe help me on some of the questions to this. She is most familiar with some of that, and put together a lot of the portions of that report. Incidental and catch in small scale fisheries, so this is kind of a very unique element of what happened in Amendment Number 3.

The incidental catch in Amendment 3, also included something called the small-scale fisheries. If you take a look at the report, at the very end of it, you'll see the whole amount of transfers that have moved from one state to the northern states. But in essence what you've seen, is there has been a lot of change, in terms of the small-scale fishery movement.

The incidental catch, small-scale fisheries in 2017, was averaging, I think 4.5 million pounds on average. But in 2020, it's up to 13.9 million pounds. You can see that there has been a big pressure on the small-scale fishery, in terms of pressure on the northern states. You can see that a lot of this is coming from small-scale fishery through purse seine, and then again, a lot has changed. I think there was a lot of discussion in the Working Group, and also included in the report, about the various types of gear used.

I'm not going to get into that in any greater detail, but there is a question about how the gear should really be taken a look at, and maybe we need to take a closer look at that. Then this other issue is

something that is important for folks to recognize, which is, this incidental catch and small-scale fisheries, it was included that the landings in that particular program were included in the assessment of ecological reference points.

But when we do the management of it, it is not being accounted for, in terms of being accounted for against the TAC. There is a possibility that the TAC could be exceeded, if the total landings continue to increase. Moving some landings to a directed fishery may improve accountability, and these landings are accounted for, like I said, assessment models, but not in the management as part of a TAC, or as a set-aside.

The potential strategies to take a look at underneath this small-scale and incidental catch fisheries was, should you separate them out? Should the small-scale fishery be taken and separated from the incidental catch fishery, sort of a directed and non-directed fisheries, and whether or not that is doable or not is a question.

But it was a question of whether or not, do you really want to have the two of those packaged together? Another issue was gear type, and the different gear types depending upon where you are, whether it's a passive kind of gear, or whether it's a more active gear, was something that was definitely discussed by the Working Group, and again, this is where I think we need to focus some of our attention, in looking at this particular program.

The other idea here is on some of these things the incidental and small-scale fisheries, there could be a limit, lowering trip limits that currently exist within the Amendment might be another way to help reduce the amount of fish that are taken and are outside, if you will, the existing allocation. Then finally, excuse me not finally, but the last one on this page.

Count all incidental catch and small-scale fishery landings towards the TAC using a set-aside as a TAC. That is how it works under the episodic event set-aside, or maybe under a management trigger. Develop a Cap. This is another way to look at small-scale fisheries. You might want to just say, we're going to cap small scale fisheries at a certain number, and make certain that that's a part of the TAC, and again, possibly utilizing a management trigger to move that forward.

Requiring all states to utilize their full directed allocation prior to entering the incidental catch, regardless of in-state allocation. That becomes maybe a state-by-state issue that needs to be resolved, perhaps amongst everybody on the whole Commission. Then finally, to just eliminate the small-scale fisheries provision, and revert to a bycatch allowance only.

I think folks can see here there is a very broad array of possible ways to deal with this specific issue. A lot of it having to do with sort of how expansive the interpretation of the small-scale fisheries has been, and the increase of landings underneath it. The Episodic Event Set-aside Program is basically a provision that allows states to, so what this does basically, it sets aside a percentage of the TAC that can then be used in a certain month, after folks have kind of exploited all of their existing allocation.

Then they can jump into this set-aside program, and in essence, they have to demonstrate because it's episodic, because the state who is going to take advantage of this has to demonstrate that there is fish availability, fish availability meaning menhaden, in their jurisdiction. If they can do that, then they can participate in this program.

One of the ideas here was to adjust the set-aside percentage, maybe increase it to be reviewed regularly. Is 1 percent enough? Could we use the episodic set-aside in a broader way, to maybe do more with it than is currently being done? Again, some of the issues here that may provide some additional challenges, in terms of making certain that we're doing the right administrative review of how often that fish is being taken, and again, how

does that work as between states who are involved in this program?

Then for any particular year, or to either require or allow states to transfer unused quota, or relinquish their quota, and put it into the EESA. In other words, the idea here was, if I have latent quota, and I'm a state who isn't really using it, maybe I could just donate that to the episodic event set-aside program.

Permanently reallocate the state's latent quota, or a portion thereof to the EESA. Again, roll back unused EESA sooner than October 31, and then additional restrictions on the use of the EESA. For example, putting limitations on weekly limits or daily landings, or some other form of a state cap, or allow the state EESA to access less than 100 percent of quota use.

Again, Nichola, I want to thank you for helping me on that, in terms of pulling that together, and Allison Colden for the earlier ones as well. Additionally, we had some additional strategies that we had Joe Cimino help pull together on this. The idea here was, and we talked a lot about this in the beginning, of whether or not we could create a quota bank.

In other words, a place where folks who have latent allocations could relinquish their commercial quota, and so that others could basically utilize it. Again, I think there was a number of technical and administrative concerns with moving this forward, but the idea was to basically allow states to put a donation into a sort of a larger group, that could then be utilized by folks who need it in the bait fishery.

Similarly, but slightly differently, would be to do a pooled quota, where landings are evaluated against a pool. In other words, it would be similar to like a coastwide cap, used for American eel management. I think there were some differences between the two of those. We included it in the report as something that might be looked at, but probably needs a little bit more analysis, before it moved forward.

The other thing about this, and this is something I had some good conversations with Kirby about, is quota transfers are an administrative burden. I mean, you're looking at trying to make certain that I, as a donating state, and another state who requires it. You have to check the number of boxes, and that basically brings it back to the Atlantic States Marine Fisheries staff, to make certain that the state who wants to get it, gets it, and the state who is giving it away, give it away. You're getting into a bunch of issues, in terms of trying to deal with those transfers.

You also have to figure out where the states are on all of these programs, in terms of what their actual landings are, have they utilized their quota. When should they utilize it and when shouldn't they? Not that they should utilize it, but when have they and when haven't they? There is just a bunch of tracking and administrative hassle about this, which I think is part of what our task was, to try and reduce some of that.

Basically, the Working Group promoting the idea to promote the use of quota transfers, if jurisdictions are not really fully utilizing their quota. I think that was one of the things that the Working Group was hoping that, if you're not using it, maybe you could allow it to go someplace else.

A challenging of compelling quota transfers, I mean all the states involved in this are effectively sovereign states, they have a quota. They get to decide what to do with it, and we as a Working Group were trying to offer up suggestions for figuring out a way to move, transfer, or somehow or other alter allocations, such that we were not left with latent quota.

Finally, adjust fishing seasons from the calendar year to be offset with peaks in fishing pressure. Again, this was one of the issues of how the timing of all of the quota transfer's work. That is it, I apologize for running through that pretty quickly. I think the report does a better job than I did, in terms of actually laying it all out, but hopefully my presentation, when combined with reading the

report, will get folks to where they need to go, so thank you.

CHAIR WOODWARD: Thank you very much, Rob, great report, lots of innovating thinking and good ideas, to deal with some difficult and challenging issues. At this point, I'll open up for questions for Rob, and some of his section leads. Toni, if you'll give me the raised hands.

MS. KERNS: Currently, I have Ritchie White.

CHAIR WOODWARD: Okay, go ahead, Ritchie.

MR. G. RITCHIE WHITE: Excellent job, a lot more detail than I was expecting. I think it will be helpful. Was there any thought given to kind of the next step, getting into numbers, to look at the last couple of years of landings and quota transfers, and come up with a total volume it looks like the New England states need to find, so kind of work it backwards? You know what is the total amount that the states are now utilizing and landing, and then that might help applying to which of these options would work. Thank you.

MR. LaFRANCE: That's a great question, Ritchie, and I'm going to answer what I think, but I'm also going to ask Megan Ware to jump in on this. I think in many ways what's happening in the Gulf of Maine, and up in that general direction, I think Megan has the best handle on. But I think what we were trying to do, was to offer up suggestions of different alternatives. I like what you're saying, in terms of the idea of actually working it backwards. I think that was in the minds of some of the folks we were working with, when we started to take a look at some of the data sheets. But I would say that I don't know that we actually did some projections, although there was some discussion of that in the Working Group. Megan, I don't know, are you available to maybe answer that? I said I might phone a friend on this, and I think I'm doing that right now.

MS. MEGAN WARE: Yes, I'm happy to chime in. I think you had a great answer. Yes, Ritchie, we never like specifically added up the landings from the New England states, and like came up with a percentage that some people may be looking to get to the New England states. But we did look at things like direction of transfers.

The percent of total landings that are coming from each state. I think we looked at the trends that would kind of support that type of analysis, but we didn't specifically say, you know as an example, the New England states collectively landed 8 percent, let's say, of landings last year. How do we get to 8 percent?

CHAIR WOODWARD: Yes, I think the issue here, Ritchie, is we asked the Work Group to develop these strategies, to address things like mismatch, and then it will really be up to the Board to decide how to move forward, and which strategies are best suited for addressing both the current situation, and possibly preventing future situations. You know, while recognizing that we're going to have a dynamic situation with these fish, like most fish. I mean we spent a lot of time on black sea bass distribution earlier today, so it's part of our lives. Toni, any other hands?

MS. KERNS: I don't have any other hands at this time.

CHAIR WOODWARD: Well, Rob, you did a great job, or just overwhelmed everybody with the menu. I think you've heard me mention that before.

MR. LaFRANCE: Thank you, Spud.

CHAIR WOODWARD: But it's a great menu, and we certainly appreciate the work that was put into it. There is no doubt there is a lot of thought put into this, and I think it is going to help us.

CONSIDER INITIATION OF ADDENDUM ON COMMERCIAL FISHERY MEASURES

CHAIR WOODWARD: If there are no questions or comments about Rob's presentation, we're going to

move into our next agenda item, and that is to Consider Initiation of Addendum on Commercial Fishery Measures. I'm going to turn it over to Kirby for some background information before we get into our deliberations.

MR. ROOTES-MURDY: Maya has a presentation for me that we'll get up on the screen in just a minute, and is, I assure you all, a very short presentation. Building off of the Working Group report, I thought it would be helpful for this Board to be aware of what items from Amendment 3 that can be adjusted through an Addendum.

For those of you who have Amendment 3 on your desktop right now, you can easily get to the Pages 49 and 50. I pulled out just some of the key ones, as I said, were specific to topics covered by the Work Group report. They include TAC specifications, the quota allocations, quota transfers, quota rollovers, episodic event set-aside programs, incidental catch, and small-scale fishery provisions, fishing year, and/or seasons, trip limits, gear restrictions, including mesh sizes and area closures. Again, these are just ones that are specific to the Work Group report. There are additional items in Amendment 3 that can be adjusted through an addendum it's a pretty exhaustive list.

With that as we had it set up today, the Board action for consideration is to initiate an addendum, to address really the issues that were outlined in that motion back in May. As staff, what we will be looking to the Board to do is hopefully make clear what the goals and objectives are, to guide what will be our Plan Development Team, which is yet to be formed, and developing an addendum if initiated. I can take any questions, if there are any at this point. Thanks.

CHAIR WOODWARD: Any questions for Kirby on procedure and process?

MS. KERNS: Justin Davis.

CHAIR WOODWARD: Go ahead, Justin.

DR. DAVIS: The question for Kirby, was there anything in the Work Group report, or anything that the Work Group deliberated on that could not be addressed through an addendum? Like one example that came to mind is, I think there was discussion about the idea of creating something like a quota bank.

Sort of like an episodic set-aside, but maybe a little different, as a place to park some quota, to help out jurisdictions, when they exceed their directed quota. I don't know if that would fall under sort of the Episodic Event Set-Aside Program as described in Amendment 3. But I guess my general question, is there anything that was contemplated by the Work Group that could not be done through an addendum?

MR. ROOTES-MURDY: Yes, it's a good question, Justin. You know, thinking through the report. There was nothing during those deliberations that really came out as being really out of bounds clearly. I think some of these things could be addressed through the broad idea of quota allocations, if that is what this Board wants to pursue.

Something that was discussed by the Work Group, and I can turn it back to them to chime in more on it, was generally speaking, the strategies when it came to allocation, they were talking about, were focused on jurisdictional allocations. But there wasn't really guidance so far. We had heard from the Board that more of a regional quota approach was something this Board wanted to pursue.

That being said, I think the Work Group report does highlight that one of the issues with the episodic event set-aside program, in some people's eyes, is that it has effectively become a secondary regional quota. Those are just some considerations. I'll leave it at that, and if other Work group members want to chime in specific to this question, feel free.

CHAIR WOODWARD: Rob, anybody in the Work Group want to opine on this?

MR. LaFRANCE: Justin, it's a good question. Remember, we weren't really, as the Working Group, supposed to deliberate. Our job was to recommend options. We did not say, well this option is something that could be done by an amendment, or this is something that can only be done by an addendum.

I think really, as the, like a PDT would take a closer look at it. They would only be able to do that which would be legitimate as an addendum. I don't know, if we were to move forward and have a PDT take a look at these recommendations, or these strategies really, they were strategies that they could consider. I think at that point in time the decision would have to be made, as to whether or not it was a big enough change to the existing amendment, to call for the need for a new amendment.

CHAIR WOODWARD: Absent any more questions for Kirby, what I'm looking for from the Board is a motion to initiate a management action, ostensibly an addendum. Hopefully, a motion that captures what the scope of that management action would be. I mean there are multiple topics that were addressed by the Work Group. It is certainly up to the Board to decide which or all of those topics they would like to be addressed in a management action. At this point I'll open the floor up to any possible motions.

MS. KERNS: You have Megan Ware.

CHAIR WOODWARD: All right, go ahead, Megan.

MS. WARE: I have sent a motion to staff, if they are able to put it up. I'll read it in the record, and if I get a second, I can provide some rationale. But the motion is, move to initiate an addendum to consider changes to commercial allocation, the episodic events set-aside, and the small-scale/incidental catch provision. The purpose of this action is to address the issues outlined in the Atlantic Menhaden Work Group memo, and the PDT should use the strategies provided in the work group memo as a starting point.

CHAIR WOODWARD: Thank you very much, Megan. Do I have a second?

MS. KERNS: You have a lot, but I'll go with the first name I saw, and that was Emerson Hasbrouck.

CHAIR WOODWARD: All right, thank you, Emerson. All right, Megan, I would like if you would just elaborate a little bit more on your motion, and provide a little more background.

MS. WARE: Great, thank you. I think it's pretty clear that we've seen some changes since 2009 to 2011, both in the menhaden distribution and the fishery. I now believe it's time to consider changes to our management, and I think some of the clearest pieces of evidence showing this change, particularly in New England, are the fact that Maine now receives 200 to 300 percent more quota via transfers, then what we are allocated, the consistent and rapid use of episodic events each year. I also think Maine's volume of landings under the incidental small-scale provision is a symptom of a management system that is not reflecting current conditions. I hope it's obvious that Maine does not set a goal of trying to land 10 million pounds under small scale. The challenge is that we're exhausting all of our available quota in July, when biomass is highest. I think the Work Group has teed this up well. I think it does a good job of showing how all of these challenges and solutions are interconnected, so I hope that is a good starting point for the Plan Development Team.

Then, in response to Kirby's comment. You know I know Kirby has encouraged us during the Board discussion to provide some goals for this action. Some of the things that I hope we can achieve, are to better align jurisdictional quotas with fish availability and landings, maintain access to the fishery for all Atlantic coast jurisdictions, reduce the state's dependence on quota transfers, and continue to minimize our regulatory discards.

Then I also think it may be important to maintain flexibilities in the FMPs for unanticipated shifts in menhaden abundance. You know the work group had some discussion that we don't have full knowledge of where menhaden will go next. They may further increase in New England. There may be a surge in the Mid-Atlantic, and having those types of provisions is important to the long-term viability of the FMP. Thank you.

CHAIR WOODWARD: Thank you, Megan, I appreciate that. Emerson, would you like to add anything as the seconder of the motion?

MR. EMERSON C. HASBROUCK: Thank you, Mr. Chairman, I don't think I need to add anything more. The Working Group report was fairly extensive, and Megan has outlined the need for this motion, so I don't have anything additional to add, thank you.

CHAIR WOODWARD: At this point, I'll accept comments, lobby some questions. What I would like the Board to particularly is, you've seen a pretty diverse range of strategies. The motion recommends that the PDT consider all of those, and I would like there to be some feedback.

Are there any of these strategies that are seen as problematic by Board members, and they may wish for them not to be considered by the PDT? Likewise, if there are some strategies that you think are particularly important, that need to be emphasized, I would welcome any comments along those lines as well, so Toni, do we have any hands?

MS. KERNS: A couple hands here, I'll give you three names first; Pat Geer, David Borden, and Joe Cimino, and then I'll give you more names.

CHAIR WOODWARD: Okay. Go ahead, Pat, and David, you're on deck.

MR. PAT GEER: I believe I know the answer to this, because you just said all options. Megan, I just want to be clear that changes to the commercial allocation, because you mentioned episodic events and the small-scale incidental catch provisions, but this would also include the quota bank and the full quota options as well, correct?

MS. WARE: Correct, yes. At this point I haven't weeded anything out of the document, so I think moving all of those strategies forward is appropriate at this time.

MR. GEER: Okay that's fine, thank you.

CHAIR WOODWARD: Sort of to that point, Pat, I think that by assigning that to the PDT, we can certainly, working with staff, they can determine whether or not this quota bank concept is compatible, you know with Amendment 3 or not, if it's out of balance or not. Go ahead, David Borden.

MR. DAVID BORDEN: I support the motion, particularly because of the last phrase in the motion as a starting point. I mean the Work Group has done a tremendous job, giving us a diversity of issues. One of the things I would be concerned about is that I think we need to winnow down some of those issues, so it doesn't become too much of a burden on the PDT. But I also think we need to be able to add or delete strategies at the next meeting, so this would be a work in progress, if I understand the intent of the motion.

CHAIR WOODWARD: Yes, and that's a good point, David, and certainly, if there are strategies that were not identified in this report, certainly it's the Board's prerogative to bring those up now, and to make sure that those are included in the tasking to the PDT. I certainly invite anyone who has an idea that is maybe not addressed in this report, please feel free to bring it forward, so it can be heard and discussed. All right, Joe Cimino, you're up next.

MR. CIMINO: Like David, I support this motion, and with the concept that this is a starting point, it was a pleasure to be a part of this Working Group. It was a great think tank, and a lot of work went into this. One thing in here that does kind of give me caution, since I had the chance to work through a

lot of the potential reallocation options, is the concept of a best-year scenario. It is one of the few things that I do have concern with moving forward.

I get that somehow, we would formulate a percentage, where we wouldn't be going over a TAC, and yet menhaden availability in each year, kind of we expect to be reflected in the landings. Every state having their best year, doesn't reflect annual availability, and somehow decouples, you know reality from that proposal. I know it can be worked out mathematically, to not exceed a TAC, by just showing what each state's total of the best percentage is, but I still have some serious concern about that, and I just wanted to put that on the record. Thanks.

CHAIR WOODWARD: Thank you, Joe, and I think that's what we need, as far as feedback. If there are other folks that have a similar concern. As David said, I mean we certainly, we can winnow this down some before tasking the PDT. That certainly lessens their workload. If anyone, or several anyone's who have similar concerns about it, that is one that we could possibly delete, or we could leave it in there for analysis, and deliberate on it in the future. All right, Toni, what is my list like?

MS. KERNS: Your next three names are Rob LaFrance, and Lynn, and Conor.

CHAIR WOODWARD: Okay. All right, go ahead, Rob.

MR. LaFRANCE: I just wanted to highlight what I think is one of the more significant findings of this, and something I want to make certain the PDT kind of keeps in mind, as they move forward with final recommendation, and that is the idea that all of these landings should be part of our management structure.

They should all be accounted for under the TAC. That is the one thing I think we just need to make certain that we do. As we start to look at what I heard the longer discussion today about, how we're managing the species, and looking at it through a number of different perspectives. When we start to set the TAC to include an ecological reference point, we can't be having certain provisions of it maybe sort of fall outside that TAC.

From my perspective, I think there are a lot of options for the small-scale fishery. I think we laid out a number of those. But I really, really think it's important that at the end of the day, all of those landings get incorporated into our management strategy, and our counts according to the TAC.

CHAIR WOODWARD: All right, Lynn.

MS. FEGLEY: I really just wanted to, first of all, extend thanks and appreciation to the Work Group. It was a little bit of a debacle getting that motion off the ground to form the Work Group, but I really think that they just went above and beyond, and really have provided a very strong starting point for us to work from, and the starting point is going to be key.

I think it's going to be really important for the Board, when we start to see options in writing. We can begin to whittle things down and adjust things so they work. With that, I just wanted to mention a couple things. The first one has to do with the timeframes. You know the issue with timeframes in a species like menhaden that has fluctuated in abundance between areas.

It's kind of done this shift from the Mid-Atlantic to the North and back again. I think that the trouble is that timeframes create very strong winners and losers. I wouldn't advocate removing timeframes, but I would advocate considering placing guardrails, that when you apply a timeframe, you also have a safety that a particular jurisdiction cannot lose more than F percent of its allocation, because it can get pretty extreme, and it can really do damage to a state.

I also wanted to just encourage the PDT to simplify menhaden allocation as it's extremely complicated with the episodic set-aside, the bycatch allowance,

the small-scale incidental. I would encourage them to look hard at this idea of a pooled quota for non-targeting gears, you know gears that are passive, that sit in the water and can't chase the fish, because those gears, I believe harvest a very low percentage of the annual quota.

It is those gears that also are subject to this shifting distribution. If you had a pooled quota for these gears that would be defined, it's possible that that quota would be absorbed more by one region, in a year when they are in the Mid-Atlantic, and more by another region when they are up north. I think some of that is outlined in the report, but I would definitely, I am kind of interested in that concept. The other piece I just wanted to talk about was accountability. I fully am supportive of accountability, but I just want to be clear that I don't believe that we've had a lack of accountability. I think we've got a situation where that bycatch allowance has not counted towards the quota, yet we've never exceeded the quota. That bycatch allowance has worked exactly as it should, to prevent regulatory discards. But there is accountability. What is caught is known.

There is no mystery catch that we know of, and all of that catch gets accounted for in the stock assessment. We need to make sure we're all on the same page in what we mean by accountability. With that rambling, I think I will stop, and thank you, Mr. Chair, for the opportunity.

CHAIR WOODWARD: All right, thank you, Lynn. Go ahead, Conor.

MR. McMANUS: I guess I first wanted to say that I support the motion that could take a closer look at this, both sharing some of the same sentiments as Megan, as well as David Borden had also suggested, and indicated at really looking at this as a starting point. Just a couple notes. You know I think that, again, tremendous gratitude to the Working Group members for putting this together.

I think it not only highlighted the complexity of issues, but how many of them are linked, and we'll also certainly have to keep that in mind as we look at considering an individual action, and how it may or may not end up best, being coupled with other tools. I guess I wanted to, one of interest particularly, just thinking about some of the allocation components is the idea of the tier approach for the minimum. I think it's a really interesting idea, it's intriguing.

I guess I would just like to stress for the PDT, as they're thinking about this one in particular, like really working towards creatively trying to find what that criterion is for states. I think looking at that criterion as a context, simply on recent or historical landings, almost could effectively duplicate a given measure or consideration, so I just wanted to stress for the PDT as they look at this one, to think of creative ways as to what would be the defining criteria for states at that minimum entry either against two or multiple difference criteria levels for that.

CHAIR WOODWARD: Thank you, Conor, all right Toni, how am I looking with raised hands?

MS. KERNS: I have three more names on the list. I have Ritchie White, Eric Reid, and Allison Colden.

CHAIR WOODWARD: All right, go ahead, Ritchie.

MR. WHITE: I strongly support this motion. I also support some of the points that Lynn brought up. I think that states need to maintain a limited amount of quota, regardless if they are harvesting or not. I would look at New Hampshire, having had 300 pounds of quota prior to getting our half a percent, and we're now harvesting between 4 and 5 million pounds a year, and we couldn't even have started that if we hadn't had a minimum amount.

Now we depend on states to provide us quota, which we're very appreciative of. Going back to my earlier comments. I think a good starting place for the PDT would be to have the landings and quota transfers from each of the New England states, and then also, to ask them what they feel their landings

will be in the next few years, given that menhaden are in the waters. At least those kinds of numbers are there for us to look at, and then to see how those numbers could fit into some of these different options. I think that would be helpful, to kind of get a feel for where this is.

I would certainly expect that if the stock leaves New England waters, that these quotas then would be available, if they are not being used, if all of a sudden, the Mid-Atlantic or other states are harvesting then these additional quotas, if that's what happens, is available to the states where the harvest is taking place. Thank you.

CHAIR WOODWARD: All right, Eric, go ahead.

MR. ERIC REED: I'm going to echo some of Lynn's comments and Mr. White's comments as well. I have no problem that this is a starting point. My real problem is the end point. Under A-2, Rhode Island has about 70,000 pounds of quota. At 70,000 pounds we lost infrastructure, incentive, and interest in the fishery. Episodic events, you know that was great, but it was no guarantee that when the fish came back in the fall that we would have any quota.

My concern is, what would be the terminal year of landings in the action? You know, we're at 2.2 million pounds under Amendment 3, and we're starting to get our infrastructure, our incentive and our interest back now. You know infrastructure doesn't come, even in the menhaden fishery, overnight. I'm just really concerned about what is the end point for any landings that might be considered in the future.

CHAIR WOODWARD: I think that's something that the PDT will have to grapple with, looking at various scenarios to bring back to the Board for their information and consideration. Allison, go ahead.

MS. COLDEN: A couple things that I, first of all I'll start out by saying that I support this motion, and I want to just confirm if I can first with the maker of the motion, that it also includes the quota transfers, in the line of Pat Geer's question from before, even though it's not stated here. Is that right, Megan?

MS. WARE: Yes, thanks for asking that. Yes, anything that's in the Work Group memo, I perceive it's within bounds of this motion.

MS. COLDEN: Thank you. Then, if I could just make a comment too. One of the things that stood out to me strongly, when I was reviewing the information in Amendment 3 on the small-scale and incidental catch fisheries, was this issue of gear eligibility, and the language that already exists in Amendment 3 that says if there is any significant increase in landings by a particular gear type, that the management board would revisit that.

Based on that guidance in Amendment 3, I think it's extremely important that gear eligibility under the small-scale fisheries provision be a part of the Addendum moving forward. Just because it is something that we struggled with, kind of as a work group, acknowledging that although that language exists in Amendment 3, there is no definition of a significant increase. In addition to sort of looking at what the gear eligibility should be for now, maybe the PDT could also consider putting some sort of quantitative bounds on what options could be for a significant increase, if that provision is to stay in, so that we have some sort of baseline in the future to evaluate different landings by different gear types in the future.

One other comment I wanted to make is I think that with respect to the small-scale fishery landings, and counting towards the TAC. I think there is a strong assumption being made that moving allocation, and working on some of these other parts of allocation that make up the entire framework, would maybe "fix" the problem, and fix our reliance on some of these provisions, but that is not really a guarantee.

If it's not born out, that changing directed allocations or jurisdictional allocations don't sort of slow the trends that we have seen in the small-scale fishery, for example. I do agree with Rob's

comment that we run the risk of exceeding the TAC, if the trend continues to increase, as it has over the past three to four years.

If it's not a direct action in this Addendum, I would at least encourage at a minimum, really, some sort of management trigger for the Board to revisit this provision, but also including some of the things, more direct actions that are already in the Work Group memo as well.

CHAIR WOODWARD: All right, Toni, how are we looking?

MS. KERNS: We just have one last hand up, it's Lynn.

CHAIR WOODWARD: All right, go ahead, Lynn.

MS. FEGLEY: Yes, I apologize for the second bite, thank you, Mr. Chair. It was just something that Allison said that reminded me. I just wanted to also put forward that there is a difference between having your every fish count toward the TAC, and managing to a hard state-specific quota. I just want to be clear that while I think it's very important that we adhere to the coastwide TAC.

I think there are creative ways that keep states like Maryland, and I know that I'm a broken record with our pound nets. What happens if we have to shut down a pound net fishery, and all of the dead fish we have floating around? I think there are creative ways that that can be dealt with. I just wanted to make that clear, that you know, accountability toward the quota can be viewed a couple different ways, thanks.

CHAIR WOODWARD: All right, I want to turn it over to Kirby, who has got a few comments for us.

MR. ROOTES-MURDY: I appreciate comments that Board members have offered up, you know from a Plan Development Team Chair standpoint, they are helpful, generally speaking to hear that some of these strategies are worth pursuing in greater detail, and heard at least one or two instances, where a Board member didn't want a strategy to be pursued further. I would follow up to what David, I think noted, and maybe a few others that I heard, Eric Reid and maybe some others, that we've got right now in this motion three main issue items, or topics, and that these are not siloed in some ways, that they are kind of interconnected. Just to manage expectations, you know with that in mind. The Plan Development Team, unless there is guidance that says we need to make sure that all things are continued, and then we develop them out, that we will try to whittle some things down.

But ultimately, I think the draft document that gets back to this Board, possibly at the annual meeting, that there will need to be some additional Board decisions on what to get possibly removed from the document, from a management document crafting standpoint, and trying to ensure it's clear and not complicated for both the Board to understand, and the public to provide comment on.

You know the fact that these things do affect each other, in terms of allocations, percentages set for, episodic set-aside, and management triggers for small-scale provisions. That there will need to be some further guidance, likely from the Board once those options are made clear, and those linkages are established. Just so that is clear for the Board to consider, thanks.

CHAIR WOODWARD: Yes, thank you, Kirby. It's always important for us to kind of remember, and set realistic expectations. We've got a pretty diverse menu of strategies that we're asking the PDT to investigate. They are going to do that; we're going to get some feedback from the PDT at our annual meeting in October. We may or may not delete from further consideration some of these strategies and options.

Doing so may mean, if you delay final approval of this Addendum, you know well into next calendar year, and not that we shouldn't take the time to do it right, I'm certainly going to ask for that. But I think it's just something we all need to keep in

mind, is that if we all agreed and everything was great at the annual meeting, then we could have something that goes out for public comment, something that could possibly be finalized in February of 2022. But it may be that that is not realistic, so it's just something to keep in mind. Toni, any other hands have been raised?

MS. KERNS: You have one hand, David Borden.

CHAIR WOODWARD: Go ahead, David.

MR. BORDEN: I just want to agree with you, Mr. Chairman. I think it's important for all of us to have the ability to look at the output from the PDT at the next meeting, and then be able to winnow down, or fine tune, or possibly even add options at that point. At least in my own case, I'm not prepared to totally commit to these, because they are a little bit amorphous at this point. Once we get a little bit more information on the details, I think individuals will have other comments to make, and preferences. Thank you.

CHAIR WOODWARD: As we all know so well, when it comes to allocation it's all about the details, and the decimal points, so that's something we all know very well. All right, any further discussion on this motion? Any other comments? Okay, nothing.
MS. KERNS: No hands.

CHAIR WOODWARD: All right, is there any opposition to this motion?

MS. KERNS: I don't see any hands.

CHAIR WOODWARD: Absent any opposition, we'll consider the motion approved by unanimous consent, and that will start us on the pathway to a management action that we presume will be an Addendum, that's the goal. I appreciate everybody's involvement. Again, I appreciate the hard work of the Work Group. I think it made what we just did possible, and we did this is a fairly brief amount of time, which is pretty remarkable for something that is this complicated.

But the hard part will come in the future, so save up your energy.

OTHER BUSINESS
WHIRLING DISEASE IN ADULT MENHADEN

CHAIR WOODWARD: All right, we've got one item of other business, based on a comment that Pete Himchak made, and that is concern about the presence of whirling disease in ocean going adult menhaden populations. Kirby, what do we need to do to task the TC to look into this, and maybe bring some information back to the Board at a future meeting about this particular topic?

MS. KERNS: Spud, before Kirby jumps in on that, just a quick reminder to the Board that we will need to form a PDT for this Addendum, and Kirby will send out an e-mail for that. But I just want to note that it's likely that those PDT members will need to get confidential data access, so for those states that are approving confidential data access, please be on the lookout for those PDT members.

CHAIR WOODWARD: Thank you, Toni. Good information.

MR. ROOTES-MURDY: Yes, thanks for that, Toni, it's a good reminder for folks. I guess what would be helpful for this Board to know is, obviously when these fish kills have been occurring, especially this year, they don't happen in a vacuum, in terms of simply just one or two people seeing it, you know state agencies have been mobilized to try to respond.

Across the coast a number of Technical Committee members have been providing each other updates on if and when they have a fish kill. At this point, we generally just had informal e-mail exchange regarding fish kills when they come up, trying to get pathology reports, which is obviously one of the key things to better understand.

If one fish kill in a state is similar, or dealing with a different issue than a fish kill in another state. I

think the best way to couch this for the Board's consideration is, what would it be that the Board wants the Technical Committee to do, in looking at these fish kills? You know, I think we have obviously our tools, so to speak, within fisheries management that we're all very aware of.

But when it comes to some of these other questions that are maybe somewhat outside of traditional limits on either catch or area closures, moving into pathology. I think those are things for this Board to consider, if they want to task the TC with doing any work on this specific. Just something for the Board to think about, in trying to task the TC on this topic.

CHAIR WOODWARD: I'll certainly open it up to the Board for responses to that, but I was thinking of something more along sort of the informational lines of, you know for those of us who maybe aren't experiencing it, so the Board could be more fully aware of, you know where is this happening, when is it happening?

Is it increasing in frequency, or is it sort of up and down from year to year? Just as sort of a broad overview of it, not necessarily you know driving towards any action in response to it. But more just learning more about it, so that we can be fully aware. Certainly, Board members, I would welcome any input on this.

MS. KERNS: I have Roy Miller, Tom Fote, and Joe Cimino.

CHAIR WOODWARD: All right, go ahead, Roy.

MR. ROY W. MILLER: Thank you, Mr. Chair. Just a quick observation. Last fall and winter, we saw what I would classify as a low-level adult menhaden kill along the lower portion of the Delaware Bay, where there would be a menhaden every 25 yards, that kind of thing. I have no idea whether it's related to the same organism that Pete Himchak was referring to, or whether it was something else.

But if we were observing that, I suspect it was something similar on the New Jersey side of the Bay. But there is a bit of confusion. Using the term whirling disease, I think confuses the organism with the one that salmonid biologists are much more familiar with, which is a metazoan parasite, myxobolus cerebralis I looked up the name. Hopefully there is another name for this, so the public is not misled, that we're looking into this organism, which traditionally affects salmonids. Thank you.

CHAIR WOODWARD: Yes, good point, Roy, thank you. Go ahead, Tom.

MR. THOMAS P. FOTE: I've been involved with menhaden management since 1984, somewhere around that year I first got involved. Over the years in the Commission, I've listened to guys like Tony Vega from Massachusetts, Vito from Massachusetts, Ken Driscoll, and we talked about menhaden purse seine.

This year, I was up in the Raritan Bay quite a few times, and I saw menhaden floating out of the Navesink River on a high tide, and had never seen the bodies. You know I've watched oxygen depletion kills. I saw it up in Massachusetts when I used to fish up there once in a while. I've seen it in Long Island Sound, I've seen it in Raritan Bay. But this was different.

There were rotten bodies all over the place, all over Raritan Bay, where they went all the way up the Raritan River, or I went in different areas coming out of the Navesink. It concerned me dramatically, because I think it's something else that we basically should be really looking at, because I can see. I've heard it is the same in Connecticut, they see the same thing. You know, we depend so much on menhaden for all the other species. I've been sitting here. You know I listened to Dennis today, we were talking about, you know he might not be around, because he's 80 years old. Well, I'm 74, and I understand some of those feelings you think about, well I'm not going to be around when this finishes up. But I also don't want to see by the time 15 years are all elapsed.

We have enough problems with oxygen depletion, and we have that coming on seriously, because of the global warming, the warmer waters. We're going to see more kills for that. We don't need a disease kill. I think we need to get out in front of this. I think we need to find out what's going on. I've gotten calls from more people all over the state, and other states. I think it's becoming a serious problem, and I think we need to really address it.

CHAIR WOODWARD: Thanks, Tom. All right, Joe, go ahead.

CHAIR WOODWARD: Thanks, Spud, I wasn't quite prepared to speak to this, but since we were kind of a central hub for this, and we're very fortunate to have a pathologist on staff with our Division of Fish and Wildlife, who has been looking into this. I did want to provide some information.

First, although the majority of samples that we were seeing, we saw vibrio anguillarum which is not uncommon in the marine habitat, and in shellfish and finfish, and we thought that that was part of the reason for the early mortality events. Later on, as we collected samples, we did find a second bacterium, which is that, and forgive me for my Latin pronunciation, but yersinia ruckeri, which is that pathogen known to trout and salmon that causes whirling disease.

You know Pete Himchak's concern there is valid, and just to Roy's point there. All of this needs to be continued to look at. We've worked with New York State DEC. I really appreciate ASMFC staff's help on trying to coordinate, and just keep the information flowing. We've worked with Stonybrook, USGS, and USDA on this.

We're kind of doing this on the cuff, and maybe ASMFC is a good group to help us to continue to coordinate this. Samples do need to be fresh, so even though we do have a pathologist on staff here at NJDEP, we can't just say hey, send us your stuff and we'll look into it. There needs to be a better network of collecting samples up and down the coast.

I think one of the most interesting things about the kills around the Raritan was they were during the winter. One of the interesting things to me is that menhaden were sticking around in New York and New Jersey rivers during the winter, and that is why we saw kills earlier than we have in some years. It's not uncommon to see die offs in spring, they just started happening. Well, they were happening in December, and then we saw again in March and early April. I'll just leave it at that. Thank you.

CHAIR WOODWARD: Thanks, Joe, that is very informative, appreciate it, and I think that sort of speaks to the fact that I think it's worthwhile for our scientific advisors to delve into this to some degree, and at least keep us informed of what is going on, and what the consequences may mean for us. Kirby, does that help get what you need?

MS. KERNS: Spud, you have one more name on the list, John Clark.

CHAIR WOODWARD: Go ahead, John.

MR. JOHN CLARK: Yes, just briefly. Typically, any time these bacteria are ubiquitous in the environment out there, typically happen when the fish are stressed or very crowded. The conditions they were talking about sound like that was indeed happening, you know these winter kills like this.

I don't know that there is much we can do about it, other than work to clean up the water. But you know once again, we've seen all sorts of things kill menhaden down here from low DO to Kudoa, there was even a suspected Pfisteria kill years ago. There are just tons of things out there that will kill bunker.

MR. ROOTES-MURDY: Yes, Spud, this is Kirby. I'll follow up now. What I'm hearing is that really right now there is an interest in getting at the next Board meeting, a full report or at least a summary of what the fish kills that have occurred, I'm hearing in the last year, where they have occurred and what

information is available. You know I think it would be helpful, just kind of from a staff workload standpoint.

You know, where this kind of flies with some of the other things that this Board is considering with menhaden, right. We've got this assessment; we're looking for the Board to provide feedback on during the next Board meeting. Staff will be working with the PDT to draft up this Addendum, and where does these questions about wanting to get more information on the fish kills kind of rest with those two other items that have been talked about today?

CHAIR WOODWARD: Well, I certainly think that it's a much lesser priority than our other activities. If we can fit it in and not encroach on other things, and create hardships, let's just do it when we can, not necessarily has to be the next meeting. This can be something that we get next year, you know after there has been ample time for the work to be done. Unless someone disagrees with that, I think that is the best course of action. After all, I'm not sure, go ahead.

MS. KERNS: Sorry, I wasn't sure if Tom was disagreeing with you. He put his hand up.

CHAIR WOODWARD: Go ahead, Tom.

MR. FOTE: Well, one of the things if this starts being coastwide, the agency that should be looking into it is the U.S. Fish and Wildlife Service, since it's basically inland waters that it's basically affecting. I know U.S. Fish and Wildlife Service sits on the Menhaden Board. Do they have any ideas?

CHAIR WOODWARD: I don't know. I guess, is Mike Millard here?

MS. KERNS: Hold on Spud, I don't know if it's Mike or Lowell today. I forget.

MR. ROOTES-MURDY: We have Mike Millard on, or at least had him on at one point. We have him offline on one, and then I think maybe he just came back on.

CHAIR WOODWARD: Well, I'll give him an opportunity to comment if he chooses to. If he doesn't want to that's fine, but I think you made a good point, Tom, that it's something that needs to be looked at on an inter-agency standpoint, certainly.

MR. ROOTES-MURDY: Another consideration I think maybe to what Tom was saying. We have partners at USGS, and they may be another agency that would be able to provide some input as well, if need be, given they have some expertise in other parts of fish management.

CHAIR WOODWARD: Suffice it to say, we'll do our best to keep this on our radar screen, and keep the Board informed of what's going on, and what we know and what we don't know about these kills, and what the consequences may mean at the population levels. We're at the end of our agenda. Is there any other business to come before the Menhaden Board, anything else you need, Kirby or Toni?

MR. ROOTES-MURDY: It looked like you might have had a phantom hand raise from Mike Millard. I'm getting mixed signals from him. Oh, it looks like he's there now.

CHAIR WOODWARD: Okay, Mike, would you like to respond to what Tom said about Fish and Wildlife Service involvement?

MR. MIKE MILLARD: Yes, thanks, Mr. Chair, I was struggling with my technology. I don't know, I'm not sure of the exact workload, but the Service would, we would do everything we could to help out with that issue. Our fish health center is at Lamar, Pennsylvania, and I would be glad to talk to somebody more about what exactly we can do.

CHAIR WOODWARD: Well, thanks, Mike. Well since you all are our federal authority, maybe you all could get these menhaden to socially distance,

and that way we could reduce the problems. All right, any other business to come before the Menhaden Board?

MS. KERNS: Spud, you have one member of the public with their hand up.

CHAIR WOODWARD: Who is that?

MS. KERNS: Tony Friedrich.

CHAIR WOODWARD: All right, Mr. Friedrich, I'll allow you a couple of minutes for comment. I'm not hearing anything, Tony.

MS. KERNS: Tony Friedrich, you need to unmute yourself, and you had one other hand come up, Joe Smith.

CHAIR WOODWARD: Okay. Mr. Friedrich. All right, let's go to Joe Smith.

MR. JOE SMITH: Mr. Chairman, Joe Smith here sitting in on the meeting. I just heard fish kills, and it piqued my interest. I was at the Beaufort Lab for 30 years, worked for Doug Vaughn on the menhaden program. About 2002, the Technical Committee tasked me with keeping track of fish kills, and I've got about a one-inch file of fish kill reports on the Atlantic from 2002 or 3 to 2015, when I retired, if the Board is interested or the Technical Committee is interested.

Also, there was some mention of catastrophic fish kills. I believe Doug Vaughn and maybe Bill Shroff from our Beaufort Lab did a paper on the effects of simulated catastrophic fish kills on the Atlantic menhaden population. This followed, I think the Pfisteria hysteria of the '90s. There is that paper out there that you can draw some information from. Thank you.

CHAIR WOODWARD: Thank you, Joe. Yes, I appreciate anything you could do to help the TC with information. That would be great. All right, did we get Mr. Friedrich on the sound?

MS. KERNS: He put his hand down.

CHAIR WOODWARD: Okay. All right now, no other hands up, Toni.

MS. KERNS: No.

CHAIR WOODWARD: Okay, with no other business to come before the Menhaden Board, I want to thank everybody for your participation, it was a good productive meeting. I want to thank the Work Group again. I always thank our TC and our ERP Work Group for all the effort they put in, and glad things are moving along. I appreciate everybody.

ADJOURNMENT

CHAIR WOODWARD: Hopefully, our next meeting will actually be in person in October. Let's keep our fingers crossed that we can do that. With that we'll stand adjourned.

(Whereupon the meeting convened at 4:30 p.m. on Wednesday, August 4, 2021.)

Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Atlantic Menhaden Management Board

FROM: Ecological Reference Point Work Group and Atlantic Menhaden Technical Committee

DATE: April 26, 2021

SUBJECT: Atlantic Menhaden Spatial Model Needs

At the 2021 Winter Meeting, the Atlantic Menhaden Management Board tasked the Ecological Reference Point Work Group (ERP WG) and Atlantic Menhaden Technical Committee (TC) to provide additional detail regarding the research recommendation in the 2019 benchmark stock assessment to "develop a spatially-explicit model." Specifically, the Board requested information on what data would be needed, a timeline for development and implementation, and if it would resolve questions regarding management of menhaden in the Chesapeake Bay.

The ERP WG and TC discussed potential approaches for developing a spatially-explicit model for Atlantic menhaden. These approaches cover a range of spatial complexity, data needs, and timelines, and provide different levels of information to support management. In this memo, the ERP WG and TC provide an initial outline of potential approaches, including the data and modeling development needs, timelines, and expected management information produced, and highlight areas where Board input is needed. The ERP WG and TC stress that the needs and timelines listed here are based on the group's current understanding of what is feasible and may change once model development and data analysis are underway. The approach the group chooses will depend on management goals, as well as data and funding availability.

Attributes	Approach
Coarse spatial scale, minimal additional data requirements	Coastwide Beaufort Assessment Model (BAM) + coastwide Northwest Atlantic Coastal Shelf Model of Intermediate Complexity for Ecosystems (NWACS-MICE) + supplemental Bay information
	Coarse spatial BAM + coastwide NWACS-MICE ERPs
Fine spatial scale, significant additional data requirements	Coarse spatial BAM + coarse spatial NWACS-MICE ERPs
	Detailed spatial BAM + detailed spatial ERPs (NWACS-MICE or alternative detailed spatial multispecies model)

1. Coastwide BAM and NWACS-MICE with supplemental Bay information

These approaches would use the existing BAM plus NWACS-MICE approach to develop coastwide ERPs for Atlantic menhaden to produce a Total Allowable Catch (TAC) that takes into account Atlantic menhaden's role as a forage fish on a coastwide basis, as is done now, but would also provide supplemental information on the Chesapeake Bay.

a. Supplemental Bay Atlantic menhaden abundance information

Approach*:* Supplemental information on absolute Atlantic menhaden abundance in the Chesapeake Bay, such as from an aerial survey, could be used to determine what proportion of the TAC could be taken from the Chesapeake Bay in order to keep exploitation in the Bay at an acceptable level. This simpler, escapement-based approach could be an efficient way to develop information to inform the Chesapeake Bay Cap; however, it would not provide broader spatial information and therefore would not provide advice for regional allocation discussions. In addition, the ERPs developed would be on the coastwide scale, and thus would not include consideration of predator-prey interactions or needs on a finer spatial scale. The ERP WG and TC also noted the uncertainty introduced by combining two different methods of abundance estimation (the BAM and the fishery-independent Bay method), and the lack of information on seasonal migration rates into and out of the Bay.

Data & development needs: This approach would not require additional model development, but would require a significant investment in a robust source of information on absolute abundance in the Chesapeake Bay, which is currently does not exist. It may be possible to use a shorter time series of abundance in this framework than the 10 years that the TC requires for indices of relative abundance within the BAM; however, this will depend on review of the data after collection. An absolute abundance survey would likely require 1-2 years of gear calibration and pilot studies, plus a minimum of 3 years data, in order to evaluate interannual variability and uncertainty in the abundance estimates from the survey, meaning this approach could potentially be taken to peer review within 5-7 years of initiating the survey. However, if interannual variability is high, more years of data would be needed before the approach is ready for management use. Although shorter time series might be sufficient for the initial analysis, the survey would need to be conducted on a regular basis in order to provide management advice in subsequent years.

b. Supplemental Bay multispecies indicators

Approach: Supplemental information such as the state of major predators (striped bass, blue fish, birds) abundance and body fat condition for the Bay could be used as ecosystem indicators to inform management control rules in parallel with the single species BAM and MICE models. Indicators would likely provide qualitative rather than quantitative advice on the Bay cap.

Data & development needs: Ecosystem indicators could be developed from existing datasets, but would require some work to synthesize different data sources and develop a meaningful control rule or traffic light approach to inform management.

2. Coarse spatial model approaches

These approaches would provide information on a coarse spatial scale, e.g., North, Mid, and South Atlantic plus a Chesapeake Bay region. However, it is important to note that, due to data limitations, the Chesapeake Bay region would include the coastal waters of Maryland and Virginia. Additional analysis of the tagging data would be required to determine the significance of including ocean waters and whether or not this information could be used to inform the Bay Cap. Both of these approaches would take approximately 5-7 year to complete, though this could change depending on funding and data availability.

a. Coarse spatial BAM with coastwide NWACS-MICE ERPs

Approach: This approach would refine the BAM to include spatial dynamics at a coarse scale and produce regional estimates of biomass, while the NWACS-MICE model would provide coastwide ERPs. The BAM plus NWACS-MICE would be used to develop a coastwide TAC, as is done now. An escapement-based approach could be used to determine what proportion of the TAC could be taken from each region. Regions would be defined to match management needs and the existing information on migration rates. Again, in the coarse approaches the Chesapeake Bay region would include Maryland and Virginia coastal waters due to its inclusion in the Bay region in the historical tagging study. The coastwide ERPs would not include the ecosystem considerations on a finer spatial scale. Currently, genetic and tagging data indicate Atlantic menhaden comprise a single stock on the Atlantic coast, and the BAM includes some consideration of spatial dynamics with the fleets-as-areas approach. Incorporating spatial structure could provide some improvements to our understanding of the stock, including differences in recruitment and life history characteristics.

Data & development needs: Catch-at-age data are already available on a coarse regional basis. Existing fishery-independent indices could be assigned to or developed at the regional level. The existing information on migration rates between large scale regions is not differentiated by age, and so the model would assume that all ages share the same migration patterns. This would introduce additional uncertainty in the spatial model. Information on the proportion of total recruitment that comes from each region could also be a limitation for this model. This approach could be attempted with the existing datasets, but would require investment of personnel time and effort. This approach would likely be ready for peer review in 5-7 years, but that frame could be longer if existing data are not adequate.

b. Coarse spatial BAM with coarse spatial NWACS-MICE ERPs

Approach: This approach would build on the coarse spatial BAM approach described above, but combine it with a coarse spatial NWACS-MICE. To develop ERPs that take into account spatial dynamics in predator-prey interactions, a spatially-explicit multispecies model is necessary. The most straightforward approach would be to combine a spatially-explicit version of the NWACS-MICE model with a spatially-explicit version of the BAM. Both models would have a similar coarse spatial scale determined by management needs and data availability. Again, note that the Chesapeake Bay region would include Maryland and Virginia coastal waters. This approach could be used to provide advice on both the Chesapeake Bay Cap and broader regional allocation discussions. For example, it would be possible to run scenarios with differing levels of

fishing in the Chesapeake Bay region to estimate specific impacts on predators that use the region.

Data & development needs: A spatially-explicit multispecies model is more data intensive than the spatially-explicit BAM. To develop a coarse NWACS-MICE spatial model, we would need estimates of dispersal rates for all modeled species, information on seasonal spawning, recruitment, and migration patterns, and also information on spatial fishing effort for all fishing fleets in the model. In absence of actual data, expert opinion and rules-of-thumb can be used to parameterize the spatial model. For calibration and validation of the spatial model, we would need reliable species distribution maps that are seasonally resolved, region-specific trends in abundance and catch, fishing effort maps, and region-specific food habit data. The scale of the existing diet data is a weakness in current data availability in developing ERPs that account for finer scale ecosystem dynamics, especially for non-finfish predators. Investment in enhanced diet data collection from new or existing fishery-independent sampling programs at the state or federal level for the species in the NWACS-MICE model would benefit these models. This approach could be attempted with the existing datasets, but would require investment of personnel time and effort. This approach would likely be ready for peer review in 5-7 years; however, that frame could be longer if existing data are not adequate or shorter if resources are made available and more time can be allocated to model development.

3. Complex Spatial Modeling Approaches

These approaches would further refine the spatial scale. If the data were available, these approaches could provide information on the Chesapeake Bay specifically (i.e., not including ocean waters) and other regions beyond the coarse spatial scale. Both of these approaches would likely take at least 10 years, though this could change depending on funding and data availability.

a. Refined spatial BAM with NWACS-MICE ERPs

Approach: This approach would develop a more refined spatial BAM, which would be able to provide information on the Chesapeake Bay specifically (separate from MD and VA ocean waters) and other regions beyond the coarse spatial scale described above. It could be used with a coastwide NWACS-MICE or a refined spatial NWACS-MICE, depending on data availability. Depending on which NWACS-MICE approach was used, this approach would provide information similar to the escapement-based approaches or the coarse NWACS-MICE approach, respectively, but on a more refined spatial scale.

Data & development needs: In order to provide information on a true Chesapeake Bay region, or other regions beyond the coarse spatial scale described above, the BAM would require more fine-scale information on migration rates at age between the regions of interest. This would require a new comprehensive tagging study to provide that information. If complementary data on seasonal spatial distribution maps and trends in abundance and catch were available for the NWACS-MICE model, ERPs could be developed on a similar scale to the BAM's regional structure. If not, coastwide ERPs could be used in conjunction with the more refined BAM model. The refined spatial ERPs require significant investment in movement studies as well as in

diet data and model development. This approach would not be feasible until the necessary movement data are available.

b. Detailed spatial BAM and detailed spatial ERPs

Detailed spatial BAM and detailed spatial ERPs

Approach: The most complex approach would be to develop a fully-realized fine-scale spatial multispecies or ecosystem model for Atlantic menhaden. This could be achieved with NWACS-MICE, or another model such as the multi-species statistical catch-at-age model developed for the 2019 ERP Benchmark Assessment. A fully realized NWACS-MICE or other spatial model would use a much finer spatial resolution (on the order of 10-minute squares) that represented habitat gradients and jurisdictional boundaries. The model could be driven by static and/or spatial-temporal habitat maps, for example from satellite data or oceanographic model. This approach could simulate a broader range of environmental and policy options, such as warming sea temperatures and species range expansion into the northern region. Higher spatial resolution in the model would allow for better representation of spatial fishing effort in and out of the Bay.

Data & development needs: The disadvantage of this approach is that it is far more computationally demanding and requires information on species-habitat interactions that may not be available for some species. Typically, the habitat preference functions are derived from survey data. Assembling habitat maps, combining survey datasets, and estimating species preference functions for the different habitat types adds considerable time to model development. For species/life stages that are not captured in any surveys, expert opinion and online data repositories such as AquaMaps can be used instead. Validating the high-resolution spatial MICE model could be done by comparing region-specific time series (similar to the coarse scale model), comparing predicted and observed species distribution maps, or on a point-by-point basis. Higher resolution movement and diet data would significantly enhance model development and result in more reliable ERP estimates. Spatially-explicit statistical catch-at-age models do exist (i.e., Stock Synthesis and others); however, they do not exist in a multispecies model construct at this point, so would require software development. This approach would not be feasible until the necessary spatial data are available.

Immediate Funding Needs

The ERP WG and the TC indicated that some form of a coarsely structured spatial model was possible to develop for the next benchmark assessment if the Board was willing to accept a longer time frame for the next benchmark (2027-2028 instead of 2025). The approach that the groups pursue will depend on management goals (see 'Management input needs' below), data availability, and development resources. Table 1 provides a comparison of the approaches based on advice provided, data needs, and timeline.

The major areas that would require or benefit from funding to address data or model limitations are summarized below. In addition, the ERP WG and TC noted that timeline for model development could be shortened somewhat with funding for dedicated modelers.

Approach	Major Funding Need
Coastwide model with supplemental Bay information	3-5+ years of reliable absolute abundance estimates for the Chesapeake Bay
Coarse spatial ERPs	Spatially and seasonally explicit diet data and spatial distributions for key predator and prey species; additional model development
Refined spatial ERPs	Spatially- and seasonally-explicit diet data for key predator and prey species; fine-scale information on migration rates between regions by age; additional model development

Management input needs

The TC and ERP WG need guidance from the Board on specific goals and priorities to determine a path forward. The ERP WG and TC pose the following questions to the Board:

- What is the primary goal for spatially-explicit modeling? (e.g., advice on Chesapeake Bay Cap, regional allocation advice, enhance accuracy of coastwide ERPs, something else)
- Are there secondary goals?
- Are the ecosystem management objectives for the Chesapeake Bay the same as those used to develop the coastwide ERPs?
- What tradeoffs is the Board willing to make between the spatial scale/detail of the modeling and the timeline for the next benchmark?
- Would the Board be satisfied with a regional approach that separates MD and VA from the rest of the coast if modeling the Chesapeake Bay separately is not feasible for the next benchmark?

For example, the primary goal could be to provide advice on the Chesapeake Bay Cap by the next benchmark assessment, and the secondary goal could be to provide information to inform regional allocations. In this case, if there were challenges with developing a model to provide regional allocation information in the next benchmark timeframe, the group could switch to an approach that would only provide advice on the Chesapeake Bay Cap. Alternatively, if the Board prioritized regional allocation in addition to the Bay Cap and indicated that they were willing to wait longer for results, the group could delay completion of the benchmark assessment in order to complete that approach.

The TC and ERP WG will need direction from the Board as soon as possible (no later than Annual Meeting) in order to pursue a spatially-explicit modeling as part of the next benchmark stock assessment and follow the current assessment schedule.

Table 1. Comparison of potential approaches for developing a spatially-explicit model for Atlantic menhaden.

Approach	Advice				Data Needs		Timeline***
	Single-spp. CB	Multi-spp. CB	Multi-spp. Regional Allocations	Fine-scale Spatial Dynamics	Possible w/ Existing Data	Addt'l data needs	
Coastwide BAM + NWACS-MICE + supplemental Bay abundance	✓					Absolute abundance estimates in C. Bay	5-7 years
Coastwide BAM + NWACS-MICE + Bay indicators	✓*	✓*			✓		5-7 years
Coarse spatial BAM + coastwide NWACS-MICE ERPs	✓**				✓		5-7 years
Coarse spatial BAM + coarse spatial NWACS-MICE ERPs	✓**	✓**	✓		✓	Better diet data for ERP species	5-7 years.
Refined spatial BAM + NWACS-MICE ERPs	✓	✓	✓			Migration at age data for desired regions, better diet data for ERP species	10+ years
Detailed spatial BAM + detailed spatial ERPs	✓	✓	✓	✓		Finer scale data (all types) for ERP species	10+ years

*: This approach would likely provide qualitative, not quantitative, information on Chesapeake Bay Cap

**: Existing data could provide information on MD and VA separately from the rest of the coast, but not Chesapeake Bay itself.

***: These timelines are preliminary estimates and could be revised once model development is underway.

Atlantic States Marine Fisheries Commission

Executive Committee

October 20, 2021
8:00 – 10:00 a.m.
Webinar

Draft Agenda

The order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Introductions *(P. Keliher)*
2. Board Consent
   - Approval of Agenda
   - Approval of Proceedings from August 2021
3. Public Comment
4. Review and Consider Approval of FY2021 Audit **Action** *(S. Woodward)*
5. Discuss Policy on Responding to FOIA Requests *(R. Beal)*
6. Discuss Commission Involvement in Wind Energy Development *(J. Cimino)*
7. Discuss Seafood Processors Pandemic Response and Safety (SPRS) Block Grant Program
8. Discuss Appeals Process *(R. Beal)*
9. Future Annual Meetings Update *(L. Leach)*
10. Other Business/Adjourn

This meeting will be held via webinar, click here for details.

MEETING SUMMARY OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

EXECUTIVE COMMITTEE

Virtual via GoToMeeting
Arlington, VA
August 4, 2021

For Review & Action by the Executive Committee October 20, 2021

INDEX OF MOTIONS

ATTENDANCE

Committee Members

Pat Keliher, ME
Cheri Patterson, NH
Dennis Abbott, NH (LA Chair)
Dan McKiernan, MA
Jason McNamee, RI
Jim Gilmore, NY
Justin Davis, CT
Joe Cimino, NJ
Kris Kuhn, PA
Roy Miller, DE (GA Chair)
John Clark, proxy for David Saveikis (DE)
Kris Kuhn, PA
Bill Anderson, MD
Chris Batsavage, proxy for Kathy Rawls, NC
Mel Bell, proxy for Phil Maier, SC
Spud Woodward, GA
Brian McManus, proxy for Jessica McCawley, FL

Other Commissioners/Proxies

Lynn Fegley MD DNR
Tom Fote, NJ (GA)
Pat Geer, VMRC
Emerson Hasbrouck, NY (GA)
Doug Haymans, GA (AA)
Bill Hyatt, CT (GA)
Raymond Kane, MA (GA)
Mike Luisi, MD DNR
Nichola Meserve, MA DMF
Eric Reid, RI (LA Proxy)
Dave Sikorski, MD (LA Proxy)
Megan Ware, ME DMR
Ritchie White, NH (GA)

Staff

Bob Beal
Laura Leach
Toni Kerns
Tina Berger
Lisa Carty
Pat Campfield
Geoff White
Kristen Anstead
Lindsey Aubart
Chris Jacobs
Jeff Kipp
Savannah Lewis
Kirby Rootes-Murdy
Sarah Murray
Deke Tompkins

Others

Karen Abrams, NOAA
Fred Akers
Max Appelman, NOAA
Julia Beaty, MAFMC
Jeff Brust, NJ DEP
Allison Colden, CBF
Peter deFur
Alexa Galvan, VMRC
Marty Gary, PRFC
Hannah Hart, FL FWC
Adam Hart, VMRC
Adam Kenyon, VMRC
Wilson Laney
Shanna Madsen, VMRC
Alyson Martin, CBF
Chair McDonough, SC DNR
Brandon Muffley, MAFMC
Allison Murphy, NOAA
Nicholas Popoff, USFWS
Jill Ramsey, VMRC
Somers Smott, VMRC
Kevin Sullivan, NH FGD
Lowell Whitney, USFWS
Chris Wright, NOAA
Renee Zobel, NH FGD

CALL TO ORDER

The Executive Committee (EC) of the Atlantic States Marine Fisheries Commission convened August 4, 2021 virtually via a GoToMeeting webinar. The meeting was called to order at 8:00 a.m. by Chair Pat Keliher.

APPROVAL OF AGENDA

The agenda was approved, with the addition of discussion on Conservation Equivalency and the Recovering Americas Wildlife Act.

APPROVAL OF PROCEEDINGS

The summary minutes from the May 5, 2021 meeting were approved as presented.

PUBLIC COMMENT

There was no public comment.

CONSOLIDATED APPROPRIATIONS ACT OF 2021

Mr. Beal provided a brief overview of the second round of CARES assistance, technically known as the Consolidated Appropriations Act of 2021, or "The ACT". The Commission has received the Cooperative Agreement and half of the states have submitted Spend Plans. Mr. Beal reminded the Committee the funds must be obligated by 9/30/21, and Congress prefers the funds are disbursed by this date, but the funds will not revert if not spent by the states by 9/30/21. We have the flexibility and time to get these funds to fisheries participants who need them.

ADMINISTRATIVE OVERSIGHT COMMITTEE

The Administrative Oversight Committee was unable to meet to discuss the Statement of Investment Policy Guidelines; but will meet before the Annual Meeting to discuss it. The Vice-Chair proposed this topic be moved to the EC agenda at Annual Meeting for action.

LEGISLATIVE COMMITTEE REPORT

The Committee received an update on federal shark conservation legislation introduced in the 117th Congress. The four bills discussed were:

- S.1106 - Shark Fin Sales Elimination Act, Booker (D-NJ)
- H.R.2811 - Shark Fin Sales Elimination Act of 2021, Sablan (D-MP)
- S.1372 - Sustainable Shark Fisheries and Trade Act of 2021, Rubio (R-FL)
- H.R.3360 - Sustainable Shark Fisheries and Trade Act of 2021, Webster (R-FL)

The Commission's Legislative Committee has raised concerns about discarding legally harvested shark parts, as required by S. 1106 and H.R. 2811. The Legislative Committee will continue to monitor these bills and will react as needed.

ANNUAL MEETING UPDATE

Mr. Beal reported the staff will be looking into the possibility of a hybrid meeting for the 80th Annual Meeting in Long Branch, NJ October 18-21, 2021. Leadership will continue to monitor the situation regarding the Delta variant of Covid-19 and keep the Commissioners apprised. Chair Keliher recommended travelers hold off on purchasing plane tickets at this time.

OTHER BUSINESS

The Committee approved sending a letter in support of the Recovering Americas Wildlife Act to Senate Leadership.

The Committee discussed Conservation Equivalency (CE) with the thought it might be time to review its policy, based on the successes and failures of the current approach to CE. The policy was last revised in 2016 and much has changed in the interim. Chair Keliher will appoint a workgroup to develop a specific charge, which, after approval by the Executive Committee will be given to the Management & Science Committee for action.

ADJOURN

The Executive Committee adjourned at 9:02 a.m.

Considerations for Updating the Appeals Process

October 5, 2021

The ASMFC appeals process is a seldom-used procedure to address the concern of an aggrieved state or group of states. The recent appeal on black sea bass allocation from New York is the first time the appeal process has resulted in changes to a management program. This experience raised some process questions that may justify updates to the appeals process. The following three topics were raised at the Policy Board meeting on August 5th.

1. What happens if a species management board is unable to take action to satisfy the direction from the Policy Board?
2. Should the timeline be flexible to allow for additional analyses or other technical work to assist the species management board in responding to the direction from the Policy Board?
3. Should the Policy Board weigh in on allocation (reallocation) when a decision is made by a management board comprised of the affected states?

The following document includes potential language to address the three questions above. These changes are not staff recommendations; however they are options that would address the questions if the Policy Board agrees changes are needed to the process. The potential changes are highlighted as track changes.

As a reminder the ISFMP Charter provides that the Policy Board will be responsible for the overall administration and management of the Commission's fishery management programs. The Charter also defines one specific role of the Policy Board is to Consider and decide upon appeals of states to actions of any management board or section.

Atlantic States Marine Fisheries Commission

APPEALS PROCESS

Revised by the ISFMP Policy Board February 7, 2019

Background

The Atlantic States Marine Fisheries Commission's interstate fisheries management process is based on the voluntary commitment and cooperation of the states. The involved states have frequently demonstrated their willingness to compromise and the overall process has proven to

be very successful. However, there have been instances where a state/jurisdiction has expressed concern that the Board decisions have not been consistent with language of an FMP, resulted in unforeseen circumstances or impacts, did not follow established processes, or were based on flawed technical information. In order to address these concerns, the ISFMP Policy Board charged the Administrative Oversight Committee with "exploring and further developing an appeals process".

Under the current management process the primary policy development responsibility lies with species management boards. And, in the case of development of new fishery management plans or amendments the full Commission has final approval authority prior to implementation. The purpose of the appeals process is to provide a mechanism for a state/jurisdiction to petition for a management decision to be reconsidered, repealed or altered. The appeals process is intended to only be used in extraordinary circumstances where all other options have been exhausted. The management boards have the ability to go back and correct errors or address additional technical information through the recently clarified process on "amending or rescinding previous board actions".

During the December 2003 ISFMP Policy Board meeting, the decision was made to continue to have the Policy Board serve as the deliberative body that will consider valid appeals. This decision is consistent with the language that is included in the ISFMP Charter. However, the Charter does not provide detailed guidance on how an appeal is to be addressed.

This paper details for the Commission appeals process.

Appeal Criteria – The intent of the appeals process is to provide a state with the opportunity to have a decision made by a species management board or section reconsidered by the Policy Board. The following criteria will be used to guide what type of decisions can be appealed. In general, management measures established through the FMP/amendment/addendum process can be appealed. However, the appellant must use one of the following criteria to justify an appeal:

1. Decision not consistent with, or is contrary to, the stated goal and objectives of the current FMP (Goal and Objective Section of FMPs/Amendments or Statement of the Problem Section of Addenda).
2. Failure to follow process as identified in the ISFMP Charter, Rules and Regulations or other ASMFC guiding documents (e.g. conservation equivalency guidance).
3. Insufficient/inaccurate/incorrect application of technical information. Examples can include but are not limited to:
    a. If for any calculations used in the decision, an error which changes the results was identified after the decision was rendered;
    b. If any data used as the basis for a decision, undergoes a modification which impacts results after the decision was rendered (i.e. a landings dataset is adjusted significantly due to a recalibration or application of a control rule adjustment);

c. If data is incorrectly identified and therefore incorrectly applied, such as a misidentification of landings information as catch information, or incorrectly assigned landings/catch to a jurisdiction;
d. If information used as the basis for the decision lacked scientific or statistical rigor, thereby calling in to question the sound basis for the decision;
e. If the historical landings, catch, or abundance time series used as a basis for a decision is found to be incorrect.

Any appeal based on criterion 3 may be verified independently by a technical body appointed by the Chair, as needed.

4. Management actions resulting in unforeseen circumstances/impacts that were not considered by the Board as the management document was developed.

The following issues could not be appealed:

1. Management measures established via emergency action
2. Out-of-compliance findings (this can be appealed but, through a separate, established process)
3. Changes to the ISFMP Charter
4. Allocation (This addresses question #3 above.)

Appeal Initiation – The ISFMP Charter provides that a state aggrieved by a management board action can appeal to the ISFMP Policy Board. Any state can request to initiate an appeal; also a group of states can submit a unified request for an appeal. The states are represented on the Commission by three representatives that have the responsibility of acting on behalf of the states' Executive and Legislative branches of government. Therefore, in order to initiate an appeal all seated Commissioners (not proxies) of a state's caucus must agree that an appeal is warranted and must sign the letter submitted to the Commission. If a multi-state appeal is requested all the Commissioners from the requesting states must sign the letter submitted to the Commission. During meetings where an appeal is discussed proxies will be able to participate in the deliberations. Meeting specific proxies will not be permitted to vote on the final appeal determination, consistent with Commission policy.

A state (or group of states) can request and appeal on behalf of the Potomac River Fisheries Commission, District of Columbia, National Marine Fisheries Service, or the United States Fish and Wildlife Service.

The letter requesting an appeal will be submitted to the Chair of the Commission and include the measure(s) or issue(s) being appealed, the justification for the appeal, and the commitment to comply with the finding of the Policy Board. This letter must also include a demonstration that all other options to gain relief at the management board level have been exhausted. This letter must be submitted via certified mail or email at least **45 days** prior to a scheduled ASMFC Meeting Week. The Commission Chair, Vice-Chair and immediate past Chair will determine if

the appeal meets the qualifying guidelines and notify the Policy Board of their decision. If the immediate past chair is no longer a commissioner the Chair will select an alternate from a state that is not affected by the appeal. Also, if the Chair, Vice-Chair or immediate past Chair is a signatory to the appeal, the Chair will select an alternate from a state that is not affected (or minimally affected) by the appeal.

Convene a "Fact Finding" Committee (optional) – Upon review of the appeal documentation, the Commission Chair, Vice-Chair and immediate past Chair (or alternate if necessary, as described above) may establish a "Fact Finding" Committee to conduct analyses and/or compile additional information if necessary. This group will be made up of individuals with the technical expertise (including legal, administrative, social, economic, or habitat expertise if necessary) and familiarity with the fishery to conduct the necessary analysis. If such a committee is convened the schedule included in the last section of this document may need to be adjusted to provide time for the Committee to conduct analyses. The Commission Chair, Vice-Chair and immediate past Chair (or alternate if necessary, as described above) may set a deadline for the Committee to complete its work to ensure the appeal is addressed in a timely manner.

ISFMP Policy Board Meeting – Following the determination that an appeal has met the qualifying guidelines, a meeting of the Policy Board will be convened at a scheduled ASMFC meeting week. The agenda of this meeting will be set to allow sufficient time for all necessary presentations and discussions. The Chair of the Commission will serve as the facilitator of the meeting. If the Chair is unable to attend the meeting or would like to more fully participate in the deliberations, the Vice-Chair of the Commission will facilitate the meeting. The ISFMP Director will provide the background on the development of the management program as well as a summary of the justification provided in the record for the management board's action. The ISFMP Director will also present the potential impacts of the appeal on other affected states. The appellant Commissioners will present their rationale for appealing the decision and provide a suggested solution. The Policy Board will then discuss the presentations and ask any necessary questions. The Policy Board will vote to determine if the management board's action was justified. A simple majority of the Policy Board is required to forward a recommendation to a management board for corrective action. If the Policy Board determines that the existing management program should be modified, it will issue a finding to that effect as well as any guidance regarding corrective action to the appropriate species management board. The referral may be worded to allow the management board flexibility in determining the details of the corrective action.

Upon receipt of the Policy Board's recommendation the management board will discuss the findings and make the necessary changes to address the appeal. The management board is obligated to make changes that respond to the findings of the Policy Board. A simple majority of the management board will be necessary to approve the changes.

(To address questions #1 and #2 above)
If the Management Board is unable to make the changes necessary to respond to the findings

of the Policy Board, the following options are available:

- The Management Board can request clarification from the Policy Board on the specifics of the findings. A meeting of the Policy Board will be scheduled to ensure the requested clarification is provided to the Management Board to take action at the Commissions next quarterly meeting.
- The Management Board can inform the Policy Board that it is unable to address the findings and the Policy Board will take action to approve changes that will address the appeal.
- The Management Board can request additional analyses from the technical committee or other technical support group (e.g. Management and Science Committee, Assessment Science Committee). A meeting of the appropriate technical group will be scheduled to ensure the requested information is provided to the Management Board to take action at the Commissions next quarterly meeting

Appeal Products and Policy Board Authority – Following the Policy Board meeting a summary of the meeting will be developed. This summary will include a detailed description of the findings and will be forwarded to the appropriate management board and Policy Board upon completion. If the Policy Board determines that changes to the management program are necessary, the summary may include guidance to the management board for corrective action. The report of the Policy Board will be presented to the management board for action at the next scheduled meeting.

Considerations to Prevent Abuse of the Appeals Process – The appeals process is intended to be used only in extraordinary situations and is in no way intended to provide a potential avenue to preempt the established board process. The initiation of an appeal will not delay the Commission process for finding a state out of compliance nor delay or impede the imposition of penalties for delayed compliance.

Limiting Impacts of Appeal Findings – If a state is successful in an appeal and the management program is altered, another state may be negatively impacted by the appeals decision. In order to prevent an appeals "chain reaction," the Policy Board's recommendation and the resulting management board's decision will be binding on all states. All states with an interest in the fishery will be obligated to implement the changes as approved by the management board. Upon completion of the appeals process, a state is not precluded from taking further action beyond the Commission process to seek relief.

If the Policy Board supports the appeal and determines that corrective action is warranted, the potential for management changes to negatively impact other states will be evaluated by the Policy Board and the species management board.

Appeals Process Timeline

1. Within **15 working days** of receipt of a complete appeal request the Commission Chair, Vice-Chair, and immediate past chair (or alternate) will determine if the state has an appeal which

meets the qualifying guidelines.

2. Upon a finding that the appeal meets the qualifying guidelines, the appeal will be included on the agenda of the ISFMP Policy Board meeting scheduled during the next ASMFC Meeting Week (provided an adequate time period is available for preparation of the necessary documentation).

3. Following the finding that an appeal meets the qualifying guidelines, Commission staff and the appellant commissioners will have a minimum of **15 working days** to prepare the necessary background documents.

4. The background documents will be distributed at least **15 days** prior to the Policy Board meeting.

A summary of the Policy Board meeting will be developed and distributed to all Commissioners within **15 working days** of the conclusion of the meeting.

(This timeline can remain unchanged or we can add details about the timing of the management board meeting(s), technical work, and potential additional policy board meeting.)

I know I have been in the minority in objecting to the NY appeal on the grounds that the corrective action the Policy Board imposed on the Management Board was not in the Draft Addendum, but I do think this is a serious issue. Under the ISFMP Charter – Procedures:
(ii) Upon completion of a draft FMP or amendment and its approval by the management board/section, the Commission shall again utilize the relevant states' established public review process to elicit public comment on the draft. The Commission shall ensure that a minimum of four public hearings are held, including at least one in each state that specifically requests a hearing.

By referring to the 'states' established public review process', I think the Charter implies that states will use their Administrative Procedures Act (APA) processes, the same processes used for actions such as regulation changes. Delaware is probably typical in that you can't change a document (or create a new management option) after public review unless you take the modified document or option back out for further public review. The selective 'mixing and matching' from the options that the Policy Board imposed on the SF, S, & BSB Management Board resulted in an option that was never presented to the public. I agree that we were on safer ground when doing what we did for CT under Option 1 as increasing the CT baseline by less than 5% could be considered implicit in the option, but that could have made this clearer to the public by a simple rewrite (example below). Adding NY to Draft Addendum Option 1 when NY was not mentioned in the Draft Addendum Option 1 was questionable at best. I don't recall the Board deliberations as to why NY wasn't included in Option 1, but the only option that would increase the NY baseline was the trigger option, which was not chosen. While it was a minor deviation from the Draft Addendum presented to the public to increase NY to 1%, I don't think doing so meets APA rules and could thus open the decision to challenges. The ASMFC process works well enough that appeals are rare and appeals that are remanded to the Management Board are rarer, but the process of having the Policy Board impose a corrective action that was not included in the Public Hearing Draft on a Management Board should not happen in the future. Could something like the following be added to the draft Appeals Policy text:

ISFMP Policy Board Meeting – Following the determination that an appeal has met the qualifying guidelines, a meeting of the Policy Board will be convened at a scheduled ASMFC meeting week. The agenda of this meeting will be set to allow sufficient time for all necessary presentations and discussions. The Chair of the Commission will serve as the facilitator of the meeting. If the Chair is unable to attend the meeting or would like to more fully participate in the deliberations, the Vice-Chair of the Commission will facilitate the meeting. The ISFMP Director will provide the background on the development of the management program as well as a summary of the justification provided in the record for the management board's action. The ISFMP Director will also present the potential impacts of the appeal on other affected states. The appellant Commissioners will present their rationale for appealing the decision and provide a suggested solution. The Policy Board will then discuss the presentations and ask any necessary questions. The Policy Board will vote to determine if the management board's action was justified. A simple majority of the Policy Board is required to forward a recommendation to a

management board for corrective action. If the Policy Board determines that the existing management program should be modified, it will issue a finding to that effect as well as any guidance regarding corrective action to the appropriate species management board. The referral may be worded to allow the management board flexibility in determining the details of the corrective action. If the Policy Board requires the Management Board to take specific corrective actions, those corrective actions must be limited to the management options as written in the Draft Amendment or Addendum reviewed by the public.

As to the wording of options that are in Public Hearing Drafts, perhaps we can make it clear to the public that an option includes the entire range of possible changes? Using Draft Addendum Option 1 as an example, instead of presenting the option as: **This option would increase Connecticut's 1% allocation of the coastal quota to 5%**, the text could be written as: **This option would increase Connecticut's allocation of the coastal quota from 1% to a percentage up to and including 5%**.

John H. Clark
Fisheries Section Administrator
Delaware Division of Fish and Wildlife
89 Kings Highway
Dover, DE 19901
(302)739-9914 (Fisheries) or 9108 (Direct)

Atlantic States Marine Fisheries Commission

Coastal Sharks Management Board

October 20, 2021
10:30 – 11:00 a.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Call to Order (*M. Bell*) 10:30 a.m.

2. Board Consent 10:30 a.m.
   - Approval of Agenda
   - Approval of Proceedings from February 2021

3. Public Comment 10:35 a.m.

4. Set 2022 Specifications (*K. Rootes-Murdy*) **Final Action** 10:45 a.m.

5. Elect Vice-Chair **Action** 10:55 a.m.

6. Other Business/Adjourn 11:00 a.m.

The meeting will be held via webinar, click here for details.

MEETING OVERVIEW

Coastal Sharks Management Board
Wednesday, October 20, 2021
10:30 – 11:00 a.m.
Webinar

Chair: Mel Bell (NC) Assumed Chairmanship: 05/21	Technical Committee Chair: Angel Willey (MD)	Law Enforcement Committee Representative: Greg Garner (SC)
Vice Chair: VACANT	Advisory Panel Chair: Vacant	Previous Board Meeting: February 3, 2021
Voting Members: MA, RI, CT, NY, NJ, DE, MD, VA, NC, SC, GA, FL, NMFS (13 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from February 2021

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Set 2022 Specifications (10:45-10:55 a.m.) Final Action

Background

- NOAA Fisheries published proposed 2022 Coastal Sharks Specifications in August. The proposed rule includes a season start date of January 1 and quotas for the Atlantic Region and No Regional Quota Management Groups for 2022 are unchanged from 2021 levels.
- The fishing season will start with a commercial retention limit of 55 for Large Coastal Sharks other than sandbar sharks per vessel per trip. The retention limit of Blacknose sharks will start at 8 sharks per vessel trip.

Presentations

- NOAA Fisheries Proposed Rule for 2022 Specifications by K. Rootes-Murdy

Board actions for consideration at this meeting

- Set the 2020 coastal shark specifications including commercial opening dates and commercial possession limit by management group.

5. Elect Vice-Chair

6. Other Business/Adjourn

Coastal Sharks

Activity level: Low

Committee Overlap Score: low (some overlap with South Atlantic Board species)

Committee Task List
• TC – August 1st: Annual compliance reports due

TC Members: Angel Willey (MD, Chair), Bryan Frazier (SC), Donna McDowell (GA), Brent Winner (FL), Greg Skomal (MA), Chris Scott (NY), Lee Paramore (NC), Conor McManus (RI), Greg Hinks (NJ), Jack Musick (VIMS), Matt Gates (CT), Tobey Curtis (NOAA), Michael Frisk (NY), Enric Cortes (NOAA), Scott Newlin (DE), Julie Neer (SAFMC), Kirby Rootes-Murdy (ASMFC)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

COASTAL SHARKS MANAGEMENT BOARD

Webinar
February 3, 2021

These minutes are draft and subject to approval by the Coastal Sharks Management Board.
The Board will review the minutes during its next meeting.

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Draft Proceedings of the Coastal Sharks Management Board Webinar
February 2021

ATTENDANCE

Board Members

Dan McKiernan, MA (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Jason McNamee, RI (AA)
David Borden, RI (GA)
Justin Davis, CT (AA)
Rob LaFrance, CT, proxy for B. Hyatt (GA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
John McMurray, NY, proxy for Sen. Kaminsky (LA)
Heather Corbett, NJ, proxy for J. Cimino (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Houghtaling (LA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Mike Luisi, MD, proxy for B. Anderson (AA)
David Sikorski, MD, proxy for Del. Stein (LA)
Lewis Gillingham, VA, proxy for S. Bowman (AA)
Chris Batsavage, NC, proxy for J. Batherson (AA)
Jerry Mannen, NC (GA)
Bill Gorham, NC, proxy for Rep. Steinberg (LA)
Mel Bell, SC, proxy for P. Maier (AA)
Malcolm Rhodes, SC (GA)
Chris McDonough, SC, proxy for Sen. Cromer (LA)
Doug Haymans, GA (AA)
Spud Woodward, GA (GA)
Erika Burgess, FL, proxy for J. McCawley (AA)
Rep. Thad Altman, FL (LA)
Karyl Brewster-Geisz, NMFS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Angel Willey, Technical Committee Chair

Staff

Bob Beal
Toni Kerns
Kristen Anstead
Maya Drzewicki
Emilie Franke
Sarah Hylton
Chris Jacobs
Jeff Kipp
Savannah Lewis
Kirby Rootes-Murdy
Sarah Murray
Joe Myers
Marisa Powell
Julie Simpson
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Karen Abrams, NOAA
Bill Anderson, MD (AA)
Pat Augustine, Coram, NY
David Behringer, NCDENR
Rick Bellavance, N. Kingston, RI
Alan Bianchi, NC DENR
Rob Rourdon, MD DNR
Jeff Brust, NJ DEP
Sam Calagione, Brown Univ.
Patrick Cassidy
Mike Celestino, NJ DEP
Joe Cimino, NJ (AA)
Richard Cody, NOAA
Allison Colden, CBF
Jessica Daher, NJ DEP
Bob Danielson
John DePersenaire, RFA
Renee DiPippo

Guests (continued)

Chris Dollar, CBF
Ray Draper, King George, VA
Guy DuBeck, NOAA
Ben Duffin, NOAA
Julie Evans
Lynn Fegley, MD DNR
Cynthia Ferrio, NOAA
James Fletcher, Wanchese Fish Co
Kristin Foss, FL FWC
Alexa Galvan, VMRC
Pat Geer, VMRC
Jim Gilmore, NY (AA)
Angela Giuliano, MD DNR
Kurt Gottschall, CT DMF
Jon Hare, NOAA
Hannah Hart, FL FWS
Jay Hermsen, NOAA
Greg Hinks, NJ DEP
Carol Hoffman, NYS DEC
Asm. Eric Houghtaling, NJ (LA)
Rachel Howland, NC DENR
Bill Hyatt, CT (GA)
Dylan James
John James
Adam Kenyon, VMRC
Britt Kostraba
Chip Lynch, NOAA
John Maniscalco, NYS DEC
Cami McCandless, NOAA
Genine McClair, MD DNR
Kim McKown, NYS DEC
Conor McManus, RI DEM
Pat Moran, MA Env. Police
Jerry Morgan, Madison, CT
Clinton Morgeson, VA DWR
Allison Murphy, NOAA
Kennedy Neill
Derek Orner, NOAA
Cheri Patterson, NH (AA)
Kelly Place, Williamsburg, VA
Nick Popoff, FL FWS
Jill Ramsey, VMRC
Adam Rettig, NOAA
Mark Sampson, Ocean City, MD
Sara Saunders, UFL
CJ Schlick, NC DENR
Mike Schmidtke, SAFMC
Tara Scott, NOAA
Chris Scott, NYS DEC
Andrew Sinchuk, NYS DEC
Thomas Sminkey, NOAA
Michael Thompson, NC DENR
Beth Versak, MD DNR
Craig Weedon, MD DNR
Ritchie White, NH (GA)
Kerry Whittaker, MMA
Meredith Whitten, NC DENR
Charles Witek, W. Babylon, NY
Chris Wright, NOAA
Sarah York, NOAA
Rene Zobel, NH F & G

The Coastal Sharks Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Wednesday, February 3, 2021 and was called to order at 10:15 a.m. by Chair Chris Batsavage.

CALL TO ORDER

CHAIR CHRIS BATSAVAGE: Welcome everyone to the Coastal Sharks Management Board meeting. My name is Chris Batsavage; I'm the Administrative Proxy from North Carolina. I'll be Chairing the meeting.

APPROVAL OF AGENDA

Start off by the Board Consent for Approval of the Agenda. Are there any changes requested by folks of the Management Board for the agenda?

MS. TONI KERNS: No hands are raised.

CHAIR BATSAVAGE: With that we'll consider the agenda approved.

APPROVAL OF PROCEEDINGS

CHAIR BATSAVAGE: Next is Approval of Proceedings from the February, 2020 Management Board meeting. Are there any changes, deletions, et cetera from Board members for the proceedings?

MS. KERNS: No hands are raised.

CHAIR BATSAVAGE: Then we'll also consider those approved by consent.

PUBLIC COMMENT

CHAIR BATSAVAGE: Next up is Public Comment. This is an opportunity for the public to provide comments regarding coastal sharks, or anything that isn't on the agenda. Do we have any members of the public lined up that would like to comment at this time?

MS. KERNS: No hands are raised at this time.

CHAIR BATSAVAGE: I can move into the agenda items.

REVIEW OF THE NOAA FISHERIES COOPERATIVE SHARK TAGGING PROGRAM

CHAIR BATSAVAGE: The first one is Review of the NOAA Fisheries Cooperative Shark Tagging Program**,** and Cami McCandless from the Northeast Fisheries Science Center will be giving us a presentation on that, so Cami, it's all yours whenever you're ready to go.

DR. CAMI McCANDLESS: All right, I'm going to see if I'm showing my screen right. Can you guys hear me?

CHAIR BATSAVAGE: Yes.

DR. McCANDLESS: Great, can you see my screen?

CHAIR BATSAVAGE: We do.

DR. McCANDLESS: As mentioned, I'm Cami, the one without the beard in the photo. Before I review the Cooperative Shark Tagging Program, I'm going to give you a little background on the Program I lead, Apex Predators Program, which manages the tagging program, and is located at the NOAA Field Lab in Narragansett, Rhode Island.

Our work focuses on setting the life history of federally managed species, using a variety of platforms, in order to provide management with the information needed to help successfully manage these species. Platforms include opportunistic sampling at recreational sportfishing tournaments, like seen in the first picture here, where you can see Lisa Natanson, just recently retired, dissecting a shortfin mako at the Star Island Shark Tournament out of Montauk, New York.

We obtained samples from commercial incidental catch, and by going out on commercial fishing trips as well. We also conduct fishery independent surveys in the inshore and coastal waters along the Atlantic. The two pictures here are of a juvenile sandbar shark, and an adult sand tiger, that were

tagged and released during our longline survey in Delaware Bay.

Last but not least, our Cooperative Shark Tagging Program. This year, unfortunately, due to the virus, tournaments, other fishery dependent sampling, and our surveys were canceled. But the ocean was still open. Commercial fishers were able to get out there and make a living. Recreational anglers were still able to get out on the water, and often had more time to do so.

Boats continued to participate in our tagging program during the pandemic. Our summer tag distribution to commercial and recreational fishers was up 7 percent from last year, and our recapture reporting rate was up 25 percent from last year, based on online mail reporting. Our tagging program is a collaborative effort between recreational anglers, the commercial fishing industry, and NOAA Fisheries, to learn more about shark life history.

Since launching in 1962, program participants throughout the North Atlantic have tagged more than 300,000 sharks, over 50 species, and there have been more than 18,000 recaptures of these sharks, providing movement data on over 30 species. Much of this data was published recently, in 2019, and a shark tagging Atlas through Marine Fisheries Review.

Our tagging program is the longest running tagging program in the world, and NOAA Fisheries oldest citizen science program. We primarily use two tag types, both low tech, conventional tags that have to be recaptured and reported on how to obtain this metadata. We have Rototag, you can see up here at the top, the fin tag hooked into the first dorsal.

It's the same kind of tag that is used on cattle ears for identification, and we primarily use these tags during our research surveys on small sharks like this spiny dogfish seen here. Those that you noticed in previously slides are juveniles of larger shark species, like the sandbar shark in the previous slide.

Second tag type is the M-tag, which is seen here. It is named after Frank Mather, who originally designed this tag type for use on bluefin tuna. This tag is primarily used on sharks 3-feet and larger. It has the steel dart tip for penetrating the muscle and locking in place, and it also has a capsule which contains recapture instructions written in five languages; English, Spanish, French, Japanese, and Norwegian. You can see the placement for insertion of the tag at the base of the first dorsal fin here on this blue shark. These are the tags that our participants use in the program. Participation in the program does require following all local, state, and federal regulations in the areas fished.

The original objective of this program was to document the distribution and movements of Atlantic sharks, while promoting conservation, protection, release. However, given the long-term continuous time series, this program has not only been instrumental in shaping what we know about shark migration and distribution.

For instance, our data was the basis for defining essential fish habitat for managed shark species in the Atlantic, and is used to update these designations regularly. But it has also been used to define stock structure, document longevity, and validate age and growth in several species; all information essential for stock assessments and effective management.

Our programs offered over 40 peer reviewed publications using our tagging program data over the years, and there are many more published studies using our tagging data that we did not participate in as co-authors, but we supported the work, and we've conducted countless analyses of our tagging data in the gray literature and in working papers for stock assessments and status updates. Now, we have over 50 years of data.

We're seeing not only a growing knowledge base for many species, but also seeing to the distribution over time for some species. Our most tagged shark

is the blue shark. It accounts for 42 percent of all fish tagged, and has a 7 percent recapture rate. Blues, as many of you know are a common pelagic species in the northeast, and since they honestly don't taste that great, they are often tagged and released when caught.

The longest distance traveled was a blue shark tag off of Long Island right around here, and recaptured way down here about 300 miles northwest of Ascension Island off the African Coast, 4,000 nautical miles away. As you can see from the bottom left here, we have a lot of transboundary movements in the North Atlantic, and over here on the right is pulled from one of Apex's publications in 2008, demonstrating the transboundary movements throughout the North Atlantic.

This analysis provided the evidence needed to assess blue sharks as a unique stock in the north Atlantic Ocean. Mark recapture there for both the blacktip and the bonnethead have provided evidence for separate stocks in the Gulf of Mexico and Atlantic, with over 13,000 blacktip and 5,000 bonnethead sharks tagged. The recapture rates of 4 and 5 percent respectively.

There has been no documenting exchanged between regions for these species. The blacktip shark is now assessed as separate stocks, and the bonnethead will be assessed separately in the future. Mark recapture for the sandbar shark is over 43,000 tags and a 5 percent recapture rate, which clearly shows exchange between the Gulf and Atlantic waters off the east coast of the U.S. This species is assessed as a single stock. Recaptures also provide a direct measure of minimum life span. Sandbar sharks are estimated to live longer than 30 years, based on age and growth studies. The longest time between the tag and recapture of a fish is from our database, and it's plus 28 years. This was a sandbar shark that was tagged as a juvenile along the Virginia eastern shore, and recaptured off of Florida. Timeframes and fish measurements between tag and recapture events, can be used to validate estimated growth rates as well as age.

Like the blue shark, tiger sharks are not prized for the meat, but they are an impressive species, sometimes retained as trophies. They are not as common as the blues, and they also have pretty specialized teeth that can easily cut the line where the fish could be tagged. But we do have over 11,000 tagged, also with a 7 percent recapture rate, like seen in the blue sharks.

The tiger shark actually provides a good example of how decades of data can provide new information on species movements and distribution, with each decade if not sooner, providing updates for essential fish habitat designations. It was actually over three decades before we had a tiger shark crossing the Mid-Atlantic Ridge in 1995.

Before this time, it was not known that tiger sharks made trans-Atlantic movements. This was a tiger shark tagged as a young of the year off Saint Augustine, Florida, and recaptured two years later off Guinea-Bissau, South Africa, off the African Coast, traveling over 3,600 nautical miles, which is still a distance record today for this species, as far as we know.

One of the benefits of these low-tech tags is the lower cost, giving us the ability to put out more tags. Now with the time I have left, I want to turn to looking at how our data in combination with other data is being used, you know more bang for your buck. It's always good to work together.

For the common thresher shark, which is also retained as catch, due to the high-quality meat. It's important to use multiple resources if they're not often tagged and released. We coauthored a paper that just came out in Fishery Bulletin and you've received, that combines our tagging data with other fishery dependent data, to look at thresher shark, seasonal distributions towards updating essential fish habitat.

This figure shows the combined thresher data from 1964 to 2019, plotted in half degree squares on a

large scale, and overlaid over average sea surface temperature, averaged across 2009 to 2016. The inset in here is the Gulf of Mexico, and here in the summer, because it is so hot in the summer, apparently.

We do have two grid squares with data, even though it is hard to see there. There are two grid squares that contain thresher data from our data sources used for the publication. Additionally, we are looking at our tagging data to vet changes over time, and not just changes to our knowledge base.

Here you're looking at some preliminary figures displaying the percent catch for tiger shark tag and recapture data by decade and latitude, split out by the warmer and colder months. Basically, what you're seeing is that in the colder months here, there is no major shift in the Florida distribution of tagging events across decades. It remains off northern Florida/Georgia area. But for the warmer months the core does shift in the final decade further north, off of North Carolina. This graph shows there is a significant difference between the four means in the last two decades. This slide shows preliminary figures comparing our tag/recapture data to satellite telemetry data. This is where, you know Neil Hammerschlag has done on core areas based on satellite kernel density estimation of shark positions for three-year time periods starting last decade, over the same breakdown of the months into cold and warm periods.

That was done with the tagging data. As seen before during the cold months, the core area remains low on the coast off of Florida, further south than what our tagging distribution data showed, but off the Florida coast. But during the warmer months you can see that there is the core distribution down here.

We see a core area up here off of North Carolina, during the Mid time period, and all the way up off of southern New England during the final time period, although they did all retain that low report area across the time series. Here, this figure displays the habitat suitability areas model for tiger sharks, based on sea surface temperature data.

This time, the warm months are on the bottom, just to confuse you, not intentional. But you can see across the timeframe for the warmer months the suitable habitat has come further north in recent years, with ocean warming in the region as well. It's likely, as with other species, that temperature is driving some of the changes we are seeing.

But it is important to remember that abundance likely also plays a role. As you can see, back during the eighties, before populations started to decline due to fishing pressure, in the late eighties and early nineties there was a smaller peak in the tagging distribution data in the northern latitudes off southern New England, as was seen in the later years of the telemetry data.

Our Atlantic coastal longline survey also shows an increasing trend in relative abundance, since the implementation of the shark FMP in 1993 across all size classes, but driven by juveniles. This increased abundance, as well as increased suitable habitat, could allow for the species to spread out to avoid too much intraspecific competition for resources.

Another example of this is the decline we have seen in our tagging and survey catch records for smooth dogfish in Delaware Bay during the summer months. At the same time, we're seeing increases in juvenile sandbar shark tagging records in the Bay. We do have a recruitment index from our surveys for juvenile sandbar sharks in the Bay for our assessments, it's highly variable though. Our Atlantic coastal survey here is what's displayed, shows an increasing trend across all size classes, juveniles, matures.

But it is also driven by juveniles here, you can see. Our temperature data from our survey is sporadic, due to equipment failure. But we were able to look at the Delaware Division of Fish and Wildlife Trawl Survey bottom temperature data, to look for trends

to see if warming temperatures are potentially driving smooth dogfish out of the Bay earlier.

We did a correlation analysis using time series of monthly summer trawl survey temperature data, and from our Delaware Bay Longline Survey using two size classes of juvenile sandbar sharks and smooth dogfish, to look for significant relationships. There was only one significant relationship with smooth dogfish, and that was a negative relationship with larger juvenile sandbar sharks. This could mean that there is some predation pressure, but more likely that there is some habitat for fishing, or the sandbars are beating the smooth dogfish to the hooks. During this preliminary analysis, we did not include sand tiger trends in the Bay, which our survey also shows are increasing, and our catch depredation shows, because they leave those distinctive bite marks, and also come up on the fish moving again.

They do eat at least hooked large smooth dogfish, and occasionally small ones in the Bay. Last, but certainly not least, I wanted to touch on post release survivorship, concentrating on two species just mentioned that I'm familiar with from my own work, and are commonly encountered along the coast. Both the sandbar and the sand tiger are prohibited species. The sand tiger primarily due to their reproductive characteristics, but also in part due to past declines and uncertainty, and the sandbar, which is currently rebuilding from an overfished status.

Since both species are showing positive trends, encounter rates are increasing, especially with juveniles, as their increases are the first sign of the recovery process, before they recruit to the inshore population. We do not promote targeting prohibited species, but these species are often encountered, regardless of the target. Safe handling and release practices are needed to ensure fish survival, whether tagging or not.

This study here by Abbey Spargo, her Masters research on sandbar shark post-release survivorship from Rod and Reel captures. We were directly involved in the study. This was a captive study of juveniles from Delaware Bay, using blood analyses to determine stress and recovery.

The sharks were tagged and acclimated to the tank, and then they were hooked and fought on the line until exhaustion, up to 20 minutes, and blood was analyzed at time intervals, to determine recovery. Physiological recovery was attained within 6 to 10 hours, and long-term survivorship was also noted with conventional tag recaptures for up to a year after release.

I can attest, this is a healthy, hearty species. It's got a firm, muscular body, we've had many recaptures ourselves during our longline and gillnet surveys that were tagged during these surveys, and released in poor condition, but were caught months and years later. We were not directly involved in Jeff Kneebone's research on juvenile sand tiger sharks from PKD Bay in Massachusetts. I believe that's Plymouth Kingston Duxbury Bay. But similar methods were used to Abbey's study, and we did provide conventional tags for his study.

Sharks were fought for three minutes, based on recreational catches in the area, and recovery time was between 12 to 24 hours. Long term survivorship was noted from a conventional tag/recapture two years after the study, and additionally through acoustic monitoring of sharks that were fought and released, but not blood sampled.

Although, gut hooked sharks, which is common for this species, as they swallow their prey whole likely lead to delay mortality for some fish. From our longlining experience and gill netting, this species is certainly better conditioned than the sandbar to be restrained in the water, immobile on gear, or alongside of a boat for longer periods of time, without morbid consequences. It's due to its natural tendency to be able to hover in the water column, pump water over its gills. But unlike the sandbar, the sand tiger's bottom is not firm, and when removed from the water is more prone to injury, especially larger sizes. All this information

reinforces that volunteers within our program must follow the guidelines we provide, for safe release practices that minimize handling.

They need to leave that shark in the water, and remove the hook when possible, preferably using a de-hooker. Circle hooks are best, as they help to prevent gut hooking, although not always, especially in sand tigers. But it does reduce it. They should absolutely not drag the shark on dry sand or on a hot boat deck. They need to treat the shark gently, avoiding gills, don't sit on them or hold the jaws open for pictures.

Prohibited species need to be released immediately, and if permitted to tag, they must do so within the time it would take to release the shark from the gear. I hope everybody would be willing to report suspected and documented violations to me, as we cannot educate our taggers if we are not made aware of the violations for our guidelines, or federal and state regulations.

When we contact our taggers about incidents, most taggers want to do the right thing, and correct their behavior. Repeat offenders will not be issued anymore tags, given a citation. But we need to be told that citations were given. We appreciate the data, which goes to good use, but we don't want it at the expense of a shark's life.

In closing, when this program started it is reasonable to say there was more incorrect information back in the sixties than correct information about many shark species. But I hope this presentation has shown that the Cooperative Shark Tagging Program does make a difference to science management and conservation, and in a bottom-up way that emerges from the participants themselves.

In an e-mail exchange with a charterboat captain participant this summer, I think he put it nicely when he emphasized that this program inspires taggers to improve their conservation practices, spread the word, and it promotes catch and release, and it adds an element of collaboration, and set regulations for achieving common goals. With that I end, and I'm not sure what the timing is, but if there is time for questions, I would be happy to take them. If not, please e-mail me at cami.mccandless@NOAA.gov thanks.

CHAIR BATSAVAGE: Thank you, Cami, for the very interesting presentation, a lot of good information there. I think we have a few minutes for questions from Board members, or comments on this. If we don't get to you, I definitely encourage you to e-mail Cami with any questions or request for more information. I'll see if there are any questions from Board members at this time.

MS. KERNS: You have three Board members, Mel Bell, John McMurray, and Maureen Davidson.

CHAIR BATSAVAGE: Okay, Mel Bell.

MR. MEL BELL: Thanks Cami, great presentation. Just one comment really quickly. We're big supporters of the program down here in South Carolina, and I do appreciate you emphasizing the handling practices and all of that. One thing to keep in mind, in terms of compliance with state requirements, and I don't know that we're the only state.

But we do have a state law which requires that anyone tagging fish in state waters has to have a permit from us, it's a free permit, but they have to have that state permit. Just having the federal permit, or participating in your program, does not automatically allow them to do that in state waters. To the degree that you can make that clear to folks.

You know you mentioned ensuring that they comply with state law and all. But I don't know that that is unique to us, but it is certainly something that has been in place here for a while. We would appreciate it, because sometimes we get folks that don't know that, and they might find themselves a little crossway with law enforcement. Thanks so much for the program, and all you guys do as well.

DR. McCANDLESS: Thank you, I appreciate that comment. I am aware that South Carolina, and I believe Florida as well require a tagging permit. We do tell our taggers when we speak to them and in e-mails when they sign up, that they must check state regulations, and anywhere they're tagging locally for them to review the regulations.

We were not as forceful about this until more recent years, so there may be some people that have been tagging for years that are not aware to remember to go back and check. Things have changed. We've been sending out little notices with tags, as we send them out more tags as they request them, to remind them of this, so thank you.

CHAIR BATSAVAGE: Next up is John McMurray.

MS. KERNS: You have Maureen and then John McMurray.

CHAIR BATSAVAGE: Was it John or Maureen? Whoever wants to go first. I thought you said, John, but either way.

MS. MAUREEN DAVIDSON: John.

MR. JOHN G. McMURRAY: Okay, I'm off mute now. The organizer had me on mute, sorry about that. Cami, thank you for that presentation, it was interesting, particularly the part about post release survival. I'm wondering if there are any parameters on who you issue tags to, or any sort of qualifications that that person must have. I'm asking this, because you see on social media somewhat frequently, photos of guys who catch sandbars, sand tigers, and dusky's from the beach.

They drag them up on the beach, they take photos, and then justify it by saying they are putting tags in them. I'll let you speak directly to this, but I'm pretty sure that is not legal in New York, and for good reason, because it is probably quite a bit of discard mortality. I'm wondering if there is consideration of where they're fishing from, and what their plan is?

DR. McCANDLESS: Anybody is welcome to volunteer. We do not restrict who does volunteer. I do ask, when I have the opportunity, if they are fishing from shore or from the water. We do emphasize that they have to follow guidelines by the state, and they must check those guidelines beforehand.

In some cases, more recently, people when they register, the state they register from does not necessarily mean that sort of fishing. But if I find out that they are fishing in areas where stricter regulations are in place, I do tell them to check with those states before I give them any tags, to see if they can even tag where they want to tag.

But as I said, we don't refuse volunteers. We don't have strict regulations or an official training for them. We do provide them with our guidelines. When people do inform me of things like this, I do call the taggers, if I do have their information. If it's obvious from, if someone sends me to a website or something, I do call them up and talk to them about the issues.

They are nearly always apologetic, and I do see better behavior, but I have to be made aware of these things. Sometimes these things go around and they don't get to me, so I don't know. Then also, we've got to keep in mind with some things that are posted online, a snapshot in time is a picture, and you can't always tell what's going on.

I was alerted to one occasion where I contacted the tagger. They actually sent me a video of the event, and it was actually not a bad interaction. It looks like they were posing with a shark, but they were actually, through the video you could see they just glanced up at the time the picture was taken. The shark was actually in the water surf area.

You've got to keep that in mind when you look at these things online, but we do want to be made aware. Let me know, I don't mind if I get flooded. I want to nip this in the bud the best I can. We deal

with it annually, more so with the increase in shore-based anglers. But we do have some really good responsible taggers in the program, the majority of them are.

MR. McMURRAY: Okay thank you. That is good to know. Just to give you a heads-up though. It is becoming somewhat pathetic, in the fact if folks see it on social media and they think they could do it. But I'll have Maureen speak a little more to that.

CHAIR BATSAVAGE: Maureen, do you have a quick comment based on what John just mentioned? If so that's great, then we're going to have to probably end this. If any other Board members have questions or comments, definitely reach out to Cami. I think a lot of us have these same questions John has brought up. Maureen, to this point.

MS. MAUREEN DAVIDSON: Cami, thank you very much for your presentation. You're collecting really valuable information through the Cooperative Shark Tagging Program. It's so good to see how the information is being used. Yes, speaking from the New York side. We do seem to have some shoreside anglers who are targeting some of the prohibited species of shark, and they don't seem to be handling them responsibly.

Obviously, we've had this really big concern as to how we can sort of control their behavior. I'm very happy to know that you're willing to accept reports from us, if we're able to document people who are mishandling the shark, or if they're sort of showboating that they caught a shark, and they've got to take their picture and put it on Facebook.

Also, New York State is going to think about what other actions we might be able to take to see if we can't sort of, if not control who gets the tag, perhaps to see if we can control their behavior. Our concern is that some anglers are not handling the sharks that they catch from the shore responsibly. But I think we'll be in touch with you, and we'll let you know what sort of steps New York state will be taking, to sort of help remedy the issue. But thank you very much for your presentation.

DR. McCANDLESS: You're welcome, and thank you. I look forward to working with you.

CHAIR BATSAVAGE: Okay, thank you for that, Maureen and Cami. Let's go ahead and move on to the next agenda item. I know there were a couple members of the public with their hands up. If we have time at the end, maybe we can go to them really quickly. But I do want to make sure that we get done with these next couple of agenda items to stay on schedule. I appreciate everyone's understanding of that.

UPDATE FROM NOAA FISHERIES ON HIGHLY MIGRATORY SPECIES MANAGEMENT

CHAIR BATSAVAGE: Next up will be an update from NOAA Fisheries on Highly Migratory Species Management, and Karyl Brewster-Geisz will be giving us that presentation, so Karyl, whenever you're ready.

MS. KARYL BREWSTER-GEISZ: Hello, this is Karyl. I will try to keep this short. I don't have as many slides or as many pretty pictures as Cami, so I apologize for that. It has been a long time since we've given the Board an update about what we've been doing, so that is what I'm here today to do.

I'm going to start with Draft Amendment 14. This is an amendment that we released for public comment in September of last year. The comment period closed December 31, so we are currently reviewing all the comments we received. In short, what we're trying to do with Amendment 14 is reestablish a new framework for setting up shark quotas.

Then this new framework would be consistent with the revised National Standard 1 Guidelines that the Agency released a few years ago. In doing this new framework, we're also trying to increase our management flexibility, so we can react to any

changes, both in the fishery itself and in the underlying science.

There are two things I want to make sure to point out. Amendment 14 does not change anything, in regard to the Annual Catch Limit or ACL for prohibited shark species. That remains 0. As long as the species is prohibited, that ACL will be 0. The other thing Amendment 14 does not do, is it does not change the quotas automatically.

Once we establish a framework Amendment 14, we will follow up with a future rule, to then go through and change all the quotas, based on what is finalized in Amendment 14. As I mentioned before, we did go out with the proposed Draft Amendment last year, and this is just a quick slide showing what our preferred options were. There is a lot more detail within Draft 14, and given the time I'm not going to go through a lot of the detail here. But I am going to point out some of the major changes. One of those is Topic C, the annual catch limit development options. Under Option C2, we would change to actively managing both the commercial and the recreational sectors. This is a change.

Currently right now we only actively manage the commercial sector, so we would start actively managing the recreational sector as well. The other big topic here is Option C5, where we are proposing to remove quota linkages in the commercial fishery. If you remember, in the Atlantic the large Coastal Sharks and the Hammerhead Management Groups are linked, so if one quota is met, both management groups are shut down together.

Under Option C5, which is our preferred option, if hammerhead shark quota was reached, large coastal would remain open, and vice versa. One of the other major things that I see would be Option E3. Currently we rely on the stock assessments to help us determine the overfishing status. If the stock assessment says the stock is overfished, or overfishing is occurring, we keep that overfishing status until the next stock assessment, which could be 10, 15 years in the making.

Under Option E3, we would use a three-year average of fishing mortality, and change that overfishing status if we are under the overfishing limit. We would no longer wait for a stock assessment; we would use the data we have available. There is a lot more, obviously that we're working on in Draft Amendment 14, so I'm happy to answer any questions after the fact.

This is a pretty picture of basically all we're doing in Draft Amendment 14 and the overarching framework. We would have the overfishing limit, we would establish an ABC Control Rule, which is under the preferred alternative. We're looking at a tiered approach. Using management uncertainty, we would reduce the acceptable biological catch to create the annual catch limit.

We would split that up between the commercial and the recreational sector. From the commercial sector we would remove any commercial dead discards that we are estimating, in order to derive commercial quota. It is a change from our current framework. Of course, any good management relies on our stock assessments.

This past year we had three stock assessments that we are still reviewing, so none of this is final yet. The Atlantic blacktip shark was the first assessment since 2006. Preliminary results show the stock is healthy. Porbeagle shark was assessed through ICCAT. Preliminary results are that it remains overfished, but overfishing is not occurring. Then lemon shark was a student paper that was published in a peer reviewed journal.

We're reviewing whether or not we can use those results, and that indicates lemon shark is also healthy. We're working on finalizing Amendment 14. This includes reviewing all the comments we received, along with working with the Southeast Fisheries Science Center on finalizing what that tiered ABC Control Rule would look like.

We're hoping to release final Amendment 14 later this year. As I mentioned before, once that is final, we will be doing a follow-on rulemaking that would implement that framework across all of our shark species and management groups. It would include all the recent stock assessments, so those that I just mentioned, along with say the sandbar shark assessment, which was finalized a few years ago but not yet, it didn't result yet in any changes, because we've been waiting on Amendment 14. Lastly, really quick, we have been working on a comprehensive review of the entire shark fishery.

Looking at the commercial fishery, looking at the recreational fishery, looking at bycatch across, and other fisheries that interact with sharks, and trying to figure out what is the next step we should be taking, in terms of the shark fishery? As you all know, we have not been landing the commercial quota in years, so why is that, and what can we do to actually improve that situation?

We're also looking at depredation, so shark depredation which is sharks eating other target species, has been an increasing hot topic. We regularly receive e-mails or phone calls from a number of constituents throughout the region, including the South Atlantic Council and the Gulf of Mexico Fishery Management Council, about their concerns for increasing shark depredation. It seems to happen in all fisheries, Gulf of Mexico and the Atlantic up and down the coast, and is impacting a lot of other fisheries, such as snapper grouper, for example.

There is limited research on the scope and extent of this issue, so we have identified it as a management-based research priority in our management research needs and priority document, and we are looking to see what we can do about it in our comprehensive Shark Fishery Review or SHARE. That is all I have to share with you, at least today. I'm happy to take any questions if there is time, otherwise feel free to send me an e-mail or give me a call.

CHAIR BATSAVAGE: Thanks, Karyl, we appreciate the update. I guess we have time for maybe one question from the Board if they have one. If not, I definitely encourage you to contact Karyl. I suspect we'll be hearing more about these activities and updates as they develop. Toni, are there any Board member with a question?

MS. KERNS: Chris, there are no Board members, no sorry about that, Lewis Gillingham just raised his hand.

CHAIR BATSAVAGE: Okay Lewis, go ahead.

MR. LEWIS GILLINGHAM: Thanks, Chris. Karyl, I always enjoy your presentations. To distill it down, what is the logic behind eliminating the linkages for the commercial quotas? I think it seems to work well. I think we've got other issues with marketing that has made the commercial quota unlikely to get caught, but thank you.

MS. BREWSTER-GEISZ: I think the primary reason for removing it is our stock assessments are getting more and more species specific. There comes a point when we have several stock assessments, and do you start opening and closing and linking a whole bunch of stocks as you are removing them from being in management groups?

We are trying to keep it simpler, if you would, and as we have a new stock assessment, move toward more species-specific management, which means the linkages could get really complicated. Instead, we will be looking at the stock assessment and pulling out any commercial discards that we are estimating could happen in that fishery. It could result in smaller commercial quotas, in order to account for any of those commercial discards that might happen, if other species remain open.

REVIEW AND POPULATE ADVISORY PANEL MEMBERSHIP

CHAIR BATSAVAGE: Thanks, Karyl for that, and thank you for the question, Lewis. Just in the interest of time, we'll move on to the next agenda item, and that is to Review and Populate Advisory

Panel Membership. For that I'll turn it over to Tina Berger, and Tina, whenever you're ready.

MS. KERNS: Chris, I don't know if Tina had to step away. I just got an e-mail. Kirby, do you have that list that you could just go to?

MR. ROOTES-MURDY: I can pull up, or we can post if need be the memo from the meeting materials, if that's helpful.

MS. KERNS: Yes.

MR. ROOTES-MURDY: Just give me a second and we'll get there.

MS. KERNS: I have it, Kirby.

MR. ROOTES-MURDY: Okay, if you want to pull it up.

MS. KERNS: Yes, we have Rick Bellavance was nominated to the Coastal Sharks Advisory Panel. Rick is a commercial rod and reel fisherman, a charter and party boat captain, and he would be from the state of Rhode Island, and he is being nominated to this AP.

CHAIR BATSAVAGE: Thank you, Toni, any questions or would any Board member like to make a motion?

MS. KERNS: You have Eric Reid.

CHAIR BATSAVAGE: Eric.

MR. ERIC REID: I would move to appoint Rick Bellavance to the Coastal Shark AP.

CHAIR BATSAVAGE: Thanks, Eric, do we have a second?

MS. KERNS: You have Roy Miller.

CHAIR BATSAVAGE: Okay, thank you, Roy. Any discussion on the motion? The motion is to move to appoint Rick Bellavance to the Coastal Sharks Advisory Panel. Is there any opposition to the motion?

MS. KERNS: I see no hands up in opposition.

CHAIR BATSAVAGE: Great! Then it's approved by unanimous consent. Thank you, and congratulations, Rick. Next, last on the agenda it there any other business that Board members have for coastal sharks?

MS. KERNS: I don't see any Board members with their hands up. You still do have that one member of the public.

CHAIR BATSAVAGE: Okay, and Toni, this is a time check. I know we're a little bit over. Do we have time for a quick comment from the public?

MS. KERNS: I think if Julie can limit her comment to one minute that would be great, just so folks can have a quick biological break between meetings.

CHAIR BATSAVAGE: Good, great, so Julie, please feel free to provide your comments or questions to the Board, thanks.

CAPTAIN JULIE EVANS: Thank you, Mr. Chair, for allowing me to speak. I just want to say that, as a person who has been in the commercial and charterboat industry here in Montauk, we do so appreciate the shark research that Cami has done here. It's a very important economic driver to our little coastal, crazy town.

The research that has gone into it and the participants have always enjoyed getting their information back when they tagged shark on the daybreak back in the day. I just want to reinforce that not only is it a great research tool, and we so appreciate it, but it's also very much a part of our economy here. Thank you.

CHAIR BATSAVAGE: Thank you, Julie, appreciate those comments.

ADJOURNMENT

CHAIR BATSAVAGE: I think unless there is any opposition to it, I think we can go ahead and adjourn the meeting. With that we're adjourned, thank you, everyone.

(Whereupon the meeting convened at 11:05 a.m. on Wednesday February 3, 2021.)

§ 74.702 [Amended]

■ 9. Amend § 74.702 by removing the second sentence of paragraph (a)(1).

§ 74.786 [Amended]

■ 10. Amend § 74.786 by removing the second sentence of paragraph (b). Amend § 74.1201 by revising paragraph (j) to read as follows:

§ 74.1201 Definitions.

* * * * *

(j) *AM Fill-in area.* The area within the greater of the 2 mV/m daytime contour of the AM radio broadcast station being rebroadcast or a 25–mile (40 km) radius centered at the AM transmitter site.

* * * * *

§ 74.1202 [Amended]

■ 11. Amend § 74.1202 by removing paragraph (b)(3).

■ 12. Amend § 74.1235 by revising paragraph (d) to read as follows:

§ 74.1235 Power limitations and antenna systems.

* * * * *

(d) Applications for FM translator stations located within 320 km of the Canadian border will not be accepted if they specify more than 250 watts effective radiated power in any direction or have a 34 dBu interference contour that exceeds 60 km. Applications for FM translator stations located within 320 kilometers of the Mexican border must adhere to the following provisions.

(1) Translator stations located within 125 kilometers of the Mexican border may operate with a maximum ERP of 250 watts (0.250 kW) but must not exceed an ERP of 50 watts (0.050 kW) in the direction of the Mexican border. A translator station may not produce an interfering contour in excess of 32 km from the transmitter site in the direction of the Mexican border, nor may the 60 dBu service contour of the translator station exceed 8.7 km from the transmitter site in the direction of the Mexican border.

(2) Translator stations located between 125 kilometers and 320 kilometers from the Mexican border may operate with a maximum ERP of 250 watts in any direction. However, in no event shall the location of the 60 dBu contour lie within 116.3 km of the Mexican border.

[FR Doc. 2021–15684 Filed 8–5–21; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 635

[Docket No. 210730–0156; RTID 0648–XT040]

Atlantic Highly Migratory Species; 2022 Atlantic Shark Commercial Fishing Year

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: This proposed rule would adjust quotas and retention limits and establish the opening date for the 2022 fishing year for the Atlantic commercial shark fisheries. Quotas would be adjusted as required or allowable based on any underharvests experienced during the 2021 fishing year. NMFS proposes the opening date and commercial retention limits to provide, to the extent practicable, fishing opportunities for commercial shark fishermen in all regions and areas. The proposed measures could affect fishing opportunities for commercial shark fishermen in the northwestern Atlantic Ocean, the Gulf of Mexico, and the Caribbean Sea.

DATES: Written comments must be received by September 7, 2021.

ADDRESSES: You may submit comments on this document, identified by NOAA–NMFS–2021–0056, by electronic submission. Submit all electronic public comments via the Federal e-Rulemaking Portal. Go to *https://www.regulations.gov* and enter ''NOAA–NMFS–2021–0056'' in the Search box. Click on the ''Comment'' icon, complete the required fields, and enter or attach your comments.

Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on *www.regulations.gov* without change. All personal identifying information (*e.g.,* name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter ''N/A'' in the required fields if you wish to remain anonymous).

Copies of this proposed rule and supporting documents are available from the HMS Management Division website at *https://www.fisheries.noaa.gov/topic/atlantic-highly-migratory-species* or by contacting Lauren Latchford (*lauren.latchford@noaa.gov*) by phone at 301–427–8503.

FOR FURTHER INFORMATION CONTACT: Lauren Latchford (*lauren.latchford@noaa.gov*), Derek Kraft (*derek.kraft@noaa.gov*), or Karyl Brewster-Geisz (*karyl.brewster-geisz@noaa.gov*) at 301–427–8503.

SUPPLEMENTARY INFORMATION:

Background

The Atlantic commercial shark fisheries are managed under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP) and its amendments are implemented by regulations at 50 CFR part 635. For the Atlantic commercial shark fisheries, the 2006 Consolidated HMS FMP and its amendments established default commercial shark retention limits, commercial quotas for species and management groups, and accounting measures for underharvests and overharvests. The retention limits, commercial quotas, and accounting measures can be found at 50 CFR 635.24(a) and 635.27(b). Regulations also include provisions allowing flexible opening dates for the fishing year (§ 635.27(b)(3)) and inseason adjustments to shark trip limits (§ 635.24(a)(8)), which provide management flexibility in furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas. In addition, § 635.28(b)(4) lists species and/or management groups with quotas that are linked. If quotas are linked, when the specified quota threshold for one management group or species is reached and that management group or species is closed, the linked management group or species closes at the same time (§ 635.28(b)(3)). Lastly, pursuant to § 635.27(b)(3), any annual or inseason adjustments to the base annual commercial overall, regional, or sub-regional quotas will be published in the **Federal Register**.

2022 Proposed Commercial Shark Quotas

NMFS proposes adjusting the quota levels for the various shark stocks and management groups for the 2022 Atlantic commercial shark fishing year

based on underharvests that occurred during the 2021 fishing year, consistent with existing regulations at 50 CFR 635.27(b). Overharvests and underharvests are accounted for in the same region, sub-region, and/or fishery in which they occurred the following year, except that large overharvests may be spread over a number of subsequent fishing years up to a maximum of five years. If a sub-regional quota is overharvested, but the overall regional quota is not, no subsequent adjustment is required. Unharvested quota may be added to the quota for the next fishing year, but only for shark management groups that have shark stocks that do not have an unknown status or that have no overfishing occurring and are not overfished. No more than 50 percent of a base annual quota may be carried over from a previous fishing year.

Based on 2021 harvests to date, and after considering catch rates and landings from previous years, NMFS proposes to adjust the 2022 quotas for certain management groups as shown in Table 1. All of the 2022 proposed quotas for the respective stocks and management groups will be subject to further adjustment in the final rule after NMFS considers landings submitted in the dealer reports through mid-October. NMFS anticipates that dealer reports received after that time will be used to adjust 2022 quotas, as appropriate, noting that, in some circumstances, NMFS re-adjusts quotas during the subject year.

Because the Gulf of Mexico blacktip shark management group and smoothhound shark management groups in the Gulf of Mexico and Atlantic regions are not overfished, and overfishing is not occurring, available underharvest (up to 50 percent of the base annual quota) from the 2021 fishing year for these management groups may be added to the respective 2022 base quotas. NMFS proposes to account for any underharvest of Gulf of Mexico blacktip sharks by dividing underharvest between the eastern and western Gulf of Mexico sub-regional quotas based on the sub-regional quota split percentage implemented in Amendment 6 to the 2006 Consolidated HMS FMP (80 FR 50073; August 18, 2015).

For the sandbar shark, aggregated large coastal shark (LCS), hammerhead shark, non-blacknose small coastal shark (SCS), blacknose shark, blue shark, porbeagle shark, and pelagic shark (other than porbeagle or blue sharks) management groups, the 2021 underharvests cannot be carried over to the 2022 fishing year because those stocks or management groups are overfished, are experiencing overfishing, or have an unknown status. There are no overharvests to account for in these management groups to date. Thus, NMFS proposes that quotas for these management groups be equal to the annual base quota without adjustment, although the ultimate decision will be based on current data at the time of the final rule.

The proposed 2022 quotas by species and management group are summarized in Table 1 and the description of the calculations for each stock and management group can be found below. All quotas and landings are dressed weight (dw), in metric tons (mt), unless specified otherwise. Table 1 includes landings data as of July 9, 2021; final quotas are subject to change based on landings as of October 2021.

TABLE 1—2022 PROPOSED QUOTAS AND OPENING DATE FOR THE ATLANTIC SHARK MANAGEMENT GROUPS

Region or sub-region	Management group	2021 Annual quota (A)	Preliminary 2021 landings [1] (B)	Adjustments [2] (C)	2022 Base annual quota (D)	2022 Proposed annual quota (D + C)	Season opening dates
Western Gulf of Mexico.	Blacktip Sharks [3] ..	347.2 mt (765,392 lb).	210.7 mt (464,554 lb).	115.7 mt (255,131 lb).	231.5 mt (510,261 lb).	347.2 mt (765,392 lb).	January 1, 2022.
	Aggregated Large Coastal Sharks.	72.0 mt (158,724 lb).	66.6 mt (146,851 lb).	.....	72.0 mt (158,724 lb).	72.0 mt (158,724 lb).	
	Hammerhead Sharks.	11.9 mt (26,301 lb).	<1.5 mt (<3,300 lb).	.....	11.9 mt (26,301 lb).	11.9 mt (26,301 lb).	
Eastern Gulf of Mexico.	Blacktip Sharks [3] ..	37.7 mt (83,158 lb).	8.6 mt (18,858 lb)	12.6 mt (27,719 lb).	25.1 mt (55,439 lb).	37.7 mt (83,158 lb).	January 1, 2022.
	Aggregated Large Coastal Sharks.	85.5 mt (188,593 lb).	38.1 mt (84,047 lb).	.....	85.5 mt (188,593 lb).	85.5 mt (188,593 lb).	
	Hammerhead Sharks.	13.4 mt (29,421 lb).	5.7 mt (12,458 lb)	.....	13.4 mt (29,421 lb).	13.4 mt (29,421 lb).	
Gulf of Mexico	Non-Blacknose Small Coastal Sharks.	112.6 mt (248,215 lb).	23.1 mt (50,911 lb).	.....	112.6 mt (248,215 lb).	112.6 mt (248,215 lb).	
	Smoothhound Sharks.	504.6 mt (1,112,441 lb).	—mt (—lb)	168.2 mt (370,814 lb).	336.4 mt (741,627 lb).	504.6 mt (1,112,441 lb).	
Atlantic	Aggregated Large Coastal Sharks.	168.9 mt (372,552 lb).	38.7 mt (85,317 lb).	.....	168.9 mt (372,552 lb).	168.9 mt (372,552 lb).	January 1, 2022.
	Hammerhead Sharks.	27.1 mt (59,736 lb).	10.2 mt (22,542 lb).	.....	27.1 mt (59,736 lb).	27.1 mt (59,736 lb).	
	Non-Blacknose Small Coastal Sharks.	264.1 mt (582,333 lb).	32.8 mt (72,243 lb).	.....	264.1 mt (582,333 lb).	264.1 mt (582,333 lb).	
	Blacknose Sharks (South of 34 °N lat. only).	17.2 mt (37,921 lb).	4.8 mt (10,617 lb)	.....	17.2 mt (37,921 lb).	17.2 mt (37,921 lb).	
	Smoothhound Sharks.	1,802.6 mt (3,971,587 lb).	192.8 mt (425,130 lb).	600.9 mt (1,324,634 lb).	1,201.7 mt (2,649,268 lb).	1,802.6 mt (3,973,902 lb).	
No regional quotas	Non-Sandbar LCS Research.	50.0 mt (110,230 lb).	5.0 mt (11,129 lb)	.....	50.0 mt (110,230 lb).	50.0 mt (110,230 lb).	January 1, 2022.
	Sandbar Shark Research.	90.7 mt (199,943 lb).	35.4 mt (78,074 lb).	.....	90.7 mt (199,943 lb).	90.7 mt (199,943 lb).	
	Blue Sharks	273.0 mt (601,856 lb).	<1.0 mt (<2,200 lb).	.....	273.0 mt (601,856 lb).	273.0 mt (601,856 lb).	
	Porbeagle Sharks	1.7 mt (3,748 lb) ..	0.0 mt (0 lb)	.....	1.7 mt (3,748 lb) ..	1.7 mt (3,748 lb).	

TABLE 1—2022 PROPOSED QUOTAS AND OPENING DATE FOR THE ATLANTIC SHARK MANAGEMENT GROUPS—Continued

Region or sub-region	Management group	2021 Annual quota (A)	Preliminary 2021 landings [1] (B)	Adjustments [2] (C)	2022 Base annual quota (D)	2022 Proposed annual quota (D + C)	Season opening dates
	Pelagic Sharks Other Than Porbeagle or Blue.	488.0 mt (1,075,856 lb).	25.2 mt (55,566 lb).	.....	488.0 mt (1,075,856 lb).	488.0 mt (1,075,856 lb).	

[1] Landings are from January 1, 2021, through July 9, 2021, and are subject to change.
[2] Underharvest adjustments can only be applied to stocks or management groups that are not overfished and have no overfishing occurring. Also, the underharvest adjustments cannot exceed 50 percent of the base quota.
[3] This adjustment accounts for underharvest in 2021. This proposed rule would increase the overall Gulf of Mexico blacktip shark quota by 128.3 mt (282,850 lb). Since any underharvest would be divided based on the sub-regional quota percentage split, the western Gulf of Mexico blacktip shark quota would be increased by 115.7 mt, while the eastern Gulf of Mexico blacktip shark quota would be increased by 12.6 mt.

1. Proposed 2022 Quotas for Shark Management Groups Where Underharvests Can Be Carried Over

The Gulf of Mexico blacktip shark management group (which is divided between the two sub-regions) and smoothhound shark management groups in the Gulf of Mexico and Atlantic regions are not overfished, and overfishing is not occurring. Pursuant to § 635.27(b)(2)(ii), available underharvest (up to 50 percent of the base annual quota) from the 2021 fishing year for these management groups may be added to the respective 2022 base quotas.

The 2022 proposed commercial quota for blacktip sharks in the western Gulf of Mexico sub-region is 347.2 mt dw (765,392 lb dw) and the eastern Gulf of Mexico sub-region is 37.7 mt dw (83,158 lb dw). As of July 9, 2021, preliminary reported landings for blacktip sharks in the western Gulf of Mexico sub-region were at 60.7 percent (210.7 mt dw) of their 2021 quota levels (347.2 mt dw), and blacktip sharks in the eastern Gulf of Mexico sub-region were at 22.7 percent (8.6 mt dw) of the sub-regional 2021 quota levels (37.7 mt dw). Reported landings in both sub-regions have not exceeded the 2021 quota to date. Pursuant to § 635.27(b)(1)(ii)(C), any underharvest would be divided between the two sub-regions, based on the percentages that are allocated to each sub-region. To date, the overall Gulf of Mexico blacktip shark management group is underharvested by 165.6 mt dw (365,138 lb dw). NMFS proposes to increase the western Gulf of Mexico blacktip shark quota by 115.7 mt dw which is 90.2 percent of the quota adjustment, while the eastern Gulf of Mexico blacktip shark sub-regional quota would increase by 12.6 mt dw, which is 9.8 percent of the quota adjustment (Table 1). Thus, the proposed western sub-regional Gulf of Mexico blacktip shark commercial quota is 347.2 mt dw (765,392 lb dw), and the proposed eastern sub-regional Gulf of Mexico blacktip shark commercial quota is 37.7 mt dw (83,158 lb dw).

The 2022 proposed commercial quota for smoothhound sharks in the Gulf of Mexico region is 504.6 mt dw (1,112,441 lb dw) and in the Atlantic region is 1,802.6 mt dw (3,973,902 lb dw). As of July 9, 2021, there have been no smoothhound shark landings in the Gulf of Mexico region and 10.7 percent (192.8 mt dw) of their 2021 quota (1802.6 mt dw) in the Atlantic region. NMFS proposes to adjust the 2022 Gulf of Mexico and Atlantic smoothhound shark quotas for anticipated underharvests in 2021 to the full extent allowed. The proposed 2022 adjusted base annual quota for Gulf of Mexico smoothhound sharks is 504.6 mt dw (336.4 mt dw annual base quota + 168.2 mt dw 2021 underharvest = 504.6 mt dw 2022 adjusted annual quota) and the proposed 2022 adjusted base annual quota for Atlantic smoothhound sharks is 1,802.6 mt dw (1,201.7 mt dw annual base quota + 600.9 mt dw 2021 underharvest = 1,802.6 mt dw 2022 adjusted annual quota).

2. Proposed 2022 Quotas for Shark Management Groups Where Underharvests Cannot Be Carried Over

Consistent with the current regulations at § 635.27(b)(2)(ii), 2021 underharvests cannot be carried over to the 2022 fishing year for the following stocks or management groups because they are overfished, are experiencing overfishing, or have an unknown status: Sandbar shark, aggregated large coastal shark (LCS), hammerhead shark, non-blacknose small coastal shark (SCS), blacknose shark, blue shark, porbeagle shark, and pelagic shark (other than porbeagle or blue sharks) management groups.

The 2022 proposed commercial quota for aggregated LCS in the western Gulf of Mexico sub-region is 72.0 mt dw (158,724 lb dw), and the eastern Gulf of Mexico sub-region is 85.5 mt dw (188,593 lb dw). The 2022 proposed commercial quota for aggregated LCS in the Atlantic region is 168.9 mt dw (372,552 lb dw). For these stocks, the 2022 proposed commercial quotas reflect the codified annual base quotas, without adjustment for underharvest. At this time, no overharvests have occurred, which would require adjustment downward. As of July 9, 2021, preliminary reported landings for aggregated LCS in the western Gulf of Mexico sub-region were 92.5 percent (66.6 mt dw) of the 2021 quota (72.0 mt dw), the aggregated LCS in the eastern Gulf of Mexico sub-region were 44.6 percent (38.1 mt dw) of the 2021 quota (85.5 mt dw), and the aggregated LCS fishery in the Atlantic were 22.9 percent (38.7 mt dw) of the 2021 quota. Reported landings from both Gulf of Mexico sub-regions and the Atlantic region have not exceeded the 2021 overall aggregated LCS quota to date. Given the unknown status of some species in the aggregated LCS complex, the aggregated LCS quota cannot be adjusted for any underharvests. Based on both preliminary estimates and catch rates from previous years, NMFS proposes that the 2022 quotas for aggregated LCS in the western and eastern Gulf of Mexico sub-regions, and the Atlantic region be equal to their annual base quotas without adjustment.

The 2022 proposed commercial quotas for hammerhead sharks in the eastern Gulf of Mexico sub-region and western Gulf of Mexico sub-region are 11.9 mt dw (26,301 lb dw) and 13.4 mt dw (29,421 lb dw), respectively. For these stocks, the 2022 proposed commercial quotas reflect the codified annual base quotas, without adjustment for underharvest. At this time, no overharvests have occurred, which would require adjustment downward. The 2022 proposed commercial quota for hammerhead sharks in the Atlantic region is 27.1 mt dw (59,736 lb dw). As of July 9, 2021, preliminary reported landings of hammerhead sharks in the western Gulf of Mexico sub-region were

less than 12 percent (<2.3 mt dw) of the 2021 quota (11.9 mt dw), landings of hammerhead sharks in the eastern Gulf of Mexico sub-region were at 42.3 percent (5.7 mt dw) of the 2021 quota (13.4 mt dw), and landings of hammerhead sharks in the Atlantic region were at 37.7 percent (10.2 mt dw) of the 2021 quota. Reported landings from the Gulf of Mexico sub-regions and the Atlantic region have not exceeded the 2021 overall hammerhead quota to date. Given the overfished status of the scalloped hammerhead shark, the hammerhead shark quota cannot be adjusted for any underharvests. Based on both preliminary estimates and catch rates from previous years, NMFS proposes that the 2022 quotas for hammerhead sharks in the western Gulf of Mexico and eastern Gulf of Mexico sub-regions be equal to their annual base quotas without adjustment.

The 2022 proposed commercial quota for blacknose sharks in the Atlantic region is 17.2 mt dw (37,921 lb dw). This quota is available in the Atlantic region only for those vessels operating south of 34 °N latitude. North of 34 °N latitude, retention, landing, or sale of blacknose sharks is prohibited. NMFS is not proposing any adjustments to the blacknose shark quota at this time. For these stocks, the 2022 proposed commercial quotas reflect the codified annual base quotas, without adjustment for underharvest. At this time, no overharvests have occurred, which would require adjustment downward. As of July 9, 2021, preliminary reported landings of blacknose sharks were at 28.0 percent (4.8 mt dw) of the 2021 quota levels in the Atlantic region. Reported landings have not exceeded the 2021 quota to date. NMFS proposes that the 2022 Atlantic blacknose shark quota be equal to the annual base quota without adjustment.

The 2022 proposed commercial quota for non-blacknose SCS in the Gulf of Mexico region is 112.6 mt dw (248,215 lb dw). The 2022 proposed commercial quota for non-blacknose SCS in the Atlantic region is 264.1 mt dw (582,333 lb dw). For these stocks, the 2022 proposed commercial quotas reflect the codified annual base quotas, without adjustment for underharvest. At this time, no overharvests have occurred, which would require adjustment downward. As of July 9, 2021, preliminary reported landings of non-blacknose SCS were at 20.5 percent (23.1 mt dw) of their 2021 quota level (112.6 mt dw) in the Gulf of Mexico region and were at 12.4 percent (32.8 mt dw) of the 2021 quota level in the Atlantic region. Reported landings have not exceeded the 2021 quota to date. Given the unknown status of bonnethead sharks within the Gulf of Mexico and Atlantic non-blacknose SCS management groups, underharvests cannot be carried forward. Based on both preliminary estimates and catch rates from previous years, NMFS proposes that the 2022 quota for non-blacknose SCS in the Gulf of Mexico and Atlantic regions be equal to the annual base quota without adjustment.

The 2022 proposed commercial quotas for blue sharks, porbeagle sharks, and pelagic sharks (other than porbeagle or blue sharks) are 273.0 mt dw (601,856 lb dw), 1.7 mt dw (3,748 lb dw), and 488.0 mt dw (1,075,856 lb dw), respectively. For these stocks, the 2022 proposed commercial quotas reflect the codified annual base quotas, without adjustment for underharvest. At this time, no overharvests have occurred, which would require adjustment downward. As of July 9, 2021, there were no preliminary reported landings of blue sharks or porbeagle sharks, and landings of pelagic sharks (other than porbeagle and blue sharks) were at 5.2 percent (25.2 mt dw) of the 2021 quota level (488.0 mt dw). Given that these pelagic species are overfished, have overfishing occurring, or have an unknown status, underharvests cannot be carried forward. Based on preliminary estimates of catch rates from previous years, NMFS proposes that the 2022 quotas for blue sharks, porbeagle sharks, and pelagic sharks (other than porbeagle and blue sharks) be equal to their annual base quotas without adjustment.

The 2022 proposed commercial quotas within the shark research fishery are 50 mt dw (110,230 lb dw) for research LCS and 90.7 mt dw (199,943 lb dw) for sandbar sharks. Within the shark research fishery, as of July 9, 2021, preliminary reported landings of research LCS were at 10.1 percent (5.0 mt dw) of the 2021 quota, and sandbar shark reported landings were at 39 percent (35.4 mt dw) of their 2021 quota. Because sandbar sharks and scalloped hammerhead sharks within the research LCS management group are either overfished or overfishing is occurring, underharvests for these management groups cannot be carried forward. Based on preliminary estimates, NMFS proposes that the 2022 quota in the shark research fishery be equal to the annual base quota without adjustment.

Proposed Opening Date and Retention Limits for the 2022 Atlantic Commercial Shark Fishing Year

In proposing the commercial shark fishing season opening dates for all regions and sub-regions, NMFS considered the ''Opening Commercial Fishing Season Criteria,'' which are the criteria listed at § 635.27(b)(3): The available annual quotas for the current fishing season, estimated season length and average weekly catch rates from previous years, length of the season and fishery participation in past years, effects of the adjustment on accomplishing objectives of the 2006 Consolidated HMS FMP and its amendments, temporal variation in behavior or biology of target species (*e.g.,* seasonal distribution or abundance), impact of catch rates in one region on another, and effects of delayed openings.

In analyzing the criteria, NMFS examines the underharvests of the different management groups in the 2021 fishing year to determine the likely effects of the proposed commercial quotas for 2022 on shark stocks and fishermen across regional and sub-regional fishing areas. NMFS also examines the potential season length and previous catch rates to ensure, to the extent practicable, that equitable fishing opportunities will be provided to fishermen in all areas. Lastly, NMFS examines the seasonal variation of the different species/management groups and the effects on fishing opportunities. At the start of each fishing year, the default commercial retention limit is 45 LCS other than sandbar sharks per vessel per trip in the eastern and western Gulf of Mexico sub-regions and in the Atlantic region, unless NMFS determines otherwise and files with the Office of the Federal Register for publication notification of an inseason adjustment. NMFS may adjust the retention limit from zero to 55 LCS other than sandbar sharks per vessel per trip if the respective LCS management group is open under § 635.27 and § 635.28, respectively.

NMFS also considered the six ''Inseason Trip Limit Adjustment Criteria'' listed at § 635.24(a)(8). Those criteria are: The amount of remaining shark quota in the relevant area, region, or sub-region, to date, based on dealer reports; the catch rates of the relevant shark species/complexes in the region or sub-region, to date, based on dealer reports; the estimated date of fishery closure based on when the landings are projected to reach 80 percent of the quota given the realized catch rates and whether they are projected to reach 100 percent before the end of the fishing season; effects of the adjustment on accomplishing the objectives of the 2006 Consolidated HMS FMP and its amendments; variations in seasonal distribution, abundance, or migratory

patterns of the relevant shark species based on scientific and fishery-based knowledge; and/or effects of catch rates in one part of a region precluding vessels in another part of that region from having a reasonable opportunity to harvest a portion of the relevant quota.

In analyzing the criteria, NMFS examines landings submitted in dealer reports on a weekly basis and catch rates based upon those dealer reports and have found that, to date, landings and subsequent quotas have not been exceeded. Catch rates in one part of a sub-region reached 80 percent have been closed, and have not reached 100 percent of the available quota. In addition, that closure did not preclude vessels in another part of that region or sub-region from having a reasonable opportunity to harvest a portion of the relevant quota. Given the pattern of landings over the previous years, seasonal distribution of the species and/or management groups has not had an effect on the landings within a region or sub-region.

After considering both sets of criteria in § 635.24 and 635.28, NMFS is proposing to open the 2022 Atlantic commercial shark fishing season for all shark management groups in the northwestern Atlantic Ocean, including the Gulf of Mexico and the Caribbean Sea, on January 1, 2022, after the publication of the final rule for this action (Table 2). NMFS proposes to open the season on January 1, 2022, but recognizes that the actual opening date is contingent on publication of the final rule in the **Federal Register**, and may vary accordingly. NMFS is also proposing to start the 2022 commercial shark fishing season with the commercial retention limit of 55 LCS other than sandbar sharks per vessel per trip in both the eastern and western Gulf of Mexico sub-regions, and a commercial retention limit of 55 LCS other than sandbar sharks per vessel per trip in the Atlantic region (Table 2). Proposed retention limits could change (as a result of public comments as well as updated catch rates and landings information submitted in dealer reports) in the final rule.

TABLE 2—QUOTA LINKAGES, SEASON OPENING DATES, AND COMMERCIAL RETENTION LIMIT BY REGIONAL OR SUB-REGIONAL SHARK MANAGEMENT GROUP

Region or sub-region	Management group	Quota linkages *	Season opening date	Commercial retention limits for directed shark limited access permit holders (inseason adjustments are possible)
Western Gulf of Mexico	Blacktip Sharks	Not Linked	January 1, 2022	55 LCS other than sandbar sharks per vessel per trip.
	Aggregated Large Coastal Sharks.	Linked.		
	Hammerhead Sharks.			
Eastern Gulf of Mexico	Blacktip Sharks	Not Linked	January 1, 2022	55 LCS other than sandbar sharks per vessel per trip.
	Aggregated Large Coastal Sharks.	Linked.		
	Hammerhead Sharks.			
Gulf of Mexico	Non-Blacknose Small Coastal Sharks.	Not Linked	January 1, 2022	N/A.
	Smoothhound Sharks	Not Linked	January 1, 2022	N/A.
Atlantic	Aggregated Large Coastal Sharks.	Linked	January 1, 2022	55 LCS other than sandbar sharks per vessel per trip.
	Hammerhead Sharks.			
	Non-Blacknose Small Coastal Sharks.	Linked (South of 34 °N lat. only).	January 1, 2022	N/A.
	Blacknose Sharks (South of 34 °N lat. only).			8 Blacknose sharks per vessel per trip (applies to directed and incidental permit holders).
	Smoothhound Sharks	Not Linked	January 1, 2022	N/A.
No regional quotas	Non-Sandbar LCS Research	Linked	January 1, 2022	N/A.
	Sandbar Shark Research.			
	Blue Sharks	Not Linked	January 1, 2022	N/A.
	Porbeagle Sharks.			
	Pelagic Sharks Other Than Porbeagle or Blue.			

* § 635.28(b)(4) lists species and/or management groups with quotas that are linked. If quotas are linked, when the specified quota threshold for one management group or species is reached and that management group or species is closed, the linked management group or species closes at the same time (§ 635.28(b)(3)).

In the eastern and western Gulf of Mexico sub-regions, NMFS proposes opening the fishing season on January 1, 2022, for the aggregated LCS, blacktip sharks, and hammerhead shark management groups, with the commercial retention limits of 55 LCS other than sandbar sharks per vessel per trip for directed shark permits. This opening date and retention limit combination would provide, to the extent practicable, equitable opportunities across the fisheries management sub-regions. The season opening criteria listed in § 635.27(b)(3) requires NMFS to consider the length of the season for the different species and/or management groups in the previous years (§ 635.27(b)(3)(ii) and (iii)) and whether fishermen were able to participate in the fishery in those years (§ 635.27(b)(3)(v)). In addition, the criteria listed in § 635.24(a)(8) require NMFS to consider the catch rates of the relevant shark species/complexes based on landings submitted in dealer reports to date (§ 635.24(a)(8)(ii)). NMFS may also adjust the retention limit in the Gulf of Mexico region throughout the season to ensure fishermen in all parts of the region have an opportunity to harvest aggregated LCS, blacktip sharks, and hammerhead sharks (see the criteria listed at § 635.27(b)(3)(v) and § 635.24(a)(8)(ii), (v), and (vi)). Given these requirements, NMFS reviewed landings on a weekly basis for all species and/or management groups and determined that fishermen have been able to participate in the fishery, and landings from both Gulf of Mexico sub-regions and the Atlantic region have not exceeded the 2021 overall aggregated LCS quota to date. For both the eastern and western Gulf of Mexico sub-regions combined, landings submitted in dealer reports received through July 9, 2021, indicate that 66 percent (104.7 mt dw), 57 percent (219.3 mt dw), and almost 30 percent (<8 mt dw) of the available aggregated LCS, blacktip, and hammerhead shark quotas, respectively, have been harvested. Therefore, for 2022, NMFS is proposing opening both the western and eastern Gulf of Mexico sub-regions with a commercial retention

limit of 55 sharks other than sandbar sharks per vessel per trip.

In the Atlantic region, NMFS proposes opening the aggregated LCS and hammerhead shark management groups on January 1, 2022. The criteria listed in § 635.27(b)(3) consider the effects of catch rates in one part of a region precluding vessels in another part of that region from having a reasonable opportunity to harvest a portion of the different species and/or management quotas (§ 635.27(b)(3)(v)). The 2021 data indicate that an opening date of January 1, coupled with inseason adjustments to the retention limit if later considered and needed, would provide a reasonable opportunity for fishermen in every part of each region to harvest a portion of the available quotas (§ 635.27(b)(3)(i)), while accounting for variations in seasonal distribution of the different species in the management groups (§ 635.27(b)(3)(iv)). Because the quotas we propose for 2022 are the same as the quotas in 2021, NMFS proposes that the season lengths, and therefore, the participation of various fishermen throughout the region, would be similar in 2022 (§ 635.27(b)(3)(ii) and (iii)). Additionally, the January 1 opening date appears to meet the objectives of the 2006 Consolidated HMS FMP and its amendments (§ 635.27(b)(3)(vi)). In the recent past, NMFS has managed the fishery by opening the aggregated LCS and hammerhead shark management groups on January 1 with a relatively high retention limit. Once a certain percentage threshold was reached, the retention limit was reduced to a low limit, such as 3 LCS other than sandbar sharks per vessel per trip, and then the retention limit was increased again in mid-July. This approach allowed the fishery in the Atlantic region to remain open throughout the year, consistent with conservation and management measures for the stocks and requests from fishermen and states. However, landings data from 2016 to present indicate a decrease in annual landings in the aggregated LCS management group. As a result, in 2021 NMFS opened with a retention limit of 45 LCS other than sandbar sharks per vessel per trip, anticipating that it might later reduce the trip limit when landings reached approximately 40 percent of the quota and after considering appropriate factors. Instead, on March 23, 2021, NMFS increased the retention limit from 36 to the maximum limit of 55 LCS other than sandbar sharks per vessel per trip for all directed permit holders due to low landings (86 FR 16075; March 26, 2021). As of July 9, 2021, landings data indicate that, despite increasing the retention limit to the maximum, only 22.9 percent of the aggregated LCS and 37.7 percent of the hammerhead shark commercial quotas have been landed. Considering this experience and the recent reduced landings compared to past years, NMFS proposes to open on January 1, 2022, with a retention limit of 55 LCS other than sandbar sharks per vessel per trip. Starting with the highest retention limit available could allow fishermen in the Atlantic region to more fully utilize the available science-based quota. As needed, NMFS may adjust the retention limit throughout the year to ensure equitable fishing opportunities throughout the region and ensure the quota is not exceeded (see the criteria at § 635.24(a)(8)). For example, if the quota is harvested too quickly, NMFS could consider reducing the retention limit as appropriate to ensure enough quota remains until later in the year. NMFS would publish in the **Federal Register** notification of any inseason adjustments of the retention limit.

All of the shark management groups would remain open until December 31, 2022, or until NMFS determines that the landings for any shark management group are projected to reach 80 percent of the quota given the realized catch rates, and are projected to reach 100 percent before the end of the fishing season, or until a quota-linked species or management group is closed. If NMFS determines that a non-quota-linked shark species or management group must be closed, then, consistent with § 635.28(b)(2) for non-linked quotas (*e.g.,* eastern Gulf of Mexico blacktip, western Gulf of Mexico blacktip, Gulf of Mexico non-blacknose SCS, pelagic sharks, or the Atlantic or Gulf of Mexico smoothhound sharks), NMFS will publish in the **Federal Register** a notice of closure for that shark species, shark management group, region, and/or sub-region that will be effective no fewer than four days from the date of filing. For the blacktip shark management group, regulations at § 635.28(b)(5)(i) through (v) authorize NMFS to close the management group before landings have reached or are projected to reach 80 percent of applicable available overall, regional, and/or sub-regional quota and are projected to reach 100 percent of the relevant quota by the end of the fishing season, after considering the following criteria and other relevant factors: Season length based on available sub-regional quota and average sub-regional catch rates; variability in regional and/or sub-regional seasonal distribution, abundance, and migratory patterns; effects on accomplishing the objectives of the 2006 Consolidated HMS FMP and its amendments; amount of remaining shark quotas in the relevant sub-region; and regional and/or sub-regional catch rates of the relevant shark species or management groups. The fisheries for the shark species or management group would be closed (even across fishing years) from the effective date and time of the closure until NMFS announces, via the publication of a notice in the **Federal Register**, that additional quota is available and the season is reopened.

If NMFS determines that a quota-linked species and/or management group must be closed, then, consistent with § 635.28(b)(3) for linked quotas, NMFS will publish in the **Federal Register** a notice of closure for all of the species and/or management groups in a linked group that will be effective no fewer than four days from the date of filing. In that event, from the effective date and time of the closure until the season is reopened and additional quota is available (via the publication of another NMFS notice in the **Federal Register**), the fisheries for all quota-linked species and/or management groups will be closed, even across fishing years. The quota-linked species and/or management groups are Atlantic hammerhead sharks and Atlantic aggregated LCS; eastern Gulf of Mexico hammerhead sharks and eastern Gulf of Mexico aggregated LCS; western Gulf of Mexico hammerhead sharks and western Gulf of Mexico aggregated LCS; and Atlantic blacknose and Atlantic non-blacknose SCS south of 34 °N latitude.

Request for Comments

Comments on this proposed rule and on NMFS' determination that this proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities (as discussed below in the Classification section), may be submitted via *www.regulations.gov.* NMFS solicits comments on this proposed rule by September 7, 2021 (see **DATES** and **ADDRESSES**).

Classification

The NMFS Assistant Administrator has determined that the proposed rule is consistent with the 2006 Consolidated HMS FMP and its amendments, the Magnuson-Stevens Act, and other applicable laws, subject to further consideration after public comment.

These proposed specifications are exempt from review under Executive Order 12866.

NMFS determined that the final rules to implement Amendment 2 to the 2006 Consolidated HMS FMP (June 24, 2008,

73 FR 35778; corrected on July 15, 2008, 73 FR 40658), Amendment 5a to the 2006 Consolidated HMS FMP (78 FR 40318; July 3, 2013), Amendment 6 to the 2006 Consolidated HMS FMP (80 FR 50073; August 18, 2015), and Amendment 9 to the 2006 Consolidated HMS FMP (80 FR 73128; November 24, 2015) are consistent to the maximum extent practicable with the enforceable policies of the approved coastal management program of coastal states on the Atlantic, including the Gulf of Mexico and the Caribbean Sea, as required under the Coastal Zone Management Act. Pursuant to 15 CFR 930.41(a), NMFS provided the Coastal Zone Management Program of each coastal state a 60-day period to review the consistency determination and to advise NMFS of their concurrence. NMFS received concurrence with the consistency determinations from several states and inferred consistency from those states that did not respond within the 60-day time period. This proposed action to establish an opening date and adjust quotas for the 2022 fishing year for the Atlantic commercial shark fisheries does not change the framework previously consulted upon. Therefore, no additional consultation is required.

This rulemaking would implement previously adopted and analyzed measures with adjustments, as specified in the 2006 Consolidated HMSFMP and its amendments, and the Environmental Assessment (EA) that accompanied the 2011 shark quota specifications rule (75 FR 76302; December 8, 2010). Impacts have been evaluated and analyzed in Amendments 2, 3, 5a, 6, and 9 to the 2006 Consolidated HMS FMP, which include Final Environmental Impact Statements (FEISs) for Amendments 2, 3, and 5a, and EAs for Amendments 6 and 9. The final rule for Amendment 2 implemented base quotas and quota adjustment procedures for sandbar shark and non-sandbar LCS species/management groups, and Amendments 3 and 5a implemented base quotas for Gulf of Mexico blacktip shark, aggregated LCS, hammerhead shark, blacknose shark, and non-blacknose SCS management groups and quota transfers for Atlantic sharks. The final rule for Amendment 6 implemented a revised commercial shark retention limit, revised base quotas for sandbar shark and non-blacknose SCS species/management groups, new sub-regional quotas in the Gulf of Mexico region for blacktip sharks, aggregated LCS, and hammerhead sharks, and new management measures for blacknose sharks. The final rule for Amendment 9 implemented management measures, including commercial quotas, for smoothhound sharks in the Atlantic and Gulf of Mexico regions. In 2010, NOAA Fisheries prepared an EA with the 2011 quota specifications rule (75 FR 76302; December 8, 2010) that describes the impact on the human environment that would result from implementation of measures to delay the start date and allow for inseason adjustments. NMFS has determined that the quota adjustments and season opening dates of this proposed rule and the resulting impacts to the human environment are within the scope of the analyses considered in the FEISs and EAs for these amendments, and additional National Environmental Policy Act (NEPA) analysis is not warranted for this proposed rule.

The Chief Counsel for Regulation of the Department of Commerce certified to the Chief Counsel for Advocacy of the Small Business Administration that this proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities as defined under the Regulatory Flexibility Act (RFA). The factual basis for this determination is as follows.

The proposed rule would adjust quotas and retention limits and establish the opening date for the 2022 fishing year for the Atlantic commercial shark fisheries. NMFS would adjust quotas as required or allowable based on any overharvests and/or underharvests from the 2021 fishing year. NMFS has limited flexibility to otherwise modify the quotas in this proposed rule. In addition, the impacts of the quotas (and any potential modifications) were analyzed in previous regulatory flexibility analyses, including the initial regulatory flexibility analysis and the final regulatory flexibility analysis that accompanied the 2011 shark quota specifications rule. NMFS proposes the opening date and commercial retention limits to provide, to the extent practicable, fishing opportunities for commercial shark fishermen in all regions and areas.

The proposed measures could affect fishing opportunities for commercial shark fishermen in the northwestern Atlantic Ocean, the Gulf of Mexico, and the Caribbean Sea. However, the effects this proposed rule would have on small entities would be minimal. Section 603(b)(3) of the RFA requires agencies to provide an estimate of the number of small entities to which the rule would apply. The Small Business Administration (SBA) has established size criteria for all major industry sectors in the United States, including fish harvesters. SBA's regulations include provisions for an agency to develop its own industry-specific size standards after consultation with SBA and providing an opportunity for public comment (see 13 CFR 121.903(c)). Under this provision, NMFS may establish size standards that differ from those established by the SBA Office of Size Standards, but only for use by NMFS and only for the purpose of conducting an analysis of economic effects in fulfillment of the agency's obligations under the RFA. To utilize this provision, NMFS must publish such size standards in the **Federal Register**, which NMFS did on December 29, 2015 (80 FR 81194; 50 CFR 200.2). In this final rule effective on July 1, 2016, NMFS established a small business size standard of $11 million in annual gross receipts for all businesses in the commercial fishing industry (NAICS 11411) for RFA compliance purposes. NMFS considers all HMS permit holders to be small entities because they had average annual receipts of less than $11 million for commercial fishing.

As of June 13, 2021, this proposed rule would apply to the approximately 207 directed commercial shark permit holders, 253 incidental commercial shark permit holders, 164 smoothhound shark permit holders, and 90 commercial shark dealers. Not all permit holders are active in the fishery in any given year. Active directed commercial shark permit holders are defined as those with valid permits that landed one shark based on HMS electronic dealer reports. Of the 460 directed and incidental commercial shark permit holders, to date, only 10 permit holders landed sharks in the Gulf of Mexico region, and only 65 landed sharks in the Atlantic region. Of the 164 smoothhound shark permit holders, to date, only 63 permit holders landed smoothhound sharks in the Atlantic region, and 1 landed smoothhound sharks in the Gulf of Mexico region. As described below, NMFS has determined that all of these entities are small entities for purposes of the RFA.

Based on the 2020 ex-vessel price (Table 3), fully harvesting the unadjusted 2021 Atlantic shark commercial base quotas could result in total fleet revenues of $8,481,742. For the Gulf of Mexico blacktip shark management group, NMFS is proposing to adjust the base sub-regional quotas upward due to underharvests in 2021. The increase for the western Gulf of Mexico blacktip shark management group could result in a $206,656 gain in total revenues for fishermen in that sub-region, while the increase for the eastern Gulf of Mexico blacktip shark management group could result in a $21,066 gain in total revenues for

fishermen in that sub-region. For the Gulf of Mexico and Atlantic smoothhound shark management groups, NMFS is proposing to increase the base quotas due to the underharvest in 2021. This would cause a potential gain in revenue of $281,819 for the fleet in the Gulf of Mexico region, and a potential gain in revenue of $1,217,953 for the fleet in the Atlantic region. Since a small business is defined as having annual receipts not in excess of $11.0 million, and total Atlantic shark revenue for the entire fishery is $9 million, each individual shark fishing entity would fall within the small business definition. NMFS has also determined that the proposed rule would not likely affect any small governmental jurisdictions.

All of these changes in gross revenues are similar to the gross revenues analyzed in the 2006 Consolidated HMS FMP and Amendments 2, 3 5a, 6, and 9 to the 2006 Consolidated HMS FMP. The final regulatory flexibility analyses for those amendments concluded that the economic impacts on these small entities from adjustments such as those contemplated in this action are expected to be minimal. In accordance with the 2006 Consolidated HMS FMP, as amended, and consistent with NMFS' statements in rules implementing Amendments 2, 3 5a, 6, and 9, and in the EA for the 2011 shark quota specifications rule, NMFS now conducts annual rulemakings in which NMFS considers the potential economic impacts of adjusting the quotas for underharvests and overharvests.

TABLE 3—AVERAGE EX-VESSEL PRICES PER lb dw FOR EACH SHARK MANAGEMENT GROUP, 2020

Region	Species	Average ex-vessel meat price	Average ex-vessel fin price
Western Gulf of Mexico	Blacktip Shark	$0.81	
	Aggregated LCS	0.80	
	Hammerhead Shark	0.74	
Eastern Gulf of Mexico	Blacktip Shark	0.76	
	Aggregated LCS	0.79	
	Hammerhead Shark		
Gulf of Mexico	Non-Blacknose SCS	0.71	
	Smoothhound Shark	0.76	
Atlantic	Aggregated LCS	1.13	
	Hammerhead Shark	0.57	
	Non-Blacknose SCS	1.12	
	Blacknose Shark	1.29	
	Smoothhound Shark	0.92	
No Region	Shark Research Fishery (Aggregated LCS)		
	Shark Research Fishery (Sandbar only)	1.30	
	Blue shark		
	Porbeagle shark		
	Other Pelagic sharks	1.31	
All	Shark Fins		$5.15
Atlantic	Shark Fins		1.58
GOM	Shark Fins		9.44

In conclusion, as discussed above, this proposed rule would adjust quotas and retention limits and establish the opening date for the 2022 fishing year for the Atlantic commercial shark fisheries. Based on available data on commercial catch of sharks in the northwestern Atlantic Ocean, the Gulf of Mexico, and the Caribbean Sea, it appears that shark fishing is conducted by fishermen who already possess Federal permits and are adhering to Federal reporting requirements for all catch as well as other Federal shark regulations, whether they are in Federal or state waters. Given these factors, this action would not have an effect, practically, on the regulations that shark fishermen currently follow. Furthermore, this action is not expected to affect the amount of sharks caught and sold or result in any change in the ex-vessel revenues those fishermen could expect. Therefore, NMFS has determined that this proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities. As a result, an initial regulatory flexibility analysis is not required and none has been prepared. NMFS invites comments from the public on the information in this determination that this proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities.

This proposed rule contains no information collection requirements under the Paperwork Reduction Act of 1995.

Authority: 16 U.S.C. 971 *et seq.;* 16 U.S.C. 1801 *et seq.*

Dated: August 2, 2021.

Samuel D. Rauch, III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

[FR Doc. 2021–16770 Filed 8–5–21; 8:45 am]

BILLING CODE 3510–22–P

Atlantic States Marine Fisheries Commission

Business Session

Wednesday, October 20, 2021: 11:15 a.m. – 12:15 p.m.
Thursday, October 21, 2021: 4:30 – 4:45 p.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

Wednesday, October 20, 2021

1.	Welcome/Introductions (*P. Keliher*)	11:15 a.m.
2.	Committee Consent • Approval of Agenda • Approval of Proceedings from August 2021	11:20 a.m.
3.	Public Comment	11:25 a.m.
4.	Consider 2022 Draft Action Plan **Action**	11:30 a.m.
5.	Elect Chair and Vice-Chair **Action**	Noon
6.	Recess	12:15 p.m.

Thursday, October 21, 2021

1.	Reconvene	4:30 p.m.
2.	Consider Noncompliance Recommendations (if necessary)	4:30 p.m.
3.	Other Business/Adjourn	4:45 p.m.

The meeting will be held via webinar, click here for details.
Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Atlantic States Marine Fisheries Commission

Atlantic Striped Bass Management Board

October 20, 2021
1:00 – 5:15 p.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1.	Welcome/Call to Order (*D. Borden*)	1:00 p.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from August 2021	1:00 p.m.
3.	Public Comment	1:05 p.m.
4.	Consider Draft Amendment 7 for Public Comment *(E. Franke)* **Action** (includes a 15 minute break at 3:00 p.m.)	1:15 p.m.
5.	Consider Draft Addendum VII for Public Comment *(E. Franke)* **Action**	4:00 p.m.
6.	Other Business/Adjourn	5:15 p.m.

The meeting will be held via webinar, click here for details

MEETING OVERVIEW

Atlantic Striped Bass Management Board
October 20, 2021
1:00 p.m. – 5:15 p.m.
Webinar

Chair: David Borden (RI) Assumed Chairmanship: 02/20	Technical Committee Chair: Kevin Sullivan (NH)	Law Enforcement Committee Rep: Kurt Blanchard (RI)
Vice Chair: Martin Gary (PRFC)	Advisory Panel Chair: Louis Bassano (NJ)	Previous Board Meeting: August 3, 2021
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, DC, PRFC, VA, NC, NMFS, USFWS (16 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 2021

3. Public Comment – At the beginning of the meeting, public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance, the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Draft Amendment 7 (1:15 – 4:00 p.m.) Action
(includes a 15-min break at 3:00 p.m.)

Background

- The status and understanding of the striped bass stock and fishery has changed considerably since implementation of Amendment 6 in 2003, which has raised concerns that the existing management program may no longer reflect current fishery needs and priorities.
- Accordingly, the Board initiated development of Draft Amendment 7 to consider addressing a number of important issues facing striped bass management and build upon the Addendum VI action to end overfishing and initiate rebuilding.
- In May 2021, the Board approved the following four issues for development in Draft Amendment 7: recreational release mortality, conservation equivalency, management triggers, and measures to protect the 2015 year class.
- The Plan Development Team (PDT) and the Technical Committee met multiple times between May and September 2021 to develop Draft Amendment 7 **(Briefing Materials).**
- The Advisory Panel met in September 2021 to discuss the scope and clarity of options presented in Draft Amendment 7 **(Supplemental Materials)**.

Presentations

- Overview of Draft Amendment 7 for public comment by E. Franke

Board Actions for Consideration

- Approve Draft Amendment 7 for public comment.

5. Draft Addendum VII to Amendment 6 (4:00 – 5:15 p.m.) Action

Background

- In May 2021, the motion to include the commercial quota allocation issue in Draft Amendment 7 failed for lack of a majority. Many Board members recognized that Delaware has raised this issue for some time and Delaware has been asking for a more equitable allocation. In addition there were some individuals that expressed an interest in reviewing more recent data to consider in the allocations.
- Although many Board members recognized these concerns, some Board members noted the Draft Amendment process is not the right time to address this because allocation discussions could make the process significantly longer and more complex. Some Board members suggested addressing quota allocation in a separate management document after Amendment 7 is complete.
- In August 2021, concurrent with the development of Draft Amendment 7, the Board initiated Draft Addendum VII to Amendment 6 to consider allowing the voluntary transfer of commercial striped bass quota between jurisdictions that have commercial quota.
- In September 2021, the PDT discussed Draft Addendum VII to Amendment 6 **(Supplemental Materials)**.

Presentations

- Overview of Draft Addendum VII to Amendment 6 for public comment by E. Franke

Board Actions for Consideration

- Approve Draft Addendum VII to Amendment 6 for public comment.

6. Other Business/Adjourn (5:15 p.m.)

Atlantic Striped Bass

Activity level: High

Committee Overlap Score: Medium (TC/SAS/TSC overlaps with BERP, Atlantic menhaden, American eel, horseshoe crab, shad/river herring)

Committee Task List

- PDT – develop all documentation for the development of Draft Amendment 7
- SAS/TC – various tasks in response to the 2018 benchmark assessment and relating to development of Draft Amendment 7
- TC – June 15th: Annual compliance reports due

TC Members: Kevin Sullivan (NH, Chair), Carol Hoffman (NY, Vice Chair), Nicole Lengyel Costa (RI), Alexei Sharov (MD), Charlton Godwin (NC), Ellen Cosby (PRFC), Gail Wippelhauser (ME), Gary Nelson (MA), Brendan Harrison (NJ), Jeremy McCargo (NC), Kurt Gottschall (CT), Margaret Conroy (DE), Luke Lyon (DC), Tyler Grabowski (PA), Peter Schuhmann (UNCW), Tony Wood (NMFS), Steve Minkkinen (USFWS), John Ellis (USFWS), Katie Drew (ASMFC), Emilie Franke (ASMFC)

SAS Members: Michael Celestino (NJ, Chair), Gary Nelson (MA), Alexei Sharov (MD), Hank Liao (ODU), Justin Davis (CT), John Sweka (USFWS), Tony Wood (NMFS), Katie Drew (ASMFC), Emilie Franke (ASMFC)

PDT Members: Nichola Meserve (MA), Nicole Lengyel Costa (RI), Brendan Harrison (NJ), Simon Brown (MD), Max Appelman (NMFS), Greg Wojcik (CT), Emilie Franke (ASMFC)

Tagging Subcommittee (TSC) Members: Stuart Welsh (WVU, Chair), Heather Corbett (NJ, Vice Chair), Angela Giuliano (MD), Beth Versak (MD), Chris Bonzek (VIMS), Gary Nelson (MA), Ian Park (DE), Jessica Best (NY), Carol Hoffman (NY), Tony Wood (NMFS), Josh Newhard (USFWS), Wilson Laney (USFWS), Katie Drew (ASMFC), Emilie Franke (ASMFC)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

ATLANTIC STRIPED BASS MANAGEMENT BOARD

Webinar
August 3, 2021

These minutes are draft and subject to approval by the Atlantic Striped Bass Management Board.
The Board will review the minutes during its next meeting.

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ATTENDANCE

Board Members

Megan Ware, ME, proxy for P. Keliher (AA)
Sen. David Miramant, ME (LA)
Cheri Patterson, NH (AA)
Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Mike Armstrong, MA, proxy for Dan McKiernan (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Jason McNamee (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Rep. Sosnowski (LA)
Justin Davis, CT (AA)
Bill Hyatt, CT (GA)
Matt Gates, CT, proxy for Sen. Miner (LA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
Emerson Hasbrouck, NY (GA)
John McMurray, NY, proxy for Sen. Kaminsky (LA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Houghtaling (LA)
Kris Kuhn, PA, proxy for T. Schaeffer (AA)
Loren Lustig, PA (GA)
G. Warren Elliott, PA (LA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Mike Luisi, MD, proxy for B. Anderson (AA)
Russell Dize, MD (GA)
David Sikorski, MD, proxy for Del. Stein (LA)
Pat Geer, VA, proxy for S. Bowman (AA)
Chris Batsavage, NC, proxy for K. Rawls (AA)
Jerry Mannen, NC (GA)
Bill Gorham, NC proxy for Rep. Steinberg (LA)
Marty Gary, PRFC
Nicole Lengyel-Costa, RI DEM
Max Appelman, NMFS
Mike Millard, USFWS
Lowell Whitney, USFWS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Kurt Blanchard, Law Enforcement Representative

Staff

Bob Beal
Toni Kerns
Tina Berger
Pat Campfield
Lisa Carty
Laura Leach
Maya Drzewicki
Emilie Franke
Lisa Havel
Chris Jacobs
Dustin Colson Leaning
Savannah Lewis
Kirby Rootes-Murdy
Sarah Murray
Joe Myers
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Karen Abrams, NOAA
Fred Akers
Pat Augustine, Coram, NY
Mike Bednarski, VA DWR
John Bello, CCA VA
Peter Benoit, Ofc. Sen. King (ME)
Colleen Bouffard, CT DEP
Rob Bourdon, MD DNR
Rick Brame
Jeff Brust, NJ DEP
Erika Burgess, FL FWC
Mike Celestino, NJ DEP
Sarah Cho
Richard Cody, NOAA

Guests (continued)

Allison Colden, CBF
Margaret Conroy, DE DFW
Heather Corbett, NJ DEP
Jessica Daher, NJ DEP
Monty Deihl
Patrick Denno
Steve Doctor, MD DNR
Paul Eidman
Peter Fallon, Maine Stripers
Lynn Fegley, MD DNR
Dawn Franco, GA DNR
Anthony Friedrich, SGA
Shaun Gehan, Gehan Law
Lewis Gillingham, VMRC
Willy Goldsmith, SGA
Pam Lyons Gromen, Wild Oceans
Jake Hardy
Jon Hare, NOAA
Helen Takade-Heumacher
Peter Himchak, Cooke Aqua
Carol Hoffman, NYS DEC
Jeffrey Horne, MD DNR
Harry Hornick, MD DNR
Jesse Hornstein, NYS DEC
Edward Houde, UMCES
Bob Humphrey
James Jewkes
Adam Kenyon, VMRC
Rob LaFrance, Quinnipiac Univ
Ben Landry, Omega Protein
Wilson Laney
Carl Lobue, TNC
Chip Lynch, NOAA
Pam Lyong
Shanna Madsen, VMRC
John Maniscalco, NYS DEC
Casey Marker, MD DNR
Dan McKiernan, MA (AA)
Conor McManus, RI DEM
Nichola Meserve, MA DMF
Steve Meyers
Steve McKinnen, FL FWS
Chris Moore, CBF
Jeffrey Morgan
Brandon Muffley, MAFMC
Allison Murphy, NOAA
Kennedy Neill
Robert Newberry
Jeff Nichols, ME DMR
George O'Donnell, MD DNR
Tyler O'Neill
Noah Oppenheim, Homarus Strategies
Derek Orner, NOAA
Kelly Place, Williamsburg, VA
Michael Plaia
Nick Popoff, FL FWS
Will Poston, SGA
Michael Quinan, Thompson McMullan Law
Jill Ramsey, VMRC
Kathy Rawls, NC (AA)
Story Reed, MA DMF
Harry Rickabaugh, MD DNR
Tara Scott, NOAA
Olivia Siegal, VMRC
Jared Silva, MD DMR
Thomas Sminkey, NOAA
Somers Smott, VMRC
Ross Squire
Renee St. Amand, CT DEP
Mike Stangle DE DFW
David Stormer, DE DFW
Marek Topolski, MD DNR
Aaron Uehara
Jim Uphoff, MD DNR
Beth Versak, MD DNR
Mike Waine, ASA
Angel Willey, MD DNR
Charles Witek
Michael Woods
Spud Woodward, GA (GA)
Jon Worthington
Chris Wright, NOAA
Jordan Zimmerman, DE DFW
Erik Zlokovitz, MD DNR
Renee Zobel, NH F & G

The Atlantic Striped Bass Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Tuesday, August 3, 2021, and was called to order at 9:00 a.m. by Chair David V. Borden.

CALL TO ORDER

CHAIR DAVID V. BORDEN: My name is David Borden; I'm the Striped Bass Board Chairman. I'm the Governor's Appointee from the state of Rhode Island, and I get to moderate the session today. In terms of process. I've asked Toni to follow the following rules. She's basically going to call on individuals.

If the Board members who want to speak will have to raise your hand. You'll go on a list. Toni will call on you in order. She will not call on you twice, until we go through the list. Hopefully, everyone on the list gets an opportunity to talk, at least once, and if we have more time we'll go back through the list, and let individuals who have a particular interest in a subject to possibly speak on an issue twice.

CHAIR BORDEN: The process today, we're going to move through the agenda, hopefully orderly. I would anticipate that on most of these issues we will not need motions. I would prefer to do the business of the Board by consensus, if that's possible.

APPROVAL OF AGENDA

CHAIR BORDEN: I'm going to take the items as they appear on the published agenda, approval of the agenda. Are there any additions, deletions on the agenda, or changes? Any hands up, Toni?

MS. TONI KERNS: No hands, David.

CHAIR BORDEN: Okay, so the agenda stands approved as distributed.

APPROVAL OF PROCEEDINGS

CHAIR BORDEN: We have two sets of proceedings that we need to approve. Are there any comments on the March, 2021 proceedings? Any hands up?

MS. KERNS: No hands, David.

CHAIR BORDEN: Then the March, 2021 proceedings stand approved by consensus. May, 2021, any comments, additions, deletions to those proceedings? Any hands up?

MS. KERNS: No hands.

CHAIR BORDEN: Okay, so the May, 2021 proceedings stand approved by consensus.

PUBLIC COMMENT

CHAIR BORDEN: Public Comments. The two aspects of public comments. We normally afford the public an opportunity to comment on issues which are not on the agenda. You're going to be limited to a minute or two, depending upon how many individuals. Then during the actual meeting, I may or may not take public comments, if we get to motions. It depends on the nature of the issue, and whether or not there has been an opportunity for the public to already weigh in on the issue. Are there any individuals that would like to speak to an issue which is not on the agenda, and if so, please raise your hand?

MS. KERNS: Don't see any. No hands.

CHAIR BORDEN: No hands, so there are not hands up, so there is no public comment.
The first item of business is Consider the Fishery Management Plan Review and State Compliance for 2020, Emilie Franke, please.

CONSIDER THE FISHERY MANAGEMENT PLAN REVIEW AND STATE COMPLIANCE FOR 2020 FISHING YEAR

MS. EMILIE FRANKE: Can everyone see my slide up on the screen?

MS. KERNS: Yes.

MS. FRANKE: Great, thanks so much, Toni. This morning, as the Chair mentioned, our first agenda item is the Fishery Management Plan Review for the 2020 fishing year. The Plan Review Team reviewed state compliance reports for 2020 in July, and drafted the FMP Review Report, which was included in the supplemental materials.

I would like to thank the Plan Review Team members for their time reviewing the compliance reports, and preparing the draft for the Board's review today. There is a lot of detail in the written report, so in today's presentation I'll just go over some key points. To start out, I'll just give a brief overview of the status of the stock, followed by the status of the fishery management plan, focused on Addendum VI.

Then I'll move into the status of the fishery, the status of the management measures, and then conclude the presentation today with comments from the Plan Review Team. Starting with status of the stock. Based on the results of the 2018 benchmark stock assessment, the striped bass stock is overfished and experiencing overfishing.

Just as a reminder, the benchmark does incorporate the newly calibrated MRIP estimates. In 2017, female spawning stock biomass was estimated at 58,476 metric tons, which is below both the target and the threshold for spawning stock biomass. Fishing mortality was estimated at 0.31 in 2017, which is above the threshold of 0.24.

You can see in the figure here of female spawning stock biomass, which is the blue-shaded area, that spawning stock biomass has declined steadily since the time series high in about 2003, and has been below the threshold since 2013. There was a period of low recruitment since about 2005, and recruitment is those orange bars there. However, there were a few strong year classes in 2011, 2014, and 2015.

This is a figure of fishing mortality, and you can see here that fishing mortality was estimated to be at or above the threshold for 13 of the last 15 years. Moving on to status of the fishery management plan. Amendment 6 and the Addenda I through VI set the management program for fishing year 2020. The Addendum VI measures that were designed to reduce total removals by 18 percent, relative to 2017 levels, were implemented by the states by April 1 of 2020. Addendum VI also requires the mandatory use of circle hooks, when fishing with bait in the recreational fishery. Those measures were implemented in 2021. Then finally, Draft Amendment 7 is under development, which we'll discuss later in the agenda today.

But that draft amendment will address four issues, recreational release mortality, conservation equivalency, management triggers, and measures to protect the 2015-year class. As I mentioned, Addendum VI measures were implemented in 2020, to reduce total recreational removals by 18 percent. The measures reduced state commercial quotas by 18 percent.

The measures implemented a 1-fish bag limit and a 28-inch to less than 35-inch spot limit for the ocean fisheries, and a 1-fish bag limit and an 18-inch minimum size limit in the Chesapeake Bay. Some states implemented alternative regulations through a conservation equivalency. Those regulations had to achieve an 18 percent reduction in total removals statewide.

This figure here shows fishery performance over time by sector. You can see at the bottom there, commercial harvest is in blue, and commercial discards are in red. Those have been relatively stable over time, since the fishery has been managed by a static quota system since 2015. Most of the removals of striped bass are coming from the recreational sector.

You can see recreational harvest in green on this figure, and recreational release mortality in purple.

In 2020 the recreational sector, so the total harvest and release mortality, accounted for about 88 percent of total striped bass removals. Recreational removals have been variable through time, but you can see they've been decreasing in recent years.

This slide is a broad view of fishery performance in 2020, and any percent change you see here on this slide is a percent change as compared to the previous year of 2019. Again, as a reminder, 2020 was the first year that Addendum VI measures were implemented. In 2020, the commercial fishery harvested an estimated 3.39 million pounds, or about 531,240 fish.

This is a 20 percent decrease by weight relative to 2019, and a 19 percent decrease by number. On the recreational side, in 2020 total recreational harvest was estimated at about 1.71 million fish, which is a 21 percent decrease relative to 2019. As we've discussed, the vast majority of the recreational striped bass catch is released alive, and 9 percent of those fish that are released alive are assumed to die, as a result of being caught.

In 2020, recreational anglers caught and released an estimated 30.7 million fish, and of those about 2.8 million were assumed to have died. This is a 7 percent increase relative to 2019. Then overall the recreational release mortality, so those 2.8 million fish that are assumed to have died, were about 54 percent of total striped bass removals from both sectors in 2020.

Here you can see a summary of commercial quota and harvest by state. In 2020 there were no quota overages, either in the ocean fishery or in the Chesapeake Bay fishery. In 2020, commercial harvest from the Chesapeake Bay accounted for about 62 percent of total commercial landings by weight. Again, as I mentioned, the majority of striped bass that are caught recreationally are released alive. This figure here shows that while the recreational catch varies from year to year, the proportion of fish that are released alive remains pretty high, about 90 percent per year, going back to the early 1990s, and in 2020, 95 percent of fish that were caught recreationally were released alive. As I mentioned, this recreational release mortality was over half of total removals of striped bass in 2020.

One thing that the Plan Review Team included in the FMP Review this year is a note about 2020 MRIP data. The component of MRIP that samples the dockside catch rate data was interrupted by COVID-19, so due to this interruption, the catch-rate-data were imputed as needed, so using data from 2018 and 2019 to generate those total catch estimates for 2020.

The PRT included this table here in the report, which shows the contribution of imputed data for striped bass, which varies by state and by estimate, as shown in the table here. If you see a higher percentage of imputed data, that indicates that data from 2018 and 2019 are having more of an impact on those 2020 estimates.

Moving on to the status of management measures. The first is the analysis of the juvenile abundance indices. This year's analysis evaluated the 2018, 2019, and 2020 JAI values. If any surveys JAI falls below their first quartile for three consecutive years, which is defined in Addendum II, then appropriate action should be recommended by the Technical Committee.

The next agenda item will cover this in more detail. But North Carolina, which is down here in the lower right-hand corner, met the criteria for recruitment failure for 2018, 2019, and 2020. Again, we'll hear more about this in the next agenda item. Maine's juvenile abundance index, which is up here in the upper left-hand corner, was below its first quartile in 2019 and 2020.

Then Maryland's juvenile abundance index, which is up here in the upper right-hand corner, was below its first quartile value in 2020. Moving on to Addendum VI. In 2020, a 28 percent reduction in total removals coastwide in numbers of fish was

realized, relative to the total removals coastwide in 2017.

Again, as a reminder, Addendum VI was designed to achieve an 18 percent reduction in total removals relative to 2017. This table here on the screen shows those coastwide reductions by sector, so you see coastwide there is about a 14 percent reduction from 2017 for the commercial sector, and for the recreational sector there was about a 30 percent reduction from 2017. Again, this is coastwide in numbers of fish.

This table here on the screen is included in the report, and lists the realized change for recreational removals in numbers of fish by state from 2017 to 2020. At the request of the Board, this table also shows the predicted reduction in recreational removals from those states that implemented conservation equivalency plans.

You can see that the reductions vary by state, and the Plan Review Team notes that differences in performance are influenced by a number of factors, including changes in effort, changes in fish availability, year classes moving along the coast, as well as environmental factors. Another note, as you can see as that increases in recreational releases in the Mid-Atlantic in New Jersey, Delaware, and New York contributed to those realized reductions being less than predicted for those states. Again, this is included, this full table is included in the reports. On the commercial side this table shows the percent change in commercial harvest by weight by state from 2017 to 2020. For reference, it also shows the percent change in commercial quota. Again, some states chose to take less than an 18 percent reduction through conservation equivalency, so you can see the percent change in commercial quota there on the right, and then in the middle you can see the percent change in commercial harvest by weight in 2020, relative to 2017.
In the ocean we saw about a 38 percent decrease in commercial harvest, and in the Bay, we saw about a 23 percent decrease in commercial harvest in pounds. To wrap up here, I'll go through the comments from the Plan Review Team. In 2020, all states implemented a management and monitoring program consistent with the provisions of the striped bass fishery management plan.

The PRT notes that there is one inconsistency, and that is that New York's recreational regulations state a slot limit of 28 inches to 35 inches, and this does not explicitly indicate whether the upper limit is inclusive or not. Then as far as de minimis, there were not requests for de minimis status in 2020.

Looking in to 2021, the PRT noted that Maryland's 2021 summer closure period, so this year it was a no-targeting closures from July 16 to July 31, is inconsistent with their approved 2020 closure period, which was no targeting in August, August 16-31. Then as far as the circle hook requirements that were implemented in 2021, the PRT noted that some states have implemented more restrictive definitions of bait than the definition that the Board approved back in March.

Several states have implemented the incidental catch guidance that the Board also discussed in March. Then there is one delay in the circle hook rule, and that's in New Jersey. That rule has been delayed, but is expected to be fully implemented in October of this year. Then finally, the PRT had a couple comments on commercial tagging. The PRT noted that in multiple states only about half or less than half of the issued commercial tags were reported used.

The PRT emphasizes the importance of tag accounting for unused tags. Maryland was not able to conduct a tag audit, due to COVID-19. Just as a general follow up, the PRT recommends that Commission staff work with the Law Enforcement Committee to regularly follow up with all states on tag accounting moving forward. That is all I have, Mr. Chair, I'm happy to take questions if there are any.

CHAIR BORDEN: Thank you very much, Emilie. The good news from the report is the Commission met

its Addendum VI target of 18 percent, actually exceeded it substantially, so that is good news. What I would like to do is take the comments in two segments, just general comments on the report if there are any. Then I would like to talk specifically about the recommendations from the PRT, in regards Maryland and New York, and I'll take those up separately. Anyone want to comment generally on the report at this phase, or ask questions? Any hands up, Toni?

MS. KERNS: I don't have any hands.

CHAIR BORDEN: Okay, so does anyone want to comment on the Plan Review Team recommendation on New York, in particular, or does someone from the New York delegation want to speak to the point? Any hands up?

MS. KERNS: No hands.

CHAIR BORDEN: Okay, so no comment on the New York issue. On Maryland, the Plan Review Team also gave us a recommendation. Does somebody from the delegation in Maryland want to comment on it, or does someone on the Board want to comment? Any hands up?

MS. KERNS: Mike Luisi has his hand up.

CHAIR BORDEN: Mike, you're next, and then I'll take anyone else.

MR. MICHAEL LUISI: This came to our attention when the Plan Review Team was going through our changes in regulation. I think just for transparency, I just wanted to clear the air, and let everyone know that in 2020, when we put our conservation equivalency plan together, and we came up with a two-week closure period in August.

The second week of August was the closure that we implemented in 2020, with a cap, as far as not extending that into any future year. We did so because of the timing of our regulation process, and the addendum process, and it did not allow for us to put the closure where we wanted it to be, which was during that time period in July, which is what we did this year.

Now, the analysis that was done for our conservation equivalency, a closure period in August, and a closure period in July were the exact same number of days during the same wave, during Wave 4. We felt that the analysis would have been no different from what it had been the previous year.

However, the water quality indicators, as far as temperature and air temperature, are much worse in the second half of July than they are at the end of August. We made a concerted effort to find that period of time where the water quality is at its peak, as far as the poor water quality for striped bass. That is when we implemented our closure for this year.

We made a more conservative effort to protect those fish in July, while they were at kind of their weakest point, as far as the conditions in the Bay. You know that is what we decided internally. We had hearings on it, and we dealt with the issue at hand. The analysis would be no different at all, because it's still within Wave 4.

The reduction that was part of our conservation equivalency program that was approved, would have been no different, because every day in Wave 4 counts for the same amount of reduction. I'll leave it there, Mr. Chairman, and I'm happy to answer questions. I also have a graph that we used from another area.

You can see this is the graph that kind of gave us the information that we used to implement those measures. You can see that on the far right the block was the August time period, and this is Bay water temperature, surface water temperatures. We backed up that time period to the second half of July, which you can see on the left it's the dotted line. That is when we see our peak in poor water quality, and that's why we made the decision that we did. I'm happy to answer any questions if people have questions about that.

But I'll leave it up to you, Mr. Chairman. But that is the reason for the change, and we didn't feel that we needed to do another conservation equivalency program or another conservation equivalency document, since it was all within Wave 4.

CHAIR BORDEN: Thank you, Mike, does anyone else want to comment on this issue? Toni?

MS. KERNS: I have no hands, Mr. Chairman. I will say that I noticed Maureen opened her microphone, but she didn't raise her hand. I wasn't sure if she was trying to speak prior to the New York issue.

CHAIR BORDEN: Let's finish with this issue, and I'll go back to Maureen if she would like to speak. Anyone else care to speak on this issue? If not, we'll go back to the New York situation. Any hands up, Toni?

MS. KERNS: No hands up currently, no.

CHAIR BORDEN: Okay, Maureen, do you want to go back to the New York issue? I'll afford you an opportunity to comment if you would like to.

MS. MAUREEN DAVIDSON: Thank you. I just really wanted to say that our calculated reduction, with the numbers that we used, was greater than what was required. We felt that we were fine, since we were going to have a larger reduction than was required. The difference that is currently in question right now is not really something that's enforceable, and our law enforcement is out on the water. We felt that the numbers that we went with were fine.

CHAIR BORDEN: Thank you, Maureen, any questions for Maureen or the New York delegation?

MS. KERNS: You have Adam Nowalsky.

CHAIR BORDEN: Adam.

MR. ADAM NOWALSKY: I actually wanted to go back to general questions when you're done with this New York issue, if you will afford me that opportunity. I couldn't get my hand up quick enough before. Thank you.

CHAIR BORDEN: Certainly. Any questions for Maureen? If not, any hands up, Toni?

MS. KERNS: No other hands.

CHAIR BORDEN: Okay, so Adam, you're back to general questions.

MS. KERNS: Mike Armstrong actually did put his hand up, sorry. It was a little slow.

CHAIR BORDEN: Okay, we will take Mike Armstrong, and then I'm going to go to Adam. Mike.

MR. MICHAEL ARMSTRONG: Sorry for the delay. If we could go back to Maryland a minute. I just need to recollect, for Mike. The closure was only for recreational, right? Not for the commercial fishery, which I believe is hook and line at the same time.

MR. LUISI: Yes, Mr. Chairman, I can jump in if you're okay with that.

CHAIR BORDEN: Certainly.

MR. LUISI: Yes, so the closure was a target closure, so there is no catch and release, it's a complete closure with no targeting of striped bass for both the for-hire and the recreational fishery. The commercial fishery still operated during that time period. What I will say is that since we've gone to the individual transferrable quota system, from back in 2013, 2014-ish time period. We have very few hook-and-line fishermen anymore.

The average number of boats on the water in any given day is about five. They continued to operate. They operate differently than the recreational fishery, obviously. They are there to catch their quota and move on. They are not there to catch

and release and throw fish back. But yes, Mike, hopefully that answers your question.

Each year we've committed to reviewing whether or not the commercial fishery should continue to operate during this closure period. This year the administration decided to leave it open, but next year is another story. We work with our advisors, and we get information from them, both commercial and recreational. We try to make that decision each year, based on the best available information we have.

CHAIR BORDEN: Mike, did that address your question?

MR. ARMSTRONG: Yes. Thank you.

CHAIR BORDEN: Thank you very much, Mike Luisi for doing that. Any other questions, other than Adam? If not, we're going to move back to Adam on the general question. Adam.

MR. NOWALSKY: You're doing a great job, and moving very efficiently this morning. My question was with regards to the total removals as a combination of the dead discards and the landings. As part of the FMP review, does staff compile a trend analysis of the percentage of removals that come as a function of the landings versus the dead discards from release mortality, or is that something that can be compiled elsewhere and found elsewhere?

CHAIR BORDEN: Emilie or Katie, want to address that?

MS. FRANKE: Sure, this is Emilie. Thanks for the question, Adam. We do have that information available; we just typically have not included that in the report. But we could add it as a table, for example to the report, if that would be helpful, just showing the contribution of each of those parts of the fishery, commercial removals, commercial discards, recreational removals, recreational discards, their contribution to the total removal.

MR. NOWALSKY: I would be very interested in seeing that, and I would recommend that that certainly be part of future fishery management plans, unless there was objection to that. Thank you.

CHAIR BORDEN: Any other general comments or questions?

MS. KERNS: Ritchie White.

CHAIR BORDEN: Ritchie.

MR. G. RITCHIE WHITE: Question for Emilie. New Jersey is not making the reduction, 18 percent reduction. Could that be or is it attributable to their conservation equivalency regulations, and is that something that could be determined?

MS. FRANKE: Thanks for the question. That is not something that the PRT could determine, again since performance is influenced by a variety of factors, including changes in effort, availability of year classes. Looking at a state specific performance in comparison to the predicted change from their conservation equivalency plan. The PRT can't pinpoint exactly what factors caused that change, or that percent reduction to be less than what was predicted. Katie, please feel free to add anything.

DR. KATIE DREW: No, I think you've covered it. It's definitely again, if you look at the change in effort, is certainly a big component, as is the fact that New Jersey was one of the states that had a fairly high impact of the APAIS change, and therefore you're pulling more years of data from before, or more records from before that management change as well. All of those things are hard to separate out from the actual management measures themselves.

MR. WHITE: Thank you.

CHAIR BORDEN: Anyone else?

MS. KERNS: No other hands.

CHAIR BORDEN: The action on this is to approve the report as submitted. Is that correct, Emilie?

MS. FRANKE: Yes, and I believe Maya has a draft motion. Maya, if you want to take the control back of the screen.

CHAIR BORDEN: Well, yes. If you could put the draft motion up. Given the lack of questions and controversy, I think we can probably do this by consensus. But I think it would be helpful to have a motion up on the board. All right, **so the motion is to approve the FMP Review for 2020 fishing year and state compliance reports.** Is there any objection to approving this by consensus? Does anyone object? Any hands up, Toni?

MS. KERNS: No hands, but Mr. Chairman, if we could have a maker and a seconder, and we had hands up, Emerson Hasbrouck as a maker, and Mike Armstrong as a seconder.

CHAIR BORDEN: Okay, so we've got a motion and a second. Thank you for keeping me on track. Any objection to approving this by consensus? Any hands up? **Motion stands approved by unanimous consensus.**

REVIEW JUVENILE ABUNDANCE INDEX FOR ALBEMARLE SOUND/ROANOKE RIVER

CHAIR BORDEN: All right next item on the agenda is Item 5, which is a Review of the Juvenile Abundance Index for Albemarle Sound, and we're going to start off with a Technical Committee report by Carol Hoffman. Carol.

TECHNICAL COMMITTEE REPORT

MS. CAROL HOFFMAN: Good morning everyone. The Juvenile Abundance Index for the Albemarle Sound/Roanoke River stock showed recruitment failure for three consecutive years in 2018, '19, and '20. That tripped our recruitment trigger that was established in Amendment 6, which showed that if there were three consecutive years where the JAI was below the first quartile, then appropriate action should be recommended to the Board.

In response to this the TC met on July 15 of this year. The solid black line near the X axis on the screen is the first quartile for JAI for value for the period of 1955 to 2009, and that is 1.33, and in 2018 it was 0.4, 2019 it was 1.2, and 2020 it was 0.02. In addition, there was already management action that North Carolina has taken, because in 2020 there was a stock assessment that showed that the stock was overfished, and that overfishing is occurring.

In response to this, the TAL, the total allowable landings were reduced in 2021, and for 2022 as well. They were reduced from 275,000 pounds to about 51,000 pounds, to get at fishing mortality to the target level. In addition, North Carolina did an analysis of flow, and showed a correlation between young of the year recruitment and increased flow above a certain range, and showed that as flow increases above a certain level, year class strength decreases, particularly in May, when striped bass is spawning.

The low JAI values, again from 2017 actually to 2020, aligned with high flow rates that exceeded that limit. In response to this, North Carolina has developed a stocking contingency plan. If the flows from the Roanoke Rapids Dam meet or exceed 12,000-cubic feet per second, which is the rate at which the river starts to overflow, for at least 14 days, from May 1 to June 10, which is critical spawning and transport period.

Then there is a stocking program for striped bass to be stocked in western Albemarle Sound nursery area. AT this time the TC recommends no action be taken by the Board, considering that North Carolina has already taken management action by reducing their total allowable landings, and also by having their contingency stocking program by monitoring and analysis of river flow. In summary, the JAI was low for three years in a row, which tripped the stock recruitment failure trigger per Amendment 6. The TC met to recommend appropriate action, and the

TC recommends no action by the Board, due to the fact that North Carolina has already reduced the total of allowable landings, and because they have their contingency stocking program in place. Does anyone have any questions?

CHAIR BORDEN: All right, thank you, Carol. Let me just interject that it does not appear that this item requires any action by the Board. North Carolina has been very proactive, and taken action in advance. Let me just ask for questions, and then if there is nothing of substance that comes up, we'll move on. I don't believe it requires any action at all, even to accept the report. Questions for Carol.

MS. KERNS: Carol, just a reminder to turn off your microphone when you're not speaking, and then we have Mike Armstrong followed by Mike Luisi.

CHAIR BORDEN: Mike Armstrong.

MR. ARMSTRONG: I applaud, you know the proactive measures that North Carolina has done very quickly, and I hope things turn around. Just one question. The quota was 275,000. You reduced it to 50 something thousand. Was in fact the 275 being fully utilized?

MS. HOFFMAN: I would have to go back and look at that. But I know that the 50,000 was to reduce the F down to the target.

MS. KERNS: Mr. Chair, you have Chris Batsavage, who can probably answer that question.

CHAIR BORDEN: Chris.

MR. CHRIS BATSAVAGE: I think it depends on the commercial and recreational sectors, and also while we have a commercial fishery, which takes a big percent of the TAL, and then the recreational is the other 50, which is split between Albemarle Sound and the Roanoke River.

If memory serves me, I don't think the quota was reached every year in those years overall, mostly in the commercial fishery. I think on the recreational fishery it depended. You know they might hit their allocation in the Roanoke River but not Albemarle Sound, and vice versa. It wasn't full utilization of the 275 every year.

CHAIR BORDEN: Mike Armstrong, are you finished, or do you have a follow up?

MR. ARMSTRONG: No, I'm all set, thank you.

CHAIR BORDEN: Mike Luisi.

MR. LUISI: This question might be for Chris as well, since he's on the line. Chris, do you guys do a spawning stock biomass survey in the spring? Are you sampling the fish that are coming in that spawn? I just wonder if some of the reason for the recruitment failure might just be that the fish aren't moving into the Sounds anymore, and they are moving more north. I don't know if you have any thoughts on that, or if you have any data that would suggest that maybe just spawning isn't occurring there anymore.

MR. BATSAVAGE: Yes, Mr. Chair, if it's okay I can attempt to answer that at least. Yes, thanks for the question, Mike. Yes, we do have a spawning stock survey, an adult gillnet survey in Albemarle Sound. It was suspended last year due to COVID concerns. There is also electrofishing survey on the upper Roanoke River on the spawning grounds.

We do monitor that. That information goes into the stock assessment. In terms of are we seeing just less spawning fish due to the movement north. I don't know. I think that would probably be answered better by our technical staff that I don't think are on the call today. However, it's probably more of a function of just in terms of these poor year classes, the river flow.

Stock status probably plays a role as well, but as we know, a small spawning stock can produce a large

year class, if conditions are optimal. In the last few years, we haven't seen that. It's kind of a long-winded way of saying I'm not real sure. But I just wanted to give a little bit of background information and answer at least part of your question.

MR. LUISI: Yes, I appreciate that, Chris. Thanks, Mr. Chairman, that's all I had.

CHAIR BORDEN: Thank you, Chris. Any other questions on this? Any hands up, Toni?

MS. KERNS: No additional hands.

CHAIR BORDEN: Okay, so I would just like to thank the North Carolina delegation for the way they've handled this issue. I think they've been, as I indicated before, extremely proactive, and that is exactly the type of leadership we need. Thank you very much to the entire delegation.

PROGRESS REPORT ON DRAFT AMENDMENT 7

CHAIR BORDEN: We're going to move on to the next item, which is a Progress Report on Draft Amendment 7. Emilie, you're up. Before Emilie starts, I'll provide some guidance on how I want to handle the issues at the conclusion of her presentation. Emilie.

MS. FRANKE: Go ahead, Mr. Chair.

CHAIR BORDEN: I'm finished. If you could, do the report, please?

MS. FRANKE: All right, thanks for your patience. Today I will be providing an update, as the Chair mentioned, on the development of Draft Amendment 7, and highlighting where the Plan Development Team and Technical Committee are requesting Board guidance on some of the issues being developed for the Amendment.

I'll start with a brief background, and the timeline for Amendment 7, and then I'll move into each issue, and provide a brief overview of what the Plan Development Team and Technical Committee have been discussing, and identify where they are requesting guidance from the Board. Just to recap a little background here. In August, 2020, the Board initiated the development of Amendment 7 to address a number of issues facing striped bass management. The purpose of the Amendment is to update the management program to reflect current fishery needs and priorities, since the status and understanding of the resource has changed considerably since Amendment 6 was approved in 2003. In February of this year, the Board approved for public comment the Public Information Document or PID for Draft Amendment 7.

This scoping document sought public input on a number of important management issues, and after the public comment period on the PID, at the May Board meeting the Board approved four issues for development in Draft Amendment 7. Those issues are recreational release mortality, conservation equivalency, management triggers, and measures to protect the 2015-year class.

Over the past few months, the Plan Development Team and the Technical Committee have met multiple times to begin developing options and analysis for the draft amendment. During these meetings the PDT and the TC identified specific questions requesting guidance from the Board on the type of options that should be developed for some of these issues.

Guidance from the Board at this point in the process is important to ensure that the draft options meet the Board's intent and objectives for these issues in the Draft Amendment. Based on guidance provided by the Board today, the PDT will continue developing options for Draft Amendment 7 over the next several weeks.

Here is the current timeline for Amendment 7. As I mentioned, the Board started this process in August of last year, and the PID process was completed this spring. We're in this current step of the PDT developing the draft amendment document. Again, between now and October the PDT will prepare the draft amendment, with the intent of presenting it to

the Board in October, when the Board could consider approving the draft for public comment.

Then after our public comment period, the earliest the final amendment could be approved is February of next year. For the remainder of my slides today, I'll provide a brief overview of what the PDT and TC have discussed for each issue. But most of the presentation will focus on the specific questions requesting guidance from the Board.

Those questions for the Board are related to recreational release mortality, conservation equivalency, and the recruitment trigger. I'll pause after each question or set of questions, if okay with the Chair, and if the Board would like to discuss and provide guidance on some of these questions before moving on to the next issue.

PLAN DEVELOPMENT TEAM REPORT

MS. FRANKE: The memos from the Plan Development Team and the Technical Committee that were prepared for this meeting were part of the main meeting materials, and they outline all of these questions and challenges in more detail. I would like to thank the PDT and TC members for all their time these past few months, and in the coming weeks.

To kick us off here, I'll start out with recreational release mortality. In order to reduce recreational release mortality, the Board could consider two approaches. The Board could consider additional gear restrictions to help increase the chance of survival after being released. For example, Addendum VI requires the use of circle hooks when fishing recreationally with bait, to reduce this post-release mortality. Another approach would be for the Board to consider effort controls, to reduce the number of trips interacting with striped bass, and therefore reduce the overall number of striped bass releases. The PDT is considering the following types of options to address recreational release mortality, and the PDT is still working through these potential options, so this is not a final list, just hopefully to give the Board an idea of the types of options that the PDT is discussing.

For gear restrictions, the PDT is discussing various options, including the use of non-lethal devices for removing striped bass from the water. For example, and the use of barbless hooks. For fish handling, the PDT is discussing a potential option to require the in-water release of large fish. For outreach and education, the PDT is discussing options for public outreach campaigns in the states, and also an option for an educational video and quiz.

Then finally, for effort controls, the PDT is primarily discussing seasonal closures. Today the PDT is requesting guidance on these effort control seasonal closures, which again, are intended to reduce the number of live releases by reducing the number of fishing trips that interact with striped bass.

The primary question from the PDT to the Board today is what types of effort control options should be included in the draft amendment. The PDT has identified three decision points for the Board on this issue. The first is related to the geographic scope of the closures. The next is related to a reduction target, or lack thereof, and the third is related to the type of closure, so thinking about a no targeting closure versus a no harvest closure.

First for the geographic scope, closures could be either coastwide, or they could be state or region specific. From a coastwide perspective, coastwide closures would ensure consistency in the timing of closures across all the states. But one of the primary challenges here would be equitability. Since recreational fisheries operate very differently along the coast, coastwide closures would result in different levels of effort reduction across the states.

These closures would impact each state fishery differently, based on the timing and what fish are available at that time in certain areas. Then also

based on the current management measures that are already in place within each state. Then on the other hand, state specific or regional closures could help account for unique biological or socioeconomic considerations, as well as regulatory consistency.

However, state specific closures could result in more of a patchwork of different closures as we move along the coast. For state specific closures, the PDT would not be able to develop specific options for each state. States would need to develop their own proposals for closures, that they would then pursue through their state regulatory and public processes, and they would also submit to the Commission for a TC review and Board approval as part of their state implementation plans.

The PDT could develop some options that might set some parameters on the scope of state closures. However, the state level MRIP data needed to look at these different types of closures, would likely have high PSEs, particularly when looking at specific waves. The second decision point related to seasonal closures is related to the target reduction or the basis for a closure. Without a specific target reduction in mind, it's difficult for the PDT to develop specific closure options. Without a target for reducing effort, for example a percent reduction the Board is looking for to reduce effort, then the PDT requests guidance from the Board on which days or months or waves the Board would like to consider for the closures. Then without any additional direction at this point, the PDT would only be able to focus on options for biological and ecological-based closures. For example, closures based on spawning or closures based on peak temperature periods. Then the final decision point is on the type of closure.

As I mentioned, the Draft Amendment could include options for both no harvest and no targeting closures, or the options could only focus on one type of closure. The PDT assumes a maximum reduction of effort, and therefore a reduction in number of releases would be achieved with a no targeting closure.

The PDT does recognize that there are some concerns about enforceability with no targeting closures, and there is also some uncertainty around the level of compliance. For a no harvest closure, the PDT notes that anglers may shift their trips to catch and release trips, and this could increase the number of releases, which would then be counter to the objectives of reducing releases.

Overall, choosing which type of closure may depend on the reason for the closure. But with any type of closure there will still be fishing trips that incidentally interact with striped bass, and then there will also be some striped bass trips that shift effort to target other species. Then finally, different closure scenarios could be explored with MRIP effort data.

But again, there are some challenges in that changes in angler behavior are unpredictable, and also catch and release trips are not separable in MRIP. With that, Mr. Chair, those three decision points for effort controls to address recreational release mortality are summarized here on the screen. If you want to pause for Board discussion on this before we move on to the next issue.

PROVIDE GUIDANCE TO THE PDT FOR DRAFT AMENDMENT 7

CHAIR BORDEN: Thank you, Emilie. What I would like to do is take each one of these questions that are up on the Board, and basically go through them one by one, and try to get a consensus on it, without a motion, if possible. Keep in mind that what we're developing is a draft public hearing document, with a range of options.

It's quite possible we can have more than one option, or a couple of different options developed, and then review them at the next meeting. Obviously, you want to narrow the choices, so that it limits the scope of the work that the technical people have to do. But I think it's desirable to go

through these one by one, and get some comments on it.

See if we can get a consensus, and then move on. Just remember that you're going to see this all again with greater detail at the next meeting. General comments on what type of effort control option should be included. The first question is, should the closures be coastwide, or should they be state specific. Does anyone want to speak to that point?

MS. KERNS: I'm waiting for hands to come up, Mr. Chair. We have Ritchie White, then Marty Gary.

CHAIR BORDEN: Ritchie, and then Marty.

MR. WHITE: I would favor the state regional option. I think it's too difficult for the length of season, when you look at northern states in relation to southern states, if the southern states have a much longer time period. If so, I would think that a closure ought to be a percentage, and that would be difficult. I mean that would work for the amount of time that striped bass are in a jurisdiction. That would be my recommendation.

CHAIR BORDEN: Marty.

MR. MARTIN GARY: I'm inclined to agree with Ritchie, although I guess part of me is wondering. I would like to hear from the public. My sense is Ritchie is right, you know the regional scope is probably more applicable. I just wonder, and I know the PDT, I don't want to frustrate them by giving them a lack of guidance. But unless we absolutely have to narrow it down. This is one that maybe we still need to hear from the public about, keep them both in. I would like to hear from others if they had a thought on it.

MS. KERNS: You have Mike Luisi then Tom Fote.

CHAIR BORDEN: Taking Tom next, Mike.

MR. THOMAS P. FOTE: Dave, who did you call on, Mike or me first?

CHAIR BORDEN: Mike.

MR. LUISI: Yes, I Have to agree with Ritchie. I think there is enough difference in the geographic range of this species, that state specific or regional closures should be where the PDT should be focused, rather than a coastwide closure for all states at the same time. As we just talked about maybe half an hour ago, you know we have certain information in our state here in Maryland that suggested that we have a closure period that may be completely different from what Virginia has on record, or Delaware or New Jersey.

I would like to see the state regional closure explored more, and have that allowance for the states to come up with whatever that closure is. Now, I guess you're going to get into the reduction target, and I'm interested to hear what people have to say about the target, as to how we're going to reduce releases. But that's my point at this time.

CHAIR BORDEN: Tom Fote.

MR. FOTE: I can understand what Ritchie is saying, but when we look at the reduction that goes on, and if you do an area closure, and I'll point out the Raritan Bay, because there are some suggestions, we do it in Raritan Bay. If you close that door at a certain period of time, that might be the only period of time, like in the Chesapeake Bay, where people actually because of the regulations, because we don't have sporting area regulations, but just coastwide regulations. They only see fish big enough to catch during that period of time. On the reduction in that region, it would be greater, although we would be equalized at reduction it's the same reduction up and down the coast for the Pacific time period that each state needs to put them in to accomplish that reduction. That is what I'm looking at with fair and equitable.

CHAIR BORDEN: Anyone else with their hands up, Toni?

MS. KERNS: Chris Batsavage, Justin Davis, and Mike Armstrong.

CHAIR BORDEN: Chris.

MR. BATSAVAGE: I agree with the regional target, the regional closures, as opposed to coastwide, with the thought of trying to reduce discard mortality during the hot summer months, when the water temperatures are high. I think that is not going to be applicable coastwide, it will be probably more in the Mid-Atlantic states down to North Carolina. I'm not sure about a target reduction, but maybe look at months, days, or waves.

Like Wave 4, that is done up in Maryland, you know to focus the closure periods. It would probably depend on the states, as far as exactly when those dates would be. As far as the type, it would definitely need to be no targeting, and probably no harvest at the same time. Just no harvest will mean that people will go out and catch and release, and I don't think that's new to the objective of what we're trying to do, if we're really concerned about release mortality during when the water temperatures and air temperatures are high.

CHAIR BORDEN: Dr. Davis.

DR. JUSTIN DAVIS: I just want to clarify. Are you looking for comments at this point just on the first issue of geographic scope, or sort of the whole slate of things that are up here on the slide?

CHAIR BORDEN: I realize there is a relationship between these, but I prefer to keep them separate, if we can do that, at least now at this stage.

DR. DAVIS: Okay, fair enough. On the issue of geographic scope. I think the only thing I could support would be regional closures. I think a coastwide closure, uniform up and down the coast just doesn't make sense, based on the migratory nature of the stock. There would be no way to have sort of an equitable distribution of harvest, or effort reduction up and down the coast with one-size-fits-all coastwide closure.

I think going to the other extreme, a state-by-state closure, I think it leans into the weakness of the MRIP data, and I think it was also really clear from the Addendum VI process, and the discussion of conservation equivalency there, that there was a pretty resounding rejection by the public and the Board of the idea of moving towards patchwork state-by-state regulations for this species. I think state-by-state closures, opening up that possibility just starts to go down that road, and I don't think that's a place we want to go. I think the only thing I could support would be regional closures.

CHAIR BORDEN: Mike Armstrong.

MR. ARMSTRONG: You know as usual; I think this is way more complicated than it looks like on the surface. To me, if we're looking to decrease release mortality, and by nature that means we decrease the B-2s. We have to have a no targeting closure. I don't mean to jump ahead, but that has ramifications.

If we go with, we want to cut effort during a period when the discards are very high, which would be coastwide. There may in fact be a time, you know July, where in Massachusetts and Maryland, there are both times when it's a whole lot of discards. On the other hand, if we go with an environmental thing like temperature, then that by nature has to be state and regional.

I think there is another question that hasn't been addressed yet, and maybe we'll do it in the next blurb, is how do we want to do this? Is it get people off of catching fish, or get people off catching fish when it's so warm that mortality is very high? To me that hasn't been decided, but I welcome anyone else's opinion. But I think we need to decide that.

Clearly the effect is very different, I think, as maybe Chris noted. The effect in the Mid-Atlantic with temperature guided things would be probably much greater than they were up north. It's a whole other thing to think about, so I'll just throw that out there.

MS. KERNS: I have Cheri Patterson and then John McMurray.
CHAIR BORDEN: Cheri, you're next.

MS. CHERI PATTERSON: I also agree with a state-regional approach, as opposed to coastwide closures, on several manners. We're dealing with a migratory species whose length of residency in any area is variable. We don't know from a coastwide perspective necessarily, what other species are being targeted, where the striped bass might be a bycatch, and we're still not achieving our effort controls that we are intended, if we go through a coastwide closure. I just think we have a better picture of objectives by the influence of states and regions being more familiar with when the striped bass are in those areas.

CHAIR BORDEN: John McMurray.

MR. JOHN G. McMURRAY: I have one question and a comment. Have we gone down the road of establishing an overall target reduction with discards? I think that's relevant to what we're talking about here. I'm not sure why we're trying to narrow it down at this point. For sure I have an opinion about effort controls and state, regional and coastal closures in particular.

Of course, regional and state closures make more sense, given the variability amongst states. But I don't see any reason at this point to take any of these options out of the document. I think we need to see what some of these options might look like, and we need to hear from the public about them. I know the PDT wants us to narrow this down, but in my opinion, we should include all options in the document at this point.

CHAIR BORDEN: All right, anyone else on the list, Toni?

MS. KERNS: That's all the hands.

CHAIR BORDEN: Okay, so the majority of the speakers identified a preference for regional approach, but I would note that I thought that the individuals talked about coastwide implications and concerns made some valid points. I think where we are as a Board is, we definitely want the regional strategy to be developed.

But it also sounds like the Board, at least some members of the Board, want to keep some language in there about the coastwide issue, without getting into the specifics of how the coastwide measure would work out at this stage. I think that is kind of where we are. I mean we could keep both in, but the whole point of this exercise is to kind of narrow the range, and focus PDT work. The Board definitely wants regional closures in. Does anyone object to having a discussion of some of the points that were made about coastwide issues in the same document?

MS. KERNS: We have an objection. Tom Fote has his hand up.

CHAIR BORDEN: Yes. Justin.

MS. KERNS: Tom Fote

CHAIR BORDEN: Okay, Tom Fote.

MR. FOTE: I don't have an objection. What I'm basically saying is we already have a coastwide closure when you look at the EEZ. It would be interesting to get the public's comment on how they think that closure is working. I mean a lot of us know that a whole bunch of catch and release fishery goes in the EEZ. They say they're not targeting, but we know they're targeting striped bass when they are out there, because that is what is available, maybe an occasional bluefish. I would like to hear from the public what they think about coastwide closures.

MS. KERNS: Mr. Chair, Dennis Abbott, and then Megan Ware.

CHAIR BORDEN: Dennis, and then Megan.

MR. DENNIS ABBOTT: I think the object this morning was to focus on what we wanted to do, and probably to narrow down things. It's clear to me that coastwide closures isn't something that would end up being in our final decision document, nor would it be accepted by the vast majority of the states. I agree with John McMurray, and I do personally believe that we should be as broad as can be in putting a document out.

But at the same time, I think we have to be cognizant of the fact that some things are not going to fly, and coastwide closures is definitely a nonstarter, especially here in the northern range. I mean I could have, not envisioned, but think of the fact that New Hampshire have a closure in July, you know July and August is really the only time that we see fish. It was previously stated in a migratory species, you know it makes a big difference to us, so a coastwide closure would have a negative effect on our state, Massachusetts and Maine. I just don't think that coastwide closures work, and I don't think it should go any further than the document.

CHAIR BORDEN: I've got Megan Ware next. Megan.

MS. MEGAN WARE: Yes, I agree with Dennis there. I think the issue with the coastwide closure is there are equity issues kind of on both spectrums. You could have a closure in the winter months, which is primarily that burden is going to be on the Mid-Atlantic states, or you can have one in the summer.

That could take 25 percent of the fishing opportunity, in terms of time, in some of the New England states. I think there is kind if inequity potential on both sides of the spectrum, and so I think the way to best get around that is with more of a regional approach with a percent reduction.

MS. KERNS: You have Roy Miller followed by Pat Geer.

CHAIR BORDEN: Roy and then Pat.

MR. ROY W. MILLER: One thing we haven't mentioned in regard to coastwide closures, are spawning ground closures. Our practice has been historically, most if not all the states have some type of spawning ground closure. But in many cases, like in the Delaware River, it is not a prohibition against targeting striped bass if they're fishing catch and release.

It's a prohibition on harvesting striped bass on the spawning ground during the spawning season. Maybe that is something we might want to consider under the heading of coastwide closures, is additional clarification of what you can do on spawning grounds, thank you.

CHAIR BORDEN: Pat Geer.

MR. PAT GEER: Yes, I'm going to agree with Dennis on what he said. I think that having the PDT spend their time and efforts on developing any kind of options or coastwide closures, while we're saying that it's probably not going to go anywhere. It's not a good use of their time and effort. I'm more supportive of the state and regional approaches, and having the PDT delve more into those, to spend more time on that than looking at an option that, quite frankly, is probably not going to be approved by the states or even considered by the states.

MS. KERNS: That's all your hands, Mr. Chair.

CHAIR BORDEN: Let me suggest. I think we have a consensus on this, not unanimous, to use a regional closure option. But I also would reiterate what I said before that I think there should be dialogue developed around the coastwide issue, to include some of the points that have just been made by various Commissioners, so that is part of the document. Then we let the public comment on it. Is there any objection to doing that? Any hands up, Tonti?

MS. KERNS: No hands.

CHAIR BORDEN: Okay, so Emilie, does that meet your requirement on that item?

MS. FRANKE: Yes, Mr. Chair, I think we have some good feedback, and as was mentioned, the discussion on the next item will also help inform these options.

CHAIR BORDEN: Okay, so on the next item, and Emilie will introduce it. My own thinking on this is we just need a range of targets to put into it. It's more important to me to figure out how to do this and make it work, than it is to reach a particular target. I'm going to let Emilie introduce the issue in greater detail if she wants, and then we'll take questions on it. Emilie, do you want to speak some more on this? Emilie, do you have anything else to say on that item?

MS. FRANKE: Yes, just as a reminder. Without a specific percent reduction, it is difficult to develop specific closure options. If the Board does have a specific percent reduction in mind, that would be feedback for the PDT. If the Board did not have a specific percent reduction in mind, the Board could provide some guidance on times of the year, days, months or waves the PDT should focus on. Then if there is no guidance on that, then the PDT would only focus on those biological or ecological closures, as was mentioned, such as spawning closures or closures based on temperatures.

CHAIR BORDEN: We're going to do comments. Any hands up?

MS. KERNS: We have Ritchie White.

CHAIR BORDEN: Ritchie.

MR. WHITE: I think that unless we hear a report from the Law Enforcement saying that targeting closures are enforceable, I think that that should not be part of this document. Because I believe, especially in New England, it is not enforceable. There is no way of proving, if you have a wire leader on, that you're not blue fishing in Maine, New Hampshire, Mass, probably Connecticut, which makes targeting a striped bass. I mean you can be targeting striped bass with a wire leader, and that would just not hold up in court. Anyway, I think that is a wasted effort.

CHAIR BORDEN: Toni, other hands up?

MS. KERNS: We have Justin Davis followed by Mike Luisi.

CHAIR BORDEN: Justin.

DR. DAVIS: I guess these last two items here on the slide really do relate to each other, as Ritchie just alluded to. I share his concern about the prospect of a no targeting closure. I really worry that we would be going down a road, again sort of similar like to what we just went through with the circle hook mandate out of Addendum VI, where when we start to work on it, we realize that the degree to which that no targeting closure would be enforceable from jurisdiction to jurisdiction might vary quite a bit.

We could sort of be getting ourselves into a place where due to the different regulatory scenarios in each state, the way each state's fisheries operate. It just really may not be trackable. I feel like if we're not talking about no targeting closures, then I'm not sure what we're doing here, because a no harvest closure to me, does not really address the issue of recreational release mortality.

If we close additional periods of time to harvest, we're not telling people they can't go out and catch and release striped bass, and if people go out and catch and release striped bass, potentially maybe catch and release more fish, because they can't harvest, and then switch to fishing to something else. We might be inadvertently increasing recreational release mortality with a no harvest closure.

To me this just sort of relates, as well as to this issue of what is our target. It's not entirely clear to me here what we're trying to accomplish. You know, I can understand the PDTs uneasiness with not sort

of being given a clear goal of what we're actually trying to achieve here. I don't think we have technical guidance that tells us what level of effort or discard reduction is necessary to achieve some goal related to ending overfishing, or returning the stock out of an overfished state.

Unlike Addendum VI, where we sort of had a clear target for removal reduction, this just seems to me like an effort to make an ad hoc move to address a specific source of mortality. We could come up with ranges of days or months. I don't know how we explain to the public how we pick those ranges.

How they relate to the overall goals we're trying to achieve, other than just a sense of, well anything we can do to reduce removals of mortality can help rebuild the stock faster. But I don't know if this is really helpful input, in terms of trying to decide where to go here. But I just really have concerns about generally what we're trying to achieve here.

Also given that the fishery is primarily catch and release in recreational, there will always be some level of discard mortality, and it's likely to be high in this fishery, just given the level of effort, and that it's primarily catch and release. I don't really have any specific reduction target in mind. I don't know how to go about deciding what the appropriate target is, particularly if we're not talking about a no-targeting closure, which I worry about really the feasibility of that.

CHAIR BORDEN: Mike Luisi.

MR. LUISI: I have to disagree with Ritchie on the no targeting closure, but I also want to say that I do agree with your comment regarding taking a look at a range of reduction options focused on minimizing release mortality. This is an issue that came up a couple years ago, and we all know the severity of release mortality, as it relates to the stock health.

We can't move forward with just a no harvest closure without, as Justin just mentioned, it's going to just translate into more catch and release, which is what we're trying to address here. I think the no targeting closure is a must. It has to be in the document. It's a new concept. We've been doing it for two years now. Not everybody is following the rules, I would imagine. We've talked with our enforcement agency, and they are doing their best to try to get people off fish when they see them catching stripers during the closure periods. It's an evolution of understanding and behavior, and I think over time the no-targeting closures will be much better understood. If individuals are really interested in making sure that the striped bass stock is sustainable for the future, that they will follow those rules. I think it is a must for this document to have no targeting closures in place.

But I do like your idea of a range of reductions, whether it's 10, 25, 50 percent from the release mortality that we know is a major issue in this fishery. I think those two in combination with each other should be combined and put together in an alternative that we can consider in the future. I appreciate the time, thank you, Mr. Chairman.

MS. KERNS: You have Bill Hyatt followed by Tom Fote.

CHAIR BORDEN: Bill.

MR. WILLIAM HYATT: Yes, I just want to chime in that I am strongly opposed to no targeting closures. I think that they are broadly recognized as unenforceable. I think their reputation amongst our angling constituency is that they are a joke. I think by considering them further and implementing them, that it reduces public confidence in virtually all that we do. I would support strongly removing them from further consideration. Thank you.

CHAIR BORDEN: Thanks, Bill, Tom Fote.

MR. FOTE: If you remove no targeting closures from the document, then why are we having harvest closures? I mean truly they are not the problem. We're basically controlling the amount of

fish that are basically landed, according to the percentages that we're reducing the catch by. What we're not reducing the catch by is the hook and release mortality.

You say it makes people have no confidence. Well, people have no confidence in harvest closures, when they know that people out there and the people that are promoting that we should close the areas are the catch and release fishermen that are causing the problem, as far as they're concerned. There is the credibility problem, and I have a great difficulty in it.

I mean I look at what happens in the EEZ, and back over the years we've seen that the people just don't abide by, especially catch and release fishermen, don't abide by the closures in the EEZ. They are out there fishing all the time, and these are the same people calling for us to do closures in the different areas, because it is not going to affect them and their customers. But if you start basically doing closures in an area, as far as harvest, you do expect certain captains that basically deal with people that want to take food home to eat, not just play with it.

MS. KERNS: That's all your hands.

CHAIR BORDEN: All right, so lacking any direction, the PDT is going to focus on biological and ecological closures.

MS. KERNS: I'm sorry, Mr. Chair, you had a couple hands go up after I said you don't have any hands, and I'm going on your rule for those that have not spoken to this issue yet, and I have Marty Gary and John McMurray.

CHAIR BORDEN: Marty.

MR. GARY: I apologize, I wanted to wait to hear a few folks, unlike the first time I commented, and I was glad I did. I don't want to protract this, but after listening, almost everybody was right. A prohibition on targeting is unenforceable. We have two law enforcement agencies that work with us on the Potomac; Maryland DNR and DMRC, and they pretty much told us on the public record at our meetings, they can't enforce a no targeting.

But despite that, our Advisory Committee and our Commission were fully supportive of a no targeting prohibition, when we implemented our Addendum VI reductions with our closure. Part of that is this regional issue we have in the Chesapeake Bay with habitat compression when we have high water temperature and high volumes of hypoxia.

Basically, our situation in the Potomac, we can have a very low or no salinity. We had a Frechette in '18 and '19, where we saw for great stretches of our tidal Potomac a near zero salinity. High temperatures low salinity, I think everybody on this call knows what that means. It made perfect sense to implement that, and I think the moral of the story for us was, give the fish a break during this metabolically challenging time.

But then when you get up into New England, where Ritchie and up in Maine and New Hampshire you have salinity, you have cool water temperatures. I can see the paradox here, and I don't know that I'm offering you any kind of solution, but the targeting thing, I agree with Mike in the Chesapeake, the no targeting rather, it's a valuable tool for us. But it may not be a great tool up in the northeast and in the north. I think we need to keep it in play. We clearly, I think believe in the Chesapeake it's a valuable tool. Thank you for letting me speak at the end here.

CHAIR BORDEN: John McMurray.

MR. McMURRAY: I'm not opposed to keeping no target options in the Amendment, because again, I think we need a full suite of options, and the public needs to be able to comment on them. But let's not be naïve on compliance here. It's 100 percent non-enforceable, and people are going to fish for stripers no matter what.

To Tom's point, of course discards are a problem, regulatory discards and just straight up recreational discards. But to claim that they are the bigger issue

is not correct. I did want to point out that 52 percent of mortality is harvest, and 48 percent is discards. Harvest is certainly the easier thing to control.

MS. KERNS: Mr. Chair, you have one repeat Commissioner, and one member of the public.

CHAIR BORDEN: We're going to take the Commissioner first.

MS. KERNS: Ritchie White.

CHAIR BORDEN: Ritchie White, you get a second bite, maybe a first one, Ritchie.

MR. WHITE: I'll be short. I agree with the input that we're looking to lower mortality. Release mortality certainly is, I think, part of that. But a harvest closure would reduce mortality, so I think it's important to leave that in. Thank you.

CHAIR BORDEN: All right, so we really don't have a consensus here on this. I guess my only suggestion is on this specific issue, as I indicated before. Without some kind of direction, the PDT will continue to focus on biological and ecological closures.

But it seems to me that there is some merit in having the section on this in the document reflect the discussion that just took place. About particularly the points that Marty raised about it may be an appropriate technique in some areas and not the appropriate technique in other areas. Then seek the public's guidance on it. Would members feel comfortable with that? Any hands up, Toni?

MS. KERNS: Dave Sikorski.

CHAIR BORDEN: David.

MR. DAVID SIKORSKI: I'm just raising my hand to say yes, I'm comfortable with that.

CHAIR BORDEN: Does anyone else want to comment on this concept? If there are any other hands up, Emilie, does that help at all if we do that?

MS. FRANKE: I think so. There has been a lot of feedback on a couple different points, so I think the PDT can develop a couple different types of options. There seemed to be more focus, as you mention, on the biological and ecological closures, so that is something the PDT can kind of focus on within this suite of options.

MS. KERNS: Emerson Hasbrouck has his hand up.

CHAIR BORDEN: Emerson.

MR. EMERSON C. HASBROUCK: I was just going to say that I agree with your suggestion that you made a few minutes ago.

CHAIR BORDEN: Okay, so I'm not going to take any public comments on this, because this document in particular, this section of the document we obviously have divergent views. It's going to be further refined. Any member of the public that wants to weigh in has the option of talking directly to their own Commissioner on this.

Then we're going to have another bite at it at the next meeting. We'll see what was developed, and then if members of the public want to weigh in on that, they talk to their commissioners, and hopefully the Commissioner's bring the concerns to the table at that. We may also have opportunity for public comment. Without anything else at this stage, I'm going to move on to Item 3. Emilie, do you have anything further on the type?

MS. FRANKE: I don't. It sounded like there has already been a lot of discussion on this. Again, some divergent views with some not in favor of no targeting closures, some in favor of no targeting closures, then maybe a few still in favor of the no harvest closures.

CHAIR BORDEN: I guess my own view is that I think that if you do what Mary suggested, that is going to be fleshed out as part of this item and the previous item, you know the merits of the two strategies and

the weaknesses will be fleshed out. Does anyone else want to speak on this issue? If not, Emilie, could you advance the slide?

MS. KERNS: You have Joe Cimino.

CHAIR BORDEN: Joe, please.

MR. JOE CIMINO: I just kind of wanted to take a step back to the comments about, it isn't just about release mortality. I thought that's what this Amendment was. Obviously, this slide is. But I didn't know we were also targeting a reduction in fishing mortality again. I thought we did that last time around, and this Amendment is specifically started to address release mortality, CE, and sorry one other item, and management triggers. I know we're going to get to the other two in a minute, but I don't understand why we just, there were some comments that were very dismissive of release mortality just now, and how to deal with it, and I'm kind of confused.

CHAIR BORDEN: Does anyone care to respond to that?

MS. KERNS: No hands.

CHAIR BORDEN: Okay, so I'm going to have to think on that, Joe, as we move along, and maybe come back to it. Emilie, could you advance the slide, please?

MS. FRANKE: Yes, Mr. Chair. Moving us on to Conservation Equivalency, which is our next issue. I'll again provide a little bit of background, and then there are a couple sets of questions for the Board to consider. Again, just to recap. Conservation Equivalency provides flexibility for the states, but there are some challenges which were identified in the PID.

These challenges include regulatory inconsistency between neighboring states, the challenge of evaluating the effectiveness of CE programs, also limited guidance on how and when CE should be pursued, and how equivalency is defined. Then again, the challenge of the use of state level MRIP data, which is less precise than the regional or coastwide MRIP estimates.

The PDT is considering the following types of options to address these concerns about the use of CE. The PDT is thinking about the applicability of restrictions on CE, so which sectors would any CE restrictions apply to. The PDT is considering restrictions on when CE can be used, including options for restrictions that are based on stock status, and options that would be based on specific justifications. The PDT is considering options around CE proposal requirements. These types of options could include limiting the number or scope of proposals, setting some data standards for proposals, implementing or requiring an uncertainty buffer for proposals, and also defining equivalency.

The PDT has also discussed probability of success metrics, as well as CE accountability measures. The requested guidance today on CE focuses on five main topics that are highlighted here. We'll take these in sort of sets of one or two questions for the Board to consider. This is the discussion that the PDT identified as sort of a starting point to inform the development of the CE options going forward.

The question for the Board is, whether the Board can specify at this point, which sector or sectors of the fishery would be subject to new restrictions on the use of conservation equivalency. Based on the PID and previous Board meetings, most of the issues and concerns around CE seem to apply to non-quota managed recreational fisheries.

That would not include recreational bonus programs. However, the Board has not decisively indicated whether new restrictions for CE would apply across the board through all sectors, or would apply only to certain sectors. It would be helpful if the Board were able to specify which of these options the PDT would focus on.

The first option would be new restrictions on the use of CE would apply to recreational fisheries that are not managed by quota, so that would not

include recreational bonus programs. The second option is new restrictions on these the CE would apply to all recreational fisheries. That would include the bonus programs.

The third option would be new restrictions on the use of CE would apply to all recreational and commercial fisheries. The PDT included two notes in the memo. First, when comparing quota managed to non-quota managed fisheries, and thinking about effectiveness. Quota managed fisheries are accountable to a quota, using census level harvest data, while non-quota managed fisheries rely on survey-based harvest estimates, to determine if they are exceeding the harvest target.

Then second, thinking about regulatory consistency. The PDT Notes that the commercial fishery will have variations, both among and within states, in terms of seasons, trip limits, et cetera, even without CE, because there are some pretty large differences in gear participation and quota by state across the commercial sector, even without CE. With that, Mr. Chair, this might be a helpful place to pause for discussion, before we move on to the rest of the questions about CE.

CHAIR BORDEN: All right, comments from the Board.

MS. KERNS: I have Megan Ware, followed by Jay.

CHAIR BORDEN: Megan.

MS. WARE: This is actually more of a question for Emilie, but I guess I would agree with the PDTs assessment that generally the challenges we have seen have been with the recreational fisheries. I guess kind of a complicating factor here, may be the fact that some states have been moving reductions between sectors in previous addendum. Then just curious if the PDT has discussed that, and maybe potential implications such that if one sector has more liberal CE requirements than another, if that could result in some situations that we either don't foresee or don't want.

MR. FRANKE: Thanks for the question, Megan. If I'm remembering correctly, the PDT hasn't specifically discussed that. For example, thinking about Addendum VI, and sort of studying the reduction between two sectors. That's not something the PDT has discussed that could be discussed, thinking about, in what scenarios would it be difficult to sort of limit these restrictions to only part of the fishery? Yes, that's something we can discuss.

CHAIR BORDEN: Megan, do you want a follow up?

MS. WARE: Just to say that yes, I think that might be a helpful discussion for something the PDT to think through, because I do see that as a potentially complicating factor.

CHAIR BORDEN: Okay Toni, the second name.

MS. KERNS: Jason McNamee.

CHAIR BORDEN: Jason. Dr. McNamee.

DR. JASON McNAMEE: Yes, so similar to Commissioner Ware, I have kind of a clarifying question. I too kind of get the point of the group that potentially you could drop the commercial fisheries out of this. However, I think the best way for me to do this is to offer an example for the floating fish trap fishery in Rhode Island, way back.

We made an adjustment to the minimum size, and then through an analysis, you know translated that adjustment in minimum size to the quota. Again, it was eventually related back to the quota. That part of it I think is in line with what was in the presentation here. But I'm wondering if that is considered a conservation equivalency.

If so, that would be a complicating factor. It would probably hinge around the minimum size by and large, and adjustments to the minimum size, because some of the commercial fisheries, in particular in the north, have larger minimum sizes.

But that is my question. I'm not sure if Emilie is going to have an answer to that right now. But I just wanted to get that out on the table for consideration.

CHAIR BORDEN: Emilie.

MS. FRANKE: Yes, thanks for the question. One of the things that the PDT Did discuss is that it would be helpful to develop for the draft amendment a list of current CE programs that are in place, just to get a better idea of, you know thinking about exactly where these restrictions on CE would apply. I think that would kind of fall into that discussion of making it clear to the Board and to the public what is currently implemented through CE, to better be able to address this question.

CHAIR BORDEN: Jason, do you want to follow up?

DR. McNAMEE: No, I'm perfectly fine with that. Thank you, Mr. Chair.

CHAIR BORDEN: All right, Toni, who else do you have on the list?

MS. KERNS: I currently don't have any hands up.

CHAIR BORDEN: I'm not sure that we've provided enough guidance on this. But if people don't have specific suggestions, we can come back to it. I'll just make a note that we'll come back to it. Individuals can think about the discussion and the issues, and we'll come back and give you another round of opportunity to comment on it.

MS. KERNS: I just got two more hands, Mike Luisi and Dennis Abbott.

CHAIR BORDEN: Mike.

MR. LUISI: If you're looking for a direct recommendation. My recommendation would be to focus on Option 3 here, and allow for both recreational and commercial fisheries to be included in the conservation equivalency programs. We just had a conversation about states, and all states are different, and we might need to make adjustments as needed within that state.

I think excluding commercial fisheries in the conservation equivalency program would be a mistake. I would like to see how Option 3 would be developed, to allow for both recreational and commercial fisheries to be included in those CE programs. If you're looking for direct input that is my input, and we'll see what others have to say. Thanks.

CHAIR BORDEN: Thanks, Mike, that was helpful. Dennis.

MR. ABBOTT: Yes, thank you, Mr. Chair. I was just sitting here thinking that we're dealing with conservation equivalency of striped bass. Would the results of this lead us to apply the same regulations, or whatever you want to call them, to all species that we manage? Would we consider that? Kind of an off-the-wall question, but.

CHAIR BORDEN: Well, it's a question that is probably beyond the scope of the Board's authority to debate. You might want to raise that at a Policy Board meeting. Anyone else on the list?

MS. FRANKE: Mr. Chair, this is Emilie. I just have a quick clarification. Just to clarify, the PDT is not necessarily looking for input on which sectors would be permitted or would be able to use CE. This question is more focused on which sectors would be subject to these potential new restrictions on the use of CE. For example, if the Board was looking at options that would limit the types of proposals that could be submitted. Would that sort of restriction apply to all CE programs across the commercial and recreational sectors, or would those types of restrictions only apply to the recreational sector, given that that is where a lot of these concerns about CE sort of originate. I just wanted to clarify that this question is focused on which sectors would be subject to restrictions on

the use of CE, and not which sectors would be able to use CE at all.

CHAIR BORDEN: Comments.

MS. KERNS: I have Ritchie White.
CHAIR BORDEN: Ritchie.

MR. WHITE: Thank you, Mr. Chair, I support all sectors. Thank you.

CHAIR BORDEN: Thanks, Ritchie, anyone else?

MS. KERNS: Giving people a moment. Right now, I don't have any hands.

CHAIR BORDEN: Okay, so we've got some input on those points, Emilie, if you would like to move on. Mike Luisi suggested Number 3, so if somebody feels a compelling need to come back to that, we can come back to that at the end. Emilie, if you would advance the dialogue, please?

MS. FRANKE: The next question is related to restricting conservation equivalency based on justification. For example, justification could be limited, or justification could include biological reasons, such as the size availability of fish in an area being smaller than what the coastwide measure stipulates.

The idea here is that conservation equivalency would be limited to times when a real hardship would occur, due to the implementation of the FMP standards. The question for the Board is, how does the Board want to proceed with these types of options for restricting CE based on justification? The PDT could identify general justification categories.

For example, CE could be used if there is a biological reason or if there is a reason related to fair and equitable access. But the PDT is concerned that these sort of general justification categories may not provide enough guidance, and then most requested conservation equivalency plans would qualify under these general categories.

The other option is the PDT could develop specific justification categories, so for example specifying what types of biological reasons would justify using CE, and this would provide more guidance, but this might result in a valid reason potentially being left out of the Amendment document. That is one question, and I'll go through one more question, and then we can sort of address two questions at once here.

The next question for the Board is related to the number of alternatives in conservation equivalency proposals. The Board had previously requested options that would restrict the number of management alternatives that a state could submit within a CE proposal. The PDT recognizes the challenges that are caused by the high number of alternatives, for example submitted as part of the Addendum VI process. However, the PDT also identified some challenges in situations where a larger number of alternatives might be necessary.

First, if the timing of the CE proposal deadline is before a state's public comment or a regulatory process, a larger number of alternatives might be needed, in anticipation of public hearings. Another situation might be if states are trying to coordinate with neighboring states, then more alternatives might be needed for their proposal, again making it challenging to restrict the number of alternatives the state could submit.

Then finally, thinking about management complexity. States with multiple fishery components, for example different seasons or different areas, might need more flexibility on the number of alternatives, based on that complexity. The question to the Board here is that, thinking about these administrative challenges with limiting the number of alternatives a state could submit.

Does the Board still want the PDT to pursue options for specific number limitations, and if so, if the Board would like to see a hard cap on the number of alternatives a state would be allowed to submit,

what would that number be? Mr. Chair, here I have pulled up the last few questions, if you would like to take discussion on these.

CHAIR BORDEN: Thanks, Emilie. Did the, question from a Chair. Did the PDT discuss having an arrangement, where we would have a cap, and I'll just pick one arbitrarily, three or four options with some kind of provision in the document for an exception. If a state had some compelling reason, they could appeal directly to the Board, and then the Board could grant them an exception to exceed whatever number gets selected. Was that concept discussed?

MS. FRANKE: The PDT haven't specifically discussed exceptions, although we are considering options where potentially for each management action, either the Board or the TC could put some bounds on the types of proposals that could be submitted. For example, you know maybe for a certain management action, the Board could say, we won't see any alternatives with a size limit greater than X. The PDT is considering those types of options that would sort of provide that flexibility within the amendment, but we haven't talked about a specific cap with an exception.

CHAIR BORDEN: Okay, and then the follow up would be, have we, well actually I'm going to skip the question. Let me go to the Board, and see whether or not the Board wants to weigh in. Comments, hands up, Toni?

MS. KERNS: Yes, I'll start with the first two names I saw, Jason McNamee and Roy Miller, and then I'll give you more after that.

CHAIR BORDEN: Jason and then Roy.

DR. McNAMEE: A couple of comments here. Again, really, I appreciate the presentation and the information provided. I think, so I'll start with the first one and that is on justification. I think it would be extremely difficult for us to come up with. The only way to do this, I'm in agreement, is to define specific criteria for the justification categories. I just don't see us being able to do that in a really comprehensive way through this document, and I can, with high probability, can say that the very first one we get would have a justification that didn't fall into one of our categories, but that we all thought was legitimate, and we would end up in kind of a tough spot as a Board.

I don't think we really need to define justification. I think the Technical Committee, upon their review, they give us hints. Sometimes they give us very overt comments about, you know what they think about any particular justification. You know some recent ones, where I think we've gone a little askew is on like circle hooks, and assigning a specific value to the reduction achieved, and mortality.

Things like that is where we start to get outside of the bounds of what we can actually quantify. I think we can make those types of judgments as a Board. We need to step up a little bit, and be a little more bold, to say look, we're not accepting that as a justification. But to try and define all of the possible justifications here in this document. I don't think we should do that.

Then quickly on the number. I know this is another area, I think it becomes a talking point of, oh my God, so and so submitted 50 proposals, when really what they submitted was, you know variations of a single method. I don't think I've ever seen a situation where there was like even more than three or four different methods that were proposed by a single state.

I don't think states have the resources to produce more than that. Putting an arbitrary cap on the number of CEs that can be submitted, I don't think that's valuable either. Again, I think we shouldn't require a state to put forward the full continuum of possibilities within a single method. It should be the method that they are giving to the Technical Committee, and then one or two, just to show the range of what they're thinking about. But we don't need the full continuum. I guess what I'm

suggesting is, I don't think we need either of these in the document.

CHAIR BORDEN: Thanks, Jason, Roy.

MR. MILLER: I would like to agree pretty much with what Jason said. With regard to the second question there on the hard cap. I think it's too difficult to set a hard cap in advance. I think as a general recommendation, none of us like to review a whole multitude of options from a particular state.

I think that could be, the number of options could be winnowed down at the state level, before submission to the Board, rather than throw a whole number of options up there, and see which one's stick. That should be done at the state level. I think just a general recommendation, states should make every attempt to limit the number of options proposed, before submitting to ASMFC, would be sufficient in this case. I don't think we need a hard cap.

CHAIR BORDEN: Other comments. It sounds like we've got two individuals in agreement, general justification with no cap. Toni.

MS. KERNS: I have, for people who have kept their hands up, I have Justin Davis, followed by Joe Cimino, Eric Reid, and Ritchie White.

CHAIR BORDEN: Justin, and then Joe, and I'll go back to Toni on the names.

DR. DAVIS: I appreciate the thoughtful comments from Dr. McNamee and Roy Miller. I feel like my support for having specific justification categories, and potentially looking at a hard cap was my experience in the Addendum VI process, where I thought sort of the overwhelming number of CE proposals that got submitted, created substantial challenges for those folks on the Technical Committee to effectively vet them before the Board had to take action.

I think also led to a really long and drawn-out Board meeting. I guess I'm really hesitant to go back to a situation where we just stay with the status quo, and just hope that won't happen again. I do think potentially trying to provide some options for specific justification categories in the document, could help focus the discussion a bit on what people think are the appropriate justifications for using conservation equivalency.

It was my impression during the Addendum VI process that many jurisdictions didn't even offer any justification for why they were pursuing conservation equivalency. It was just sort of understood that every state was going to go ahead and do that, because the option was available. I don't know that for this species and this management program, we want to have a situation where the default expectation is once we settle on a coastwide standard.

Every state takes a look, to see if they want to do something different just to see if they can, to provide something that's a little bit better for their fishery. I feel like I would like to see some pursuit of development of specific justification categories, and on the hard cap, I get that it can be tough to set an arbitrary number.

But I wonder if it's possible to go back and look at the last few management document processes we've been through, and look at the number of proposals that were submitted. It may be possible in looking at that, that there is some cap we could identify that wouldn't have limited, you know 80 or 90 percent of instances of proposals being submitted, but maybe there is a few sorts of outliers, where we might say yes, that is too many in a cap. Sort of in between makes sense. Those are my thoughts on the topic, thanks.

CHAIR BORDEN: Justin, you basically recommending on the cap that the technical people do an analysis, and look at the history, and then calculate some percentages that would generate some numbers, a cap that would generate a percentage reduction, so we could look at it and look at actual history, and make a determination.

Is there any objection to doing that? I think that would further the dialogue on the cap. Any objection to doing this? Emilie, that's a task under that issue, so let's focus on the general justification versus the specific justification. I've got Joe Cimino.

MR. CIMINO: I agree with everything that Jason said on this, and to that end one part of that is at odds with what Justin suggested, and that's that there were some overwhelming in number of choices that would have made it difficult for the TC to review. If this was fluke or seabass, we wouldn't have seen those huge tables with options, because the methodology would have been approved, and it would have boiled down to what was probably just a couple of options for the states. I think that that needs to be given some consideration.

We manage other species where conservation equivalency is used constantly, and the methodology is approved, so that if you're shifting two to three days or a week within a wave, it wouldn't have to result in a table full of options, it would simply be a single option. I think that should have been something that was given more consideration and discussion for this, and now we have a new Amendment to do just that. I think that is something that we should be looking at as we move forward.

CHAIR BORDEN: Thanks, Joe. Toni, the next two names, please.

MS. KERNS: Eric Reid then Ritchie White.

CHAIR BORDEN: All right, Eric, and then Ritchie.

MR. ERIC REID: I just have a general question about CEs in general, is that okay to put in at this point?

CHAIR BORDEN: Certainly.

MR. REID: Okay, thanks. CE is a mechanism, it's actually a tool, a luxury to avoid hardship. You know we've had discussions about the probability of success, uncertainty buffers, depending on MRIP, et. cetera. My question is, is it possible to require any CE proposal to exceed whatever the target release mortality, recreational mortality, mortality in general, by X percent.

You know if it's 20 percent you have to exceed it by 10 percent, that makes it 22. Make it 20 percent, it's 24, because of the uncertainty. It's a luxury. In my mind you won't have to pay for a luxury, so that is my question. Can we require it to be more restrictive than the coastwide target in general?

CHAIR BORDEN: Emilie, do you want to speak to that point?

MS. FRANKE: Yes, and thanks for the question. The PDT is considering that type of option under this category of uncertainty buffer under the CE proposal requirements. The PDT Is looking at options that would require CE proposals to exceed the required reduction, as a potential option for the Draft Amendment.

MR. REID: Thank you.

CHAIR BORDEN: Thanks, Emilie. Ritchie White.

MR. WHITE: I request an option that requires CE to be submitted as part of the management document, so addendum or amendment, so that the public gets to see them, and the public gets to comment on them. I think what has caused a lot of problems is, that the Board selects a set of regulations, the public comments on that.

Then, after the fact, CEs come in, and the public never really have a chance across the board to comment, so you have regulations changing in abutting jurisdictions, and the general public never got a chance to comment on those. That is my request, to allow the public to comment on an option that requires the CEs to be part of the document that goes out to the public. Thank you.

MS. KERNS: Mr. Chair, just to respond to Ritchie's request. If we did that, that would mean every time conservation equivalency was being contemplated,

we would have to do an addendum. Sometimes conservation equivalency is asked by a state we don't have an addendum process going on.

In addition, it would slow down the addendum process, probably by three to six months, because we get the management options out first, and then you know immediately go into the process. We would need the states to come back and give us all of their proposals immediately. We can put that in the document, but I just want to control that expectation.

MR. WHITE: Follow up, Mr. Chair?

CHAIR BORDEN: Yes, Ritchie, follow up.

MR. WHITE: I think having that in this option to explain those things is fine. But I think the public gave us a pretty strong message on conservation equivalency. I think that it is important to allow the public to comment on all aspects of how this process works. I think this is an important one, to see if they think it's very important, that they be part of the final process of approving a conservation equivalency.

CHAIR BORDEN: All right, any other comments on this?

MS. KERNS: You have Mike Luisi, followed by Tom Fote.

CHAIR BORDEN: Mike, and then Tom.

MR. LUISI: I just wanted to make a comment regarding Mr. Reid's comments about conservation equivalency and the certainty or I guess uncertainty, of how it compares with the coastwide alternative. I would say that there is uncertainty in both. I don't necessarily know that when a coastwide alternative is proposed through the development of an amendment or an addendum, that there is any more certainty that those measures are going to provide for the reductions needed, than a conservation equivalency document.

You know I think if we're going to go down that road of looking at the certainty of conservation equivalency proposals. There should be some analysis of where the certainty lies within the coastwide alternative as well. Having worked with my staff, you know within our agency on developing some of these alternatives. There is just as much uncertainty as to how they work as the conservation equivalency programs. I'll stop there and leave it there. I do agree, and while I have the microphone, I do agree with Dr. McNamee.

I think we should leave this conservation equivalency kind of open and general, and I don't necessarily know that we should use a hard cap on a number of specific proposals that go forward. You know within the states, we sometimes start with a large number, and we whittle it down to the best we can.

I think the states should just take that upon themselves to try to put forth something that is actually realistic, to the Technical Committee for review, rather than sending them 20 options for review, when they know that 18 of those options aren't going to be workable. I do agree with Jason and others that spoke in favor of the comments he made, and I appreciate the time.

CHAIR BORDEN: Tom Fote.

MR. FOTE: Yes, I agree with Mike and what Jason said. I also don't understand what Ritchie is talking about. When you do conservation equivalency, it is for your state, it's not how other states look at it. It's you're accomplishing a reduction according to the conservation equivalency. That might have a different size than you have in a different state, but it's still doing the same method with taking a shorter season.

Only looking at certain part of the regulations, well, they're taking the smaller fish, like in Chesapeake Bay. All of a sudden, we have other states who all think that's what they should be doing in the Chesapeake Bay, because we don't like that size limit. Ritchie, that is not practical, what you're talking about.

First of all, the time involved. Most of the time you go to a public hearing in your state, and you put the conservation equivalency. That is one of the reasons you ask for a list of options, is because you take it to the public in your state, and say what option to accomplish this reduction do you want in our state. That is what basically how it works. That's how it's worked for years.

CHAIR BORDEN: All right, so we've had a number of good suggestions here. It seems like there is a consensus not to put a cap on the number, and I think if I'm reading the comments correctly, the group wants the majority of the individuals who have spoken want to stick with the general justification. Anything else on this?

MS. KERNS: Mr. Chair, I have one repeat, Justin Davis.

CHAIR BORDEN: Justin.

DR. DAVIS: I just wanted to note quickly. Even though I am in favor of the specific justification categories and the cap, I don't feel strongly enough about it that I would want the PDT to do that work based on just my comments earlier. It is apparent to me, as you noted, that the majority if in favor of general justification categories, and not considering a cap, and I'm fine with that.

CHAIR BORDEN: Thank you very much, Justin. Emilie, do you want to move on?

MS. FRANKE: Sounds good, thanks, Mr. Chair. We just have one more set of questions for CE. The final two questions for consideration for conservation equivalency are about probability of success, and accountability measures. For the probability of success, the PDT recognized that there is Board and public interest in considering a probability of success metric for CE proposals.

But after some discussion, the PDT does not recommend pursuing a probability of success metric for CE proposals. This is primarily because a probability of success metric is not available, and can't be calculated at the state level. While it would be possible to calculate coastwide the probability of success, for example of achieving the fishing mortality target for all different combinations of CE proposals that are submitted. That would add considerable time and complexity to the process.

For example, if a state submitted several different CE proposals, and with all the combined CE proposals there was a lower probability of success of achieving the fishing mortality target, then the question would become, which states would have to change their proposals, and by how much would they have to change them. Again, at this point the PDT does not recommend pursuing a probability of success metric for CE proposals.

MS. KERNS: Emilie, just really quick, your slides, they are not moving forward, just as an FYI.

MS. FRANKE: Thank you, Toni.

CHAIR BORDEN: While Emilie is adjusting that, you heard the recommendation. Any comments? Toni, do we have any comments, hands up?

MS. KERNS: We have Ritchie White, and then followed by Megan Ware.

CHAIR BORDEN: Ritchie.

MR. WHITE: I guess I don't understand this, because if we cannot determine probability of success, then how are we approving conservation equivalent proposals? It seems like what we're being told is, we don't know if they are going to work or not. Am I not seeing this correctly?

CHAIR BORDEN: Emilie, or somebody on the staff.

MS. FRANKE: Right, so the way that the model is set up to quantify that uncertainty around achieving the F target and the spawning stock biomass, that uncertainty could be quantified at a coastwide level.

But we can't quantify that at a state level. Therefore, we can't calculate a probability of success for a specific CE proposal. I'm going to phone a friend here, and see if Katie can add anything to help address your comment.

DR. DREW: Yes, I think it really comes down to kind of how we can't quantify the major sources of uncertainty that are causing both the coastwide measures, and the conservation equivalency measures to succeed or fail. When we tell you we need this level of removals to have a 50 percent chance of being at the F target in 2020.

The uncertainty around that is really coming from the stock assessment model, that has uncertainty in, you know what is the population size when we start these projections, what is recruitment going to be like in the next couple of years. We can say, if we achieve this level of reduction, then we will have this probability of success, based on the uncertainty in sort of stock status, and where the population is at, and where it is going to be.

But we don't really have a way to say, what is effort going to be like in 2020? That is one of the major drivers of uncertainty in these conservation equivalencies, and also the bag and size limit analyses that we do for the overall coastwide measure. We can't say, changing the size limit will have an X percent probability of giving you this reduction, because we don't know what effort is going to be like.

We can roughly approximate the size structure and the availability of fish in a couple years, but we don't know for sure what that is going to be like, and we really can't quantify the uncertainty around it. We can't give you a hard probability of success or failure. I will also say, we don't give you a hard probability of achieving that.

You know we don't say, this coastwide measure is going to have an X percent chance of giving you the reduction. We say, if we meet our assumptions about effort and size availability of fish, we'll get this level of reduction, which translates into a probability of success at the assessment level. We can't say that this conservation equivalency measure is has a 50 percent chance of giving you an 18 percent reduction, because we can't really quantify those major drivers of uncertainty.

I think we could give you a better handle on some of the uncertainty, for both the coastwide and the conservation equivalency measures. But we don't have hard, quantifiable ways to give you what's the probability that this change in management will give you the change in removals that you're expecting.

MR. WHITE: Follow up, Mr. Chair.

CHAIR BORDEN: Yes, go ahead, Ritchie.

MR. WHITE: Thank you that is helpful, and as a result of that answer I would certainly support Eric Reid's earlier suggestion that we have options that require, say 110, 125 percent of the requirement as a buffer, as an uncertainty buffer. I think that is important that we have options such as that for the public. Thanks.

CHAIR BORDEN: Yes, as was indicated, Ritchie, those are already being developed. Next on the list I have Megan.

MS. WARE: I think maybe my comment gets to where Ritchie's comment got. I was simply kind of bummed to see that this isn't possible, because I thought it might be a way to hold CE proposals to a certain percent probability of success. But I do think, you know if it is not possible and it gets removed, it does put more pressure or onus on something like an uncertainty buffer, as a way to counteract some of that uncertainty that we can't quantify. I look forward to seeing those options.

MS. KERNS: The next two names I have are Jason McNamee and then Dennis Abbott. Then I'll have some more names.

CHAIR BORDEN: Jason.

DR. McNAMEE: You know interestingly, I think our previous discussions on this topic I felt were kind of veering off into this notion of like punitive accountability, which I didn't think was the right way to go, because there are so many variables here that aren't in a state's control. I really appreciated Commissioner White and Dr. Drew's discussion there a moment ago.

I think, so I agree with what Dr. Drew said. But I will kind of hearken back to what Mr. Reid said during the last discussion. While we can't necessarily define probabilities of success for the reasons, I think we could, but those tools need to be developed. We're working on some stuff like that for fluke, scup, black sea bass right now.

But in the absence of that, in the short term what you can do, is apply precautionary buffers, as Eric suggested earlier, and that is to say, you know you are trying to achieve some level of reduction, and we want you to go 10 percent more than that, because we have uncertainty that this will be successful.

I think we can probably borrow; you don't need to make that up on a whole cloth right now, we can probably borrow from the risk and uncertainty process that is also being developed by the Commission right now. It is not ready for striped bass yet, but eventually, I hope, it will get around to striped bass.

I think some of the inputs for the Risk and Uncertainty Decision Tree could be useful in this context. But I think in the short term that is something that we could pursue in this process that is tractable, and that is to just add a precautionary buffer of some level, probably working in proportions is the easiest way to go.

CHAIR BORDEN: Dennis Abbott.

MR. ABBOTT: I have been enjoying this conversation immensely. I have a layman's hypothetical question for Katie, nothing that I would really suggest, but hypothetically. If New Hampshire proposed a conservation equivalency of a 12 inch or 16-inch minimum size limit, and that was given to the Technical Committee, and you calculated that coastwide. Could New Hampshire's request for a very low size limit be accepted?

DR. DREW: I think it would depend on, so if we said, you know if we put in a 12-inch size limit, and that met the 18 percent reduction that we needed, would that qualify for a conservation equivalency approval at the TC level? I think it would depend on what kind of standards the TC is using to review that analysis.

Right now, I think the focus is on, are you meeting that reduction in removals that we are expecting. I think the question of, how would that impact say long term SPR of the stock. It's certainly a different question, and I think that is maybe something that the TC would flag as a concern, in terms of you may be meeting the law of the reduction.

But are you meeting the spirit of the reduction, in terms of preventing negative impacts to the overall stock, which maybe falls under something like the biological justification of why you're asking for this, versus the TCs biological justification for approving or not approving a CE proposal? I think it definitely would be something that the TC would discuss, but I don't think we have hard and fast rules about what meets the spirit versus the letter of a conservation equivalency proposal.

MR. ABBOTT: Yes, follow up, Mr. Chair.

CHAIR BORDEN: Yes, briefly, Dennis, because I want to move on.

MR. ABBOTT: Yes, thank you. But again, Katie, are we required to comply with the spirit, or are we required to comply with the law?

DR. DREW: I think we would take that information to the Board and say, here is the conservation equivalency proposal, it meets the spirit of the reduction, but the TC has concerns about the

potential impact on spawning potential in the future. How does the Board want to deal with this?

The Board is the one in the end, who approves or disapproves conservation equivalency. The TC can help provide the technical guidance on whether this meets the reduction, whether this meets the intent of the regulations that you are trying to be equivalent to. But it is the Board in the end who decides whether or not that proposal is approved.

MR. ABBOTT: Thank you, Katie.

CHAIR BORDEN: Emilie, let's move on.

MS. KERNS: You had a couple other hands, let me know what you want to do.

CHAIR BORDEN: If there is an individual with their hand up that wants to make a point that has not been made, I'll recognize you. Who are these two individuals?

MS. KERNS: I have Joe Cimino and Bill Hyatt with their hands still up.

CHAIR BORDEN: Okay so Joe and Bill, I would just as soon not get into a repetitive dialogue on this. If there is something new, by all means bring it forward. Joe.

MR. CIMINO: Yes, I'm just curious. You know it's a question maybe to Katie. What would be used to determine if something is more uncertain? A state like New Jersey has fairly low PSEs for striped bass. I mean, I 'm assuming that PSEs have to play a role. Is there some other way to say that a single state's proposal is less uncertain than a region, when that state may have lower PSEs and higher harvest than an entire region?

DR. DREW: For sure. Some of that is stuff that we can quantify, so for example PSEs, and PSEs not just maybe your PSE is good for your whole state, but once you start breaking it down into wave or into sector, or into region, you are going to increase those PSEs, and you are going to have a more uncertain proposal compared to the coastwide data that we're using to develop the coastwide measures. That is stuff we can quantify, you know PSEs if they are region versus a state, versus a wave or mode level.

But other stuff about, you know how is effort going to change in New Jersey, compared to how it is going to change overall on the coast. That is difficult to quantify, and similarly, how is availability in fish in New Jersey waters is going to compare to coastwide availability or size structure of the entire population. That is another additional source of uncertainty that is going to feed into whether or not you can make your required reduction, that we don't have a good way to quantify at the moment.

CHAIR BORDEN: Bill.

MR. HYATT: I apologize if this is slightly repetitive, I lost connection for a good period of the last discussion. I was going to speak in favor of the uncertainty buffer and the concept. I was hoping however, that in setting those uncertainty buffers, it wouldn't be just sort of the selection of arbitrary percentages.

That rather, there could be analysis performed based upon the precision of MRIP samples, and the conservation equivalency proposals being put forward, that could sort of refine what is an acceptable uncertainty buffer, and what is unacceptable. I also was hoping that analysis could identify in certain cases, whether or not a state would have the option of increasing its commitment to funding additional MRIP sampling within its borders.

Therefore, make a conservation equivalency proposal fall within a specified uncertainty buffer. But I guess on part of what I was hearing, I'm questioning whether or not those concepts are even possible. Recognizing that I might have missed some relevant discussion on that, just a real quick answer from Katie would be appreciated. Thank you.

CHAIR BORDEN: Yes, Katie, if you would like to offer some thoughts. I would just reinforce what I said before, you are going to get another bite of this at the next meeting. It is going to be more detail on this. Katie.

DR. DREW: I think we could, I guess it depends on how much work you want the TC to do on this particular issue. I think sure, theoretically we could develop uncertainty buffers based on, for example, a management strategy evaluation, to say this level of uncertainty around the reduction translates into this level of ability to hit the target.

But without like a full simulation study on that, you know we don't have a way to quantify what the right level of an uncertainty buffer is at the moment. I think it comes back to sort of risk and uncertainty tolerance for the Board, as Dr. McNamee was alluding to. I think similarly, we could certainly provide maybe tiers of buffers to say, if your PSEs are in this range, then you have to have this level of a buffer.

If your PSEs are in a better range, then you can have a lower buffer. If you're trying to do a regional proposal with a group or a couple of states, you can have a different buffer. We could provide tiers of buffers, but it wouldn't necessarily be like, this is the exact right number to give you this exact probability of rebuilding the stock in 10 years. I don't know if that is helpful or not, but I think there are ways forward, and we can provide different levels of input on that. But there still remains a lot of unquantified uncertainty in these analyses.

As for the question of, could we require states to increase MRIP sampling, in order to move them down to a different buffer, or to accept a conservation equivalency proposal. I think that is certainly something the Board can discuss as a potential option to make conservation equivalency more aggressive or more restrictive.

CHAIR BORDEN: Thanks, Katie. Emilie, we're going to move on.

MS. FRANKE: The final question for conservation equivalency is related to accountability. Again, based on Board interest, the PDT has discussed options that could require accountability measures for those instances when a state's harvest or catch under a CE program exceeds its target, or in other words if a state's CE program does not achieve the required reduction.

These accountability measures could be, for example, a requirement to revert to the FMP standards, or it could be a requirement to implement additional measures estimated to achieve the target. However, after some discussion the PDT recommends removing these types of options for accountability from consideration in the Draft Amendment.

The PDT really emphasizes here the challenges with evaluating the performance of CE. Again, this was discussed earlier in the FMP Review agenda item as well. The effects of implementing any management measures can't be isolated from the effects of changes in effort, or changes in fish availability.

The PDT is also concerned about potentially the amount of time the Board could spend on CE in the future, if accountability measures are required. From the PDTs perspective, these other front-end measures that we've been discussing, like restrictions on when conservation equivalency can be used, requirements for CE proposals. For example, these uncertainty buffers in data standards would be more effective than having accountability requirements for CE. Again, the PDT is recommending removing these accountability measures from consideration. Just related to that, we had a request from a Board member to evaluate the performance of CE, and again as just discussed, the PDT does not consider this performance analysis to be feasible. Again, due to these influences of changes in effort, fish availability, and year class strength. Just to wrap up, Mr. Chair. We covered this first recommendation already, but the final question for the Board on CE is, does the Board

support the PDTs recommendation to remove accountability from consideration?

CHAIR BORDEN: Comments. Any hands, Toni?

MS. KERNS: First two names, Mike Luisi and Jason McNamee.

CHAIR BORDEN: Mike, and then Jason.

MR. LUISI: I will say that I fully support the PDTs recommendation for removing conservation equivalency accountability options from consideration, due to the challenges that were just presented by Emilie. Based on my previous comments regarding uncertainty surrounding, not only the conservation equivalency programs that are developed, but the coastwide measures as well.

I feel that holding a state accountable in a different way, if they don't implement the coastwide measure because of certain reasons, and they come up with a solid plan to make sure that they are trying the best that they can to manage the reductions to the point for which they would be compliant with the FMP.

I don't think that those states that put conservation equivalency proposals together, should be held at a different level of accountability. We're all professionals, we're all trying to do the right thing, and I do agree with the PDTs recommendation. I'll leave it there, and thank you for the time.

CHAIR BORDEN: Dr. McNamee.

DR. McNAMEE: This one's tough, because it is hard to say you are not for accountability. I think accountability is great. I think the accountability should happen on the front end, and what we were discussing in the last section, so applying precautionary buffers before implementing management, that sort of thing.

For the reasons the PDT noted, I'm in agreement on this one. All of us are subject to potential statistical anomalies. That is what we are using for this fishery, the vast majority of this fishery. That is a hard thing to hold yourself accountable to. I really liked Commissioner Hyatt's comment, just sort of incentive to increase MRIP sampling.

I like that if that can be worked in to the mix here somehow. I think that helps the cause, but in the end, you know any one of us, any state listening in right now. You could be subject to some statistical anomaly in any given year due to no faults of your management or your fishermen, or the fish themselves. What we should be working towards is being precautionary as we implement management, not on the back end, after the management has been implemented.

CHAIR BORDEN: Toni.

MS. KERNS: Yes, you have Justin Davis followed by Dennis Abbott.

CHAIR BORDEN: All right, Justin, you're up.

DR. DAVIS: I can also support the PDTs recommendation here. I think I would want to assure those members of the public who have strong interest in seeing greater accountability for CE, that I think what we're doing here is listening to the PDT and what they are telling us about the best possible option to create some sort of guardrails, or greater accountability for CE.

The best option is to do that on the front end, not try to do accountability on the back end. I think a lot of time this interest from the public in accountability stems from instances in which there is perception that CE proposals did not produce the projected outcome. Sometimes the public wants to get into assigning fault over that, or motive.

You know I don't think that is really productive. As Dr. McNamee was noting, statistical anomalies can affect any state. They can affect a state if you implement the standard coastwide measure. I think the PDT has made a good recommendation here to

pursue front end options to provide some more guardrails on CE, and that is where we should focus.

One sort of note, this builds a little bit off of what Dr. McNamee was saying, that I also like the idea of this sort of potential requirement for a state pursuing CE to do a little bit more MRIP sampling, or some sort of sampling to improve, you know recreational data collection providing some incentive there.

I think that option fell under the CE accountability section in the document, and I am hoping that is not going to get sort of thrown out here if we remove CE accountability options. I would just advocate for trying to keep that in the document, and keep it in the discussion somehow. Thanks.

CHAIR BORDEN: We've got three in agreement, Dennis Abbott.

MR. ABBOTT: I fully believe in accountability in everything that we do in our life. I would like to see accountability here. However, I agree with Jason McNamee that it's not possible practically in fisheries, to determine accountability from year to year. Therefore, I think that the rigor on the front end, as previous speakers have mentioned, should be very strong, and as Eric Reid said, I think earlier, there is a luxury to what's CE, and you should really be looking to pay a price up front, before you are granted conservation equivalency. Thank you.

CHAIR BORDEN: Okay, so we have four in agreement. Does somebody want to raise their hand if they want to speak in opposition to what has been said? Is there anybody that wants to speak in opposition? Otherwise, I think we have a consensus.

MS. KERNS: I see no hands.

CHAIR BORDEN: No hands, I think we have a consensus on the issue. Does anyone got anything new to add on this that was not stated? I'll recognize you.

MS. KERNS: Megan Ware, and that's it.

CHAIR BORDEN: Megan.

MS. WARE: Mr. Chair, my comment is just about CE in general, and potentially another option not about accountability. I can hold that or say it now.

CHAIR BORDEN: No, you can do it now.

MS. WARE: Okay, thank you. I guess I'm wondering if it is possible to have an option, either in this document or Toni, you can let me know or Emilie, if this is more appropriate for, like a Policy Board discussion about general CE procedures. You know we've had a state change their CE closure from what they had presented.

I really appreciate Mike providing that figure, because I think it provides a lot of rationale for why Maryland made their change. But I think it is appropriate for a state to notify the Board, if they are going to change their CE measures, you know ahead of that change being finalized in state regulations. I don't know if that is something that can be added into this document, but it notifies the Board, and make sure that people don't feel caught off guard, kind of after something has already happened.

MS. KERNS: Megan, that is already part of the procedures. It's one of the reasons why the Plan Review Team pointed it out to the Board. It is something that is supposed to happen.

MS. WARE: Okay, thank you, Toni. I'll just highlight that in the future that would be kind of great for states to follow. Thank you.

CHAIR BORDEN: Emilie, we're going to move on.

MS. FRANKE: I'm just moving on here to the last bit of this Amendment 7 presentation, and it's related to the management triggers. Again, as outlined in the PID, there are some shortfalls with the triggers

that have been identified. Again, sort of the variable nature of fishing mortality and continued need for a management action.

The Board has the desire for management stability, and there is some uncertainty with using point estimates. Also, some concern about making changes to management before the stock has a chance to respond to previous management measures, and then for the recruitment trigger there have been these longer periods of below average recruitment, and there is some question about the performance of the current recruitment trigger.

To account for all the different combinations of management trigger methods and timeframes, the PDT is looking at four tiers for the management triggers. The first tier will outline a set of alternatives for the fishing mortality triggers, the second tier will outline alternatives for the spawning stock biomass triggers. The third tier will outline options for the recruitment trigger, and the fourth tier will outline options for deferring management action. Those options would, for example, if a management trigger was tripped within a certain number of years, and some other criteria are met around spawning stock biomass, the Board could consider options for a differing management action. Then within each tier there will be some options for the Board to consider, and as Mr. Chair mentioned, we'll see these in more detail in the draft document.

But just as an example again, for the fishing mortality triggers, there is a set of alternatives thinking about the timeline to reduce fishing mortality to the target, a set of alternatives looking at the F threshold triggers, and a set of alternatives looking at the F target triggers. Then for the spawning stock biomass triggers, there will be a set of alternatives looking at a potential deadline to implement a rebuilding plan, a set for the spawning stock biomass threshold trigger, and then also a set for the spawning stock biomass target trigger.

The PDT is working to more fully develop the options for the next Board meeting. We did get a request from a Board member that any newly proposed triggers be tested to evaluate their performance. Asking that question of how would different triggers have performed in the past. The PDT did discuss this. The TC did as well, and the PDT does not recommend conducting this retrospective analysis at this time, because the stock assessment, the reference points have changed over time.

There have been updates to the assessment model, and our understanding of stock status have changed over time. It would be difficult to know how the stock would have responded if different triggers were in place, that maybe led to different management actions. The TC also pointed out that a full management strategy evaluation would be needed to fully answer this question.

Further recruitment triggers specifically, this is where the PDT and TC have some questions for the Board today. As we heard earlier, the recruitment trigger was triggered once by the North Carolina JAI in 2020. There is concern about the trigger performance, given this period of below average recruitment, and the TC has been working on exploring alternative options.

The TC took a look at, these are the six state JAIs, and took a look at the current recruitment trigger, and noted that that current trigger for recruitment failure, would have been tripped historically for most of these indices during the late 1970s and early 1980s, and you can see those little filled in yellow dots are times when the trigger would have been tripped.

Those correspond to a time period of very low abundance and poor recruitment. The first question for the Board is, just confirming what information does the Board want the trigger to provide? The TC noted that if the intent of the trigger is to identify true periods of recruitment failure for these long periods of very low recruitment events, like in the 1970s and 1980s, then the current trigger is sufficient to indicate

when these recruitment failure periods are happening.

However, if the Board is interested in the trigger tripping for periods of below average recruitment that aren't necessarily at historically low levels, but might allow the Board to be more precautionary with management, then the trigger would need to be revised. Overall, the TC is looking at several different options. They are looking at different trigger mechanisms, so for example a three-year average, a different reference point, for example a median. A different reference period that would exclude those periods of low recruitment. The PDT has found that in order for the trigger to be more sensitive, those years with very low recruitment need to be excluded from that reference period.

The TC is also considering options to only use a subset of the six juvenile abundance indices that are currently used, and the TC has discussed, at the recommendation of the Board, the potential to look at Age 1 indices. But those indices did not provide any additional or different information, so the TC does not recommend including those.

Finally, the TC is thinking about the estimates of recruitment from the model, and how those could be used versus the JAIs, which are currently used. Then the second question for the Board is how the Board intends to use a trigger that would trip during these periods of below average recruitment. Really, what type of management response would the Board consider?

Right now, the Board decides on the appropriate management response when the trigger is tripped, so there is no specific management response that is required. A potential option for this to consider in this Amendment would be to update that management response to a more specific action that would protect those weak year classes.

The TC, in thinking about what are some potential options that the Board could consider. The TC noted the Board could consider redefining the fishing mortality target, or the rebuilding framework to be more precautionary. For example, if recruitment is below average, then the calculated fishing mortality target, assuming this low recruitment regime, would actually be lower than the current F that is calculated based on average recruitment over that time period.

If the recruitment trigger was tripped, the Board could, for example, take action to reduce fishing mortality to that lower fishing mortality target; that takes into account that low recruitment. The Board could also use this low recruitment assumption when they are developing a rebuilding plan, and thinking about the actions that would need to be taken to achieve the target.

MS. FRANKE: Just in summary here, Mr. Chair, in these two questions for the Board feedback is, what information does the Board want the recruitment trigger to provide, and then how does the Board intend to use the trigger, and what type of management response would be considered, and for example this option of potentially redefining the fishing mortality target. Is that something that the Board would consider as a potential response to this trigger?

CHAIR BORDEN: All right, you've got two questions, let's take them in order. In terms of the recruitment trigger, what is the preference of the Board on the two options? Hands up?

MS. KERNS: Right now, I have Mike Armstrong.

CHAIR BORDEN: Mike.

MR. ARMSTRONG: I think we have a real opportunity to be precautionary, and to do something that could be very effective. Right now, we track recruitment failure, and sometimes it's a surprise, sometimes it is not. Again, our ability to address the causes of that, it's usually not SSB, it's usually environmental, so that is difficult. But the only thing we can do is to reduce F and try and

maintain SSB. Towards that, I think we should be targeting a period of low recruitment, rather than recruitment failure.

We had five years of average to poor recruitment. We did not that much very quickly, and we ended up with the SSB we have now, which is reduced. I think to be more precautionary, we should look at a trigger that is geared around below average, as opposed to recruitment failure. I have a lot more to say about that, but I won't say it now.

CHAIR BORDEN: Thanks, Mike, Mike prefers Option 2, other comments.

MS. KERNS: I don't have any other hands.

CHAIR BORDEN: Does anyone object to including Option 2? Any objection?

MS. KERNS: John Clark.

CHAIR BORDEN: John Clark.

MR. JOHN CLARK: Not an objection, I was just, a little more explanation there, based on what Mike Armstrong said. I thought we still don't have a strong stock recruit relationship for striped bass, so I'm just curious as to what the object would be to reduce F early on in the process of having like the poor recruitment, we've seen these past few years. Is this really going to make a difference? Just more curious. I guess that's more of an assessment question there. Thanks.

CHAIR BORDEN: Anyone else on this issue? Then we'll include Option 2.

MS. KERNS: I have a couple of hands up. Mike Luisi and then I think Mike Armstrong wants a second bite of the apple.

CHAIR BORDEN: Mike Luisi.

MR. LUISI: This is a question for Emilie maybe, in regards to the discussions that have been ongoing with the PDT. When there is a recruitment failure, let's say a couple years go by and depending on what that failure is defined as, and there is action that is necessary. Those fish that are part of that failure, they maintain residency within certain nursery areas for a number of years. Has the PDT been discussing what actions would be necessary?

Would those actions fall to the areas for which the recruitment failure happened, or would it be a coastwide consideration of the failure, and changes to future management? I just wonder what you guys have been talking about, as far as where the focus would be when there is a recruitment failure, whether it is in the Hudson or Delaware or Chesapeake. You know we just heard about down in North Carolina there is failure down there as well. Where would that focus be, as far as who needs to take those necessary reductions?

MS. FRANKE: The TC has really kept the discussion at a coastwide level. I think part of it is currently the status quo response is that it's at the Board's discretion what the appropriate action would be. But since the trigger hasn't been tripped until this year, there haven't been any examples of, you know what the appropriate action might be if only one juvenile abundance index, for example, showed recruitment failure in a certain area. The TC hasn't really discussed, if a specific region would have to take on the responsibility of responding to the trigger.

Everything has been coastwide at this point. One of the things the TC has discussed is again, thinking about which juvenile abundance indices would be part of the trigger, even potentially thinking about, should the trigger require that more than one abundance index trips the trigger, or some combination of that? I think indirectly the TC is sort of thinking about the spatial differences. But as far as a management response, the discussion has only been at the coastwide level.

MR. LUISI: Okay, thanks, Emilie for that, I appreciate it. Thanks, Mr. Chairman, that's all I have.

CHAIR BORDEN: Toni, anyone else with their hand up?

MS. KERNS: It was just Mike Armstrong.

CHAIR BORDEN: Mike, you get the last word on this issue.

MR. ARMSTRONG: I just wanted to respond. You know low recruitment, it's a warning that SSB is going to drop if we keep removals at the same rate. That is just going to happen. It's not just about SSB. The relationship is very loose, until you get to lower SSB, and then there is a relationship.

But it also reflects that the fishing experience gets lousy. People are complaining, and it's clear they want more bank. They don't say SSB, but ultimately that's what it means. They want more fish and big fish in the water. I'm talking about using low recruitment as a proactive way to start management actions, probably a few years before we actually see it coming along. That's how I see it.

CHAIR BORDEN: We're going to move on to the second question, you've got two options. Preferences, please put your hands up.

MS. KERNS: No hands yet.

CHAIR BORDEN: No hands up, no preferences? Does anyone have an opinion?

MS. KERNS: Megan Ware, and then followed by Mike Armstrong.

CHAIR BORDEN: Megan and then Mike.

MS. WARE: I think this may be more of a question for Emilie, but it seems like for that second question there, if you have two different F targets, one for low recruitment and one for regular recruitment. You would have to have two sets of measures, and that starts to sound like the harvest control rule that is happening in the Rec Reform Document. I'm wondering if the PDT has had any discussion about relationship to kind of that style of management.

MS. FRANKE: The TC, you know in terms of how long would this F target be in place, if the Board were to respond to their recruitment trigger by redefining the F target to that lower, under that F target under that low recruitment assumption. The example thus far has been that until the recruitment trigger is no longer tripped, the TC could potentially come up with a few other options.

Maybe it's that new F is in place for a couple of years, or until the next assessment. But in terms of that changing reference points over time, that sort of general challenge hasn't really been discussed at the TC level. But I assume it will be something that comes up at the PDT level, in terms of the complexity associated with this type of management response.

CHAIR BORDEN: Thanks, Emilie. Mike Armstrong.

MR. ARMSTRONG: We're prolonging things too much. I'll just say, if you believe what I said on the first piece, that we should react to below average recruitment, rather than recruitment failure. I think the reaction should be to reduce F, and to consider using projections using as low recruitment regime.

It's the precautionary approach, and I would like to hear the opinions of the people. You know, they are going to have to pay a price to be precautionary, but do they want a high stock and less ability to harvest more fish? Anyway, I think the second option, but I'm not against keeping in both too, moving forward.

CHAIR BORDEN: Any other hands up, Toni?

MS. KERNS: Jason McNamee, and then Craig Pugh.

CHAIR BORDEN: Jason, and then we'll go to Craig.

DR. McNAMEE: You know I agree with what Mike Armstrong just said. My preference is, I like that second bullet there under the question as well. I guess what I was pondering, without raising my

hand in the beginning there was, so the status quo response is just Board discretion, right? Maybe I'm wrong on that.

But I guess I was thinking that the first bullet was inclusive of the second bullets. I wasn't inclined to remove either. But just to make the comment, I do like this idea of accounting for periods of low productivity, and sort of accounting for that, you know I think is a good idea, just like Mike just said. It's more a matter of what the first bullet means, and I thought it meant it's discretionary for the Board.

CHAIR BORDEN: Thanks, Jason. Craig.

MR. CRAIG D. PUGH: Yes, my question would be, in periods of the opposite, in higher recruitment, would that result in a sunset of these restrictions, as we go on with these discussions? It seems as though we're focused on this low recruitment, as though it's going to be an anomaly that stays with us forever. But if we do have periods of high recruitment, what is going to be the response back to the fishery?

MS. FRANKE: This is Emilie, Mr. Chair. The TC has discussed the potential for you know if there is this option to calculate a new F based on a low recruitment assumption, then there could be an option to calculate a new fishing mortality target, based on a high recruitment assumption. That is something that the TC could include in the draft, or could recommend that the PDT include in the Draft Amendment.

CHAIR BORDEN: Anyone else? I would just make the simple point that to some extent, the Board always maintains the option to do an addendum in response to a condition like this. That is also on the table.

MS. KERNS: You have one last hand, and that is Tom Fote.
CHAIR BORDEN: Tom Fote.

MR. FOTE: We basically manage for recruitment, yet when we do stock assessments and we look at the stock assessment, we say spawning stock like summer flounder, has no affect it seems on recruitment, I mean half the spawning stock biomass that we had in summer flounder, we had better recruitment.

We've been trying to maintain this high spawning stock biomass, and just had poor recruitment all along. When we basically shut down weakfish, and we shut down winter flounder, it hasn't done anything for recruitment. We basically stopped fishing for them. I'm not ready to basically start panicking when we have average or below average recruitment.

CHAIR BORDEN: Emilie, it sounds like we've got a few different positions here. I guess my take is let the PDT kind of develop both, unless somebody objects.

MS. KERNS: No hands.

CHAIR BORDEN: Okay, so we're going to move on, because we're going to run out of time here. Anything else on this agenda item, Emilie?

MS. FRANKE: I just have one more slide on the 2015-year class, in case folks were wondering why that issue hasn't come up yet. Again, there is concern the 2015s are entering the slot limit, some concern they have already entered the slot limit, and the TC is currently working on analysis, both to estimate the size at age of these year classes over time, and also to estimate the distribution of those year classes by size. The TC is working on this analysis, and will report to the PDT with those recommendations. Then just to wrap up, the PDT and TC will continue to meet over the next several weeks. Again, with the intent of providing the Board with a draft amendment document in October. That's all I have, Mr. Chair. I just want to say thanks so much to all the Board members for all their feedback today.

REVIEW OPTIONS FOR ADDRESSING COMMERCIAL QUOTA ALLOCATION IN A FUTURE MANAGEMENT DOCUMENT

CHAIR BORDEN: Okay, Emilie, if you would like to move on to Item 7 on the agenda, please? While you're getting organized, let me just say that in anticipation that this issue came up at the last Board meeting. The vote as most of you will recall was a tie vote, so it failed.

As a response to that I requested that given the number of individuals that spoke in favor of trying to do something, I asked the state of Delaware delegation to meet with the Commission staff, and further develop options for consideration at this Board meeting. That has been done, and you're going to get a report on that, so Emilie.

MS. FRANKE: I have pulled up the presentation here on the screen. I just have a couple of slides that just outline the content that was in the memo that was part of supplemental materials. As the Chair just mentioned, he requested that staff from the Commission in the state of Delaware prepare options and timelines for addressing this issue.

Delaware has raised this issue for several years, and there was some interest at the last Board meeting in reviewing more recent data for commercial allocation. There was also some concern that addressing commercial allocation in Draft Amendment 7 would make the amendment process longer, and more complex.

In response to that request, the Commissioners from the state of Delaware developed options to potentially address their concern, and then Commission staff prepared some perspective on the process and timeline, considering that Draft Amendment 7 is currently being developed at this time. This is the list of options that the state of Delaware has developed to address their concerns about commercial quota allocation, and a full description of each is included in the memo.

Just as a quick overview, staff perspective on these issues. Thinking about Option B, which is allowing for a commercial quota transfer, voluntary transfers from a staff perspective, this option could potentially be developed as an addendum to Amendment 6, concurrent with the development of Draft Amendment 7.

Also, since this option is less complex, it doesn't have that same complexity as some of the other options. The Board could potentially consider adding it to Draft Amendment 7 to sort of streamline that process. For the rest of the options, starting with Sub-Option 2, which is voluntary transfers, but only to other states that filled their commercial quota.

Reallocating commercial quotas based on historical quotas, fishery management and fishery performance, and then the option where quotas would be adjusted based on contribution of the estuary to the coastal spawning stock. From staff perspective, the complexity of those options would mean that those would likely need to be addressed after Amendment 7 is approved in an addendum to Amendment 7. Again, a little bit more specific perspective. If the Board decided to pursue this proposed option that would allow voluntary quota transfers, from staff perspective this option could potentially be developed alongside Amendment 7 as an addendum to Amendment 6, with some caveats.

Commission staff would not be available to conduct individual state hearings, but could conduct up to three webinar hearings. States could hold additional hearings on their own. Commission staff would have a preference for collecting public comment via a survey. If this option were developed as an addendum to Amendment 6, this could potentially be implemented in 2022.

Additionally, since this option doesn't have the same complexity as some of the other options do, the Board could potentially consider including this type of voluntary transfer option in Draft Amendment 7. From a staff perspective, this would streamline the development of that option with the current Amendment 7 process, and the estimated implementation date for that would be 2023.

That is the Commission staff perspective on this Sub-option 1, voluntary transfers. Then for the

remaining options, again Sub-option 2, voluntary transfers, but only to other states that filled their commercial quota. Option C, which would reallocate quotas based on certain criteria related to Amendment 6 historical quotas, fishery management, and recent fishery performance, as well as Option D, which would adjust the quotas based on contribution of the estuary through the spawning stock.

From a Commission staff perspective, the complexity of these options would result in these options likely needing to be pursued as an addendum to Amendment 7. That would be after final action is taken on Draft Amendment 7. This is the same slide that I had up before, just a quick summary, and again I just want to say thank you to the Commissioners from the state of Delaware for developing these options, and I will turn it back over to you, Mr. Chair.

CHAIR BORDEN: What I would like to do is I would like to go to the Delaware delegation of the Board, John Clark and his delegation, an opportunity to offer any comments, and then we'll take general questions on this or comments, so John.

MR. CLARK: Thank you Mr. Chair, thank you Emilie, and thanks to Emilie and Toni for working with us to develop these options. Tried to keep it very simple, and tried to look for a option, you know as Emilie pointed out, the first option there is voluntary transfers. We are not trying to do a full reallocation everywhere, because we know how fraught that process would be. Just looking to get more in the simplest way possible here.

We also understand that there might be some concern with just voluntary transfers, because it could end up with more questions of states asking for transfers that maybe they don't really need, or what have you. We added some criteria first with the Sub-option 2 there, to at least make sure that transfer would only go to states that had filled their quota the previous year. For Option C, adding the specificity there we thought would help, it would really narrow down where the quota could come from, and where the quota could go to. I'm sure if anybody who has read through it saw that really the only state that would qualify under all three criteria would be Delaware. Some of the performance measures I put in there, or the criteria that we put in there, also demonstrate just the small scale of the fishery in Delaware. I mean the fact that striped bass are over 50 percent of our total commercial finfish landings for each of the past five years, shows that we are very traditional, small-scale fishery here.

The fact that one of the other criteria was double tagging the fish. Our fishermen tag the fish, another tag has to be put on by a weigh station. It just shows how we are managing this fishery very carefully. The fishermen cooperate fully in that. Finally, the last option there was just to bring back the whole idea that we've brought up several times to the Board about the producer area status.

It was just a very back of the envelope thought exercise there, but if there was any desire to start looking into producer area status again, put that in there also. But as I said, tried to keep things simple, and hopefully we can use this process to increase Delaware's quota without causing a huge debate over reallocation. Thank you, Mr. Chair.

CHAIR BORDEN: Thanks, John. Any other representatives from Delaware want to speak to this?

MS. KERNS: Craig Pugh has his hand up.

CHAIR BORDEN: Craig.

MR. PUGH: I also want to thank staff for helping us develop this. It's been a long time coming to have this conversation, and it's been our long-term thought here, and then it's the undeniable fact that the inequities and balance that are supposed to be provided to us through the charter and the five-year strategic plan, have not applied to the state of Delaware.

For some reason we've been shuffled out here, and we would like to be included in a more fair, balanced, equitable dispersion of the allocation. We feel as though maybe some of these options if allowed, will help us along with that process. I guess the last point I want to make is kind of laughable.

But about half hour ago that the TC recommended that the 1970s and 1980s data is unacceptable for their triggers, but yet it is the acceptable commercial harvest process that we live under, which seems to have encumbered this problem upon the state of Delaware. It's kind of nice to see that some of these conversations are able to be had, and I'm looking forward to this Board discussion. Thank you.

CHAIR BORDEN: Thanks, Craig. Anyone else on this? If there are no hands up from the delegation, let me ask for general comments on this. My assumption, Emilie, is this will require a motion at the end, if we're going to proceed with one course of action, obviously we could delay action until the next meeting, and let everybody digest this. But let's take a few comments. Comments on the concept.

MS. KERNS: We have Mike Armstrong and Pat Geer.

CHAIR BORDEN: Mike and then Pat.

MR. ARMSTRONG: Thank you, just a quick question. If we added Option B, Sub-option 1, voluntary transfers to this Amendment. You mentioned the implementation would be 2023. I thought the original timeline for the Amendment was 2022, in spring. Are you saying if we add this to the Amendment we would prolong the timeframe, or just for the implementation of this particular option?

MS. FRANKE: Hi Mike, this is Emilie. I think the implementation date for Amendment 7 conservatively is 2023, if we stay on this timeline of approving the final Amendment 7 it's February. I think there is some question as to what provisions from that Amendment could be implemented that same year in 2022.

To answer your question, would adding this particular issue to the Amendment prolong the full Amendment timeline? No, it would not. I think a final implementation date for Amendment 7, you know maybe some parts of it could be implemented in '22, I think the PDT just isn't sure if this Amendment is approved in February, what could be implemented immediately.

CHAIR BORDEN: Toni, was it Pat Geer?

MS. KERNS: Yes, followed by Emerson Hasbrouck.

CHAIR BORDEN: Pat.

MR. GEER: Thank you, Chairman. I just have a question to one of our striped bass historians about why transfers are not allowed in this fishery. You know, does someone have an answer to that? Why has it never been allowed?

CHAIR BORDEN: Does someone want to speak to that?

MS. KERNS: I can't say why the Board chose not to allow them, but it was considered in a previous document. I see Bob has his hand up. Maybe he can say why.

CHAIR BORDEN: Bob.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Pat, my recollection is that they were not allowed while we were, even before my time the Board was trying to rebuild the striped bass stock. Then once it was rebuilt, the Board sort of felt comfortable with not allowing transfers. Part of it had to do with where those fish came from.

If you move fish from North Carolina to Maine, well North Carolina to Massachusetts, that's probably the farthest commercial quotas. You know with that impact differentially, where those fish came from and the spawning populations and that sort of

thing. But again, most of it is a holdover from the rebuilding days of the early '90s.
MR. GEER: Okay, thanks.

CHAIR BORDEN: Then Mike Armstrong.

MR. ARMSTRONG: Yes, Mr. Chair, I already asked my question.

CHAIR BORDEN: Who did I miss, Toni?

MS. KERNS: You have Emerson Hasbrouck followed by Roy Miller.

CHAIR BORDEN: Emerson and then Roy.

MR. HASBROUCK: I would certainly support consideration of Option B, Sub-option 1, voluntary transfers, either as an addendum to Amendment 6, or to add this into Draft Amendment 7. I would support moving that forward in some fashion, or at least considering moving that forward in some fashion, and let's hear what the public has to say about it. In terms of anything with Option C and Option D, reading the details that were in the memo in our meeting materials.

I have some issues and concerns about Option C and Option D. I don't know that right now is the time to get into that, especially if we're not considering any action on those. But once we do or if we do go forward with anything in Option C and D, I think we need to have an in-depth discussion about that.

CHAIR BORDEN: My question to staff is, do we need, obviously it would be helpful to provide some guidance on where we want to go to the staff today. But do we need to make the final decision today to commit to a path, or will that, because you've got two options, or will that decision be made at a subsequent meeting? Emilie, I think that is probably a question to you.

MS. FRANKE: Toni, correct me if I'm wrong, but I think if a Board wanted to pursue Sub-option 1, voluntary transfers, through either an addendum to Amendment 6, or through adding that to Draft Amendment 7. That would need to be addressed today, in order to get that process started, because we intend to have a draft amendment document by next meeting, so we would need to know if we were to add it to that document, and in order to have an estimated implementation of 2022 through and addendum to Amendment 6, I think that would also need to start today.

CHAIR BORDEN: Thank you, that is helpful. Toni, who else do you have on the list?

MS. KERNS: I had Roy Miller, Joe Cimino, and Ritchie White.

CHAIR BORDEN: Okay Roy, you're up.

MR. MILLER: Thank you, Mr. Chair, I'll be very brief. I just wanted to agree with what Bob said regarding the history of this process. We were in a rebuilding mode from the 1980s until the mid-1990s. This is from someone who was there during that time. It carried over into the restoration of the coastwide stock, and even the Delaware stock in the mid-1990s. It's just something we haven't dealt with since then, so those transfers when we were in a rebuilding mode no one wanted to consider transfers. Once the stock was declared restored, the subject hadn't come up again until very recently. Thank you.

CHAIR BORDEN: Thanks, Roy. Joe Cimino.

MR. CIMINO: I do have some concern with starting an addendum process in the midst with all of this. I am not opposed to Option B, Sub-option A being carried out to the public, and I think maybe having that done in Draft Amendment 7 makes sense. I could support that. Thank you.

CHAIR BORDEN: Okay, let's see, Ritchie White.
MR. WHITE: Question. Where this was not in the first document to go out to the public, when we do an amendment, is it appropriate that we bring something in at this time? That's just a question.

Secondly, I'm not opposed to the Sub-option 1, but would there be any constraints on that?

With a look at North Carolina, and even Massachusetts not sowing theirs in the last few years. It could be fairly substantial transfers that get harvested that then increase mortality. I guess that would be a concern. I guess I have concern over, can we bring this in at this time in an amendment, would be the biggest question. Thank you.

CHAIR BORDEN: Ritchie, to that point, and the staff can take a counterpoint if they believe this is incorrect. This issue was raised during the scoping meetings, I believe, by the representatives from Delaware. I'm not sure I totally understand your point. It has been raised as part of Amendment 7, and obviously the Board has the right to do an addendum as part of Amendment 6. I'm missing the point. It was raised as part of the process, and the staff please correct me if I misspeak.

MR. WHITE: A follow up.

CHAIR BORDEN: Yes, just let's try to get the staff to give us a history, instead of going on my recollection. Was this raised as part of the scoping process?

MS. KERNS: You are correct.

CHAIR BORDEN: I'm correct, okay, so Ritchie, you want to follow up?

MR. WHITE: Yes. It's bringing it back into the Amendment, where it was not voted to continue in, and the public saw that. I guess I'm more comfortable with an addendum than bringing it back into the Draft Amendment.

CHAIR BORDEN: Does anyone from the Delaware have a draft motion that they would like the Board to consider? It seems to be, and I'm not trying to put words in everybody's mouth. You've got some support around Option B, particularly Sub-option 1. There have been a number of people have spoken in favor of that, and talked about the complications with Option C and D. John, do you or somebody on your delegation want to make a motion?

MR. CLARK: Yes, I sure would, Mr. Chair, **and I would move to initiate an addendum to allow voluntary transfers of striped bass quota.** If I could just, for Ritchie's concern about the transfers, that is why we had the other options in there, Ritchie, to try to limit where the transfers would go. But obviously that would be an issue once the Amendment is actually done.

CHAIR BORDEN: I have a motion by Mr. Clark, is there a second to the motion?

MS. KERNS: I have Pat Geer.

CHAIR BORDEN: Seconded by Pat Geer, discussion on the motion. Any hands?

MS. KERNS: Mr. Chair, just really quickly before we go to comments, and I'm going to recreate my list. **Can we say allow voluntary transfers of commercial striped bass quota?**

CHAIR BORDEN: John, do you agree to that perfection?

MR. CLARK: That's fine with me, yes.

CHAIR BORDEN: How about you, Pat, do you agree?

MR. GEER: Yes, I'm fine with that.

CHAIR BORDEN: Okay, so any other perfections, Toni?

MS. KERNS: That is all my perfections. I have on the list here Megan Ware and Mike Armstrong, and I'll have additional names for you.

CHAIR BORDEN: Okay, I've got Megan and then Mike.

MS. WARE: I'm not really sure how I'm going to vote on this, and I think what's giving me pause is,

because of the history recap we've had on transfers the Board decided not to use transfers in a rebuilding period, yet we're finding ourselves in that same situation now. I'm a little concerned that transfers are going to increase the catch.

Is that counter kind of to the status of the stock that we're in right now? I actually think Delaware has a very strong argument for wanting to review allocation, particularly when we discussed it on the Striped Bass Work Group. They had a lot of merits to their argument. I'm not sure how I'm going to vote on this, but I am a little concerned about kind of what this could lead to in the status of our stock.

CHAIR BORDEN: Mike Armstrong.

MR. ARMSTSRONG: I would vote against this right now. I think the actual addendum needs to be pretty comprehensive, and I think there are more options that need to be considered, than what Delaware has brought forward. I think the first one of voluntary transfers, if I was Delaware, would not be very satisfying to me, to have to come with your hand out and depend on the largesse of Massachusetts, for instance. I don't know how you plan your commercial fishery that way.

I think we need a full amendment with a fair amount of options and a lot of discussion. For that reason, I would rather it be an addendum to Amendment 7, which will only delay the process. We'll be essentially done, hopefully in February. I don't think it's kicking the can down the road too much, and I think it would be more effective to be able to concentrate fully on an addendum like this.

CHAIR BORDEN: Anyone else, Toni, on the list?
MS. KERNS: Yes. Tom Fote and then Mike Luisi.

CHAIR BORDEN: All right Tom and then Mike.

MR. FOTE: We have a striped bass stock that we say is overfished and overfishing is taking place. We are putting a lot more restrictions on the recreational sector. At the same time, we're going to allow transfers of unused commercial fish from one state to another, and also where states are leaving fish in the water.

I mean it will make the public hearing process a lot more interesting. I don't know, I think it's better that we finish Amendment 7, and do this in an addendum after the Amendment 7 is passed, because this is going to complicate the public hearing process. I can see everything else getting drowned out by people that don't want to see any increases in the commercial fishery.

CHAIR BORDEN: Mike Luisi, and let me encourage future speakers to start by saying they are in favor or opposed. It would be useful. Mike Luisi.

MR. LUISI: I'm in favor of the concept. I fully support my colleagues in Delaware for their interest in trying to find a way to add to their commercial striped bass quota. What I don't understand from the motion is the timing, and it goes to the last two commenters. It says initiate an addendum. Is that an addendum to Amendment 6 that is going to start now? Is that an addendum to Amendment 7, which as Mike and Tom just alluded to will be finalized hopefully in late winter, early spring of next year.

You know that is a question for John, as to what the intent here is. Personally, I would prefer that we get through Amendment 7 first, and then work on an addendum to Amendment 7, where this commercial issue, as Mike mentioned, could be more fleshed out. There could be other options discussed, and it would just be more comprehensive. That's a question for John, and then for you, Mr. Chairman. I support the concept, I'm just not sure as to what it actually means, based on the language in the motion.

CHAIR BORDEN: John, could you provide a little bit more guidance?

MR. CLARK: Sure, thanks, Mr. Chair. I had intended for an addendum to Amendment 6, based on the input we just had from Emilie and Toni that to start an addendum for Amendment 6 we would have to start today. But I understand some of the hesitation. This is obviously a very basic motion here.

If you look at our memo, what we were getting at here, A) the Board would have to approve any transfers, B) it would only be for a year. If you look at the situation, the main situation we have where quota is going unused is North Carolina, which has about close to 300,000 pounds of coastal striped bass commercial quota that is being unused. Delaware would not be asking for all of that by any means. I just want to allay fears of what we would be asking for.

I think this could work. You know as I said, we try to do things as simply as possible, and in a way that would have the least amount of impact obviously to the stock, and also to other states, and to the commercial fishery in general. If there are any other questions about what we were intending here, I could answer those. But I hope that explains it a little more. Thanks
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CHAIR BORDEN: John, do you want to perfect the motion so it reads, move to initiate an addendum to Amendment 6? Add in Amendment 6.

MR. CLARK: Yes, that would be good, thank you, Mr. Chair.

CHAIR BORDEN: Pat, is that perfection all right with you?

MR. GEER: Yes. Yes, I'm fine with that. I wanted to open the discussion on this, so I'm fine with this.

CHAIR BORDEN: Additional discussion on this, hands up, Toni.

MS. KERNS: I have Roy Miller. John Clark, I don't know if your hand is intentionally still up, no it's not, and I think Roy just took his hand down, and then Cheri Patterson.

CHAIR BORDEN: Roy, I'm unclear whether your hand is up or down.

MR. MILLER: I put it down, Mr. Chair.

CHAIR BORDEN: Okay, thank you, because I can't see the hands, so Cheri.

MS. PATTERSON: Yes, I'm still kind of waffling on this one. I think that there is some unintended consequences that aren't really defined here, that I think needs to be further fleshed out. That might happen when you initiate this addendum. One of my concerns here is, all of a sudden seeing states that don't have a commercial fishery for striped bass currently, you know they have no quota, no fishery.

All of a sudden, those states can now receive commercial striped bass quota? I don't think that is the intent of Mr. Clark. I'm thinking he's just thinking it's going to move around similar to what we do with menhaden and such. But I think there are some unintended consequences here that need to be further thought through. Do we want to allow voluntary transfers of commercial striped bass quota, and just put a caveat that this is only for states that have a commercial quota?

MS. KERNS: You have John Clark.

CHAIR BORDEN: John.

MR. CLARK: Sorry, Mr. Chair, not to change the motion yet again, but perhaps it would allay some of Cheri's concerns there if we put in there, allow voluntary transfers of commercial striped bass quota, as outlined in the memo of July, what was the date there? The memo of July 26, 2021 to the Striped Bass Management Board regarding these transfers.

CHAIR BORDEN: All right, we've got another perfection. Pat, are you okay with this perfection?

MR. GEER: I'm okay with this. I might suggest doing it a little simpler by saying, voluntary commercial striped bass quota transfers from any state presently holding quota, or something like that. But I mean, it's in the memo. I was just trying to, instead of referencing the memo saying it's only for states that presently hold quota.

CHAIR BORDEN: John, is that what your intent is, and if you say yes, I think we can leave the motion the way it is.

MR. GEER: Yes, that's fine.

MR. CLARK: Yes, because the motion as was Amendment 6. We're only talking about states that have commercial striped bass quota. Thank you.

CHAIR BORDEN: I ask that that be part of the record. Further discussion on this.

MS. KERNS: I have Ritchie White, and then I'll have a follow up question at the end, Mr. Chairman.

CHAIR BORDEN: We're over our time slot here, and we still have got one agenda item on the agenda, so I am going to limit the discussion, and basically call the question on this after a couple more points. Ritchie.

MR. WHITE: I'm opposed to this as written. I could support if it was an addendum to Amendment 7. We're rushing this too fast. There are a lot of issues that are not flushed out yet. I'm in favor of the general concept, but concerned with some of the details. I'm just saying that any state that has a commercial quota.
New Hampshire has a couple thousand pounds, Maine has, I think 400 or something. The idea that then those states could open up, you know a substantial commercial fishery, I think is not the direction the Board wants to go. I would like to see this slow down a little bit, and see it be an addendum to Amendment 7. Thank you.
CHAIR BORDEN: Toni, you want to comment, but is there anyone else on the list?

MS. KERNS: I don't have any additional hands at this time.

CHAIR BORDEN: Okay, so Toni, you get the last word, and then I'm going to ask for a two-minute caucus period. Then we're going to call the question.

MS. KERNS: I just want to reiterate the sort of preferences of staff, in terms of how the amendment process would work. One of the reasons that we said we could do this is that we said we would do three virtual public hearings, we would not hold individual state hearings. I just want to make sure that that is clear.

Staff has a strong preference to conduct the comments by survey. It still includes the ability to do open comments, but it will help us sort the comments in a much more efficient way. I just want to put those two things out there, to make sure that everyone understands that that is what we would be agreeing for at least the hearings we would be agreeing to.

CHAIR BORDEN: Toni, thank you for raising that. That was part of Emilie's presentation, and I would just point out my interpretation was there was no objection by any Board member to doing that. I think you've got a directive from the Board to conduct the hearings in that manner. I'm going to declare a two-minute break for a caucus. We'll reconvene at 12:54. We've got the timer on. Thank you. All right, time is up. Are we back on?

MS. KERNS: I'm here.

CHAIR BORDEN: Okay, are you ready for the question?

MS. KERNS: I'm ready.

CHAIR BORDEN: Okay, Toni, so we have a clear vote, could you call a role please?

MS. KERNS: I can. I can call off the names.

CHAIR BORDEN: Or would you prefer to just call the vote? We need to have the states individually identified how they vote.

MS. KERNS: Yes, I'll do that when they raise their hands. Can you read the motion?

CHAIR BORDEN: All those states in favor of the motion to initiate an addendum to Amendment 6, and I'll read it in the record. Move to initiate an addendum to Amendment 6 to allow voluntary transfers of commercial striped bass quota as outlined in the memo of July 26, 2021 to the Atlantic Striped Bass Management Board regarding these transfers. It was a motion by Mr. Clark, seconded by Mr. Geer. All those in favor of the motion signify by raising your hands.

MS. KERNS: I have Connecticut, Delaware, Virginia, New York, Rhode Island, Maryland, North Carolina, Potomac River Fisheries Commission, and Maine.

CHAIR BORDEN: Okay, thank you. If you would put down the hands. All those in opposition to the motion, please put up your hands.

MS. WARE: Toni, just to clarify. Maine did not vote yes on that is my understanding.

MS. KERNS: I'm going to need to put the hands down, and people are going to have to re-raise their hand for those in opposition, and I have removed Maine from a yes. I need to have the hands come back up now, for those in opposition. I have NOAA Fisheries, Maine, New Jersey, Pennsylvania, Massachusetts, New Hampshire, and Fish and Wildlife Service.

CHAIR BORDEN: All right, if you would put the hands down, Toni, if you could.

MS. KERNS: I'm ready.

CHAIR BORDEN: Are you ready? Any null votes, any hands up?

MS. KERNS: I have no hands.

CHAIR BORDEN: Any abstentions?

MS. KERNS: I have no hands.

CHAIR BORDEN: Toni, could you give me the count, the final count, please?

MS. KERNS: Emilie, did you get eight?

MS. FRANKE: Yes, I had 8 in favor, 7 opposed.

CHAIR BORDEN: All right, so the final vote is 8, 7, 0, 0 motion passes. Okay, anything else on this issue?

OTHER BUSINESS

APPROVAL OF ADVISORY BOARD MEMBERS

CHAIR BORDEN: If not, we've got one other item on the agenda, which is approval of Advisory Board members**.** Tina Berger.

MS. TINA L. BERGER: Thank you, Mr. Chairman. I offer for your consideration and approval two advisory nominees from Maryland; Chris Dollar, an outdoor columnist and fishing guide, and Charles Green, a for-hire captain. Both of these nominees fill vacant seats on the panel. Thank you.

CHAIR BORDEN: Any questions on that? Any hands up, Toni? Any objection to approving this recommendation?

MS. KERNS: I have no hands in objection.

CHAIR BORDEN: No hands up, the motion stands approved with unanimous agreement. Any other issues to come before the Board?

MS. BERGER: Mr. Chair, I think we need a motion maker and seconder.

MS. KERNS: You have Mike Luisi and Marty Gary as maker and seconder.

CHAIR BORDEN: That's the second time I've gotten ahead of myself today. Thank you, Mike and Marty for the motion. We have a motion, any objections to the motion**? If there are no hands up, the motion stands approved by unanimous consent.**

MS. KERNS: No hands are up.

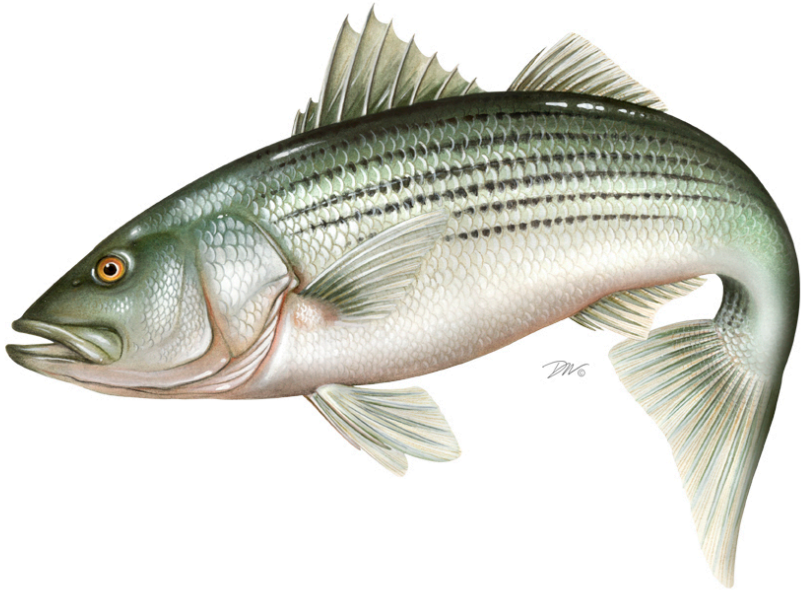
ADJOURNMENT

CHAIR BORDEN: Okay, so is there anything else to come before the Board today? We're close to being on time, I would point out. If no hands up, the meeting is adjourned. Thank you very much, all, and Emilie, thank you for all your work on this, and Toni and the rest of the staff, thank you.

(Whereupon the meeting adjourned at 1:00 p.m. on Tuesday, August 3, 2021)

Atlantic States Marine Fisheries Commission

Draft Amendment 7 to the Interstate Fishery Management Plan for Atlantic Striped Bass



This draft document was developed for Management Board review and discussion. This document is not intended to solicit public comment as part of the Commission/State formal public input process. Comments on this draft document may be given at the appropriate time on the agenda during the scheduled meeting. If approved, a public comment period will be established to solicit input on the issues contained in the document.

October 2021

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Draft Amendment 7 to the Interstate Fishery Management Plan for Atlantic Striped Bass

Prepared by

Atlantic States Marine Fisheries Commission
Atlantic Striped Bass Plan Development Team

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This is a report of the Atlantic States Marine Fisheries Commission pursuant to U.S. Department of Commerce, National Oceanic and Atmospheric Administration Award No. NAXXXXXX

The Atlantic States Marine Fisheries Commission seeks your input on Draft Amendment 7 to the Atlantic Striped Bass Fishery Management Plan.

The public is encouraged to submit comments regarding this document during the public comment period. Comments must be received by **11:59 (EST) on XXXXX.** Regardless of when they were sent, comments received after that time will not be included in the official record. The Atlantic Striped Bass Management Board will consider public comment on this document before finalizing Amendment 7.

You may submit public comment by attending a public hearing held in your state or jurisdiction or mailing, faxing, or emailing written comments to the address below. Comments can also be referred to your state's members on the Atlantic Striped Bass Management Board or Atlantic Striped Bass Advisory Panel; however, only comments received at a public hearing or written comments submitted to the Commission will become part of the public comment record.

Mail: Emilie Franke
Atlantic States Marine Fisheries Commission
1050 N. Highland Street, Suite 200 A-N
Arlington VA. 22201

Email: comments@asmfc.org
(Subject: XXXX)
Phone: (703) 842-0740
Fax: (703) 842-0741

If your organization is planning to release an action alert in response to Draft Amendment 7, or if you have questions, please contact Emilie Franke, Fishery Management Plan Coordinator, at 703.842.0740 or efranke@asmfc.org.

The timeline for completion of Amendment 7 is as follows:

August 2020	Board initiated Amendment 7
February 2021	Board reviewed Draft Public Information Document (PID) and approved PID for public comment
February - April 2021	Public comment on PID
May 2021	Board reviewed public comment; directed Plan Development Team to develop Draft Amendment
May - September 2021	Preparation of Draft Amendment
October 2021	Board reviews Draft Amendment and considers approving for public comment ***Current Step***
November 2021- January 2022	Public comment on Draft Amendment
February 2022	Board reviews public comment and selects final measures for the Amendment; Policy Board and Commission approve the Amendment

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1.0 INTRODUCTION

The Atlantic States Marine Fisheries Commission (ASMFC), under the authority of the Atlantic Coastal Fisheries Cooperative Management Act, is responsible for managing Atlantic striped bass *(Morone saxatilis)* in state waters (0-3 miles) along the Atlantic Coast. The states and jurisdictions of Maine through North Carolina, including Pennsylvania, the District of Columbia, and the Potomac River Fisheries Commission (PRFC), participate in the management of this species as part of the Commission's Atlantic Striped Bass Management Board (Board). Amendment 7 to the Interstate Fishery Management Plan (FMP) for Atlantic striped bass replaces Amendment 6 (ASMFC, 2003) and its Addenda I – VI. Management authority in the exclusive economic zone (3-200 miles from shore) lies with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS).

1.1 BACKGROUND INFORMATION

Since Amendment 6 was adopted in 2003, the status and understanding of the striped bass stock and fishery has changed considerably. The results of the 2018 Benchmark Stock Assessment (NEFSC 2019) in particular led the Board to discuss a number of significant issues facing striped bass management. The 2018 benchmark stock assessment indicated the striped bass stock has been overfished since 2013 and is experiencing overfishing, which changed perception of stock status. The Board accepted the assessment for management use in 2019; management triggers established through Amendment 6 tripped at that time, requiring the Board to take action to address both overfishing and the overfished status.

In April 2020, the Board implemented Addendum VI to end overfishing. In August 2020, the Board initiated development of Amendment 7 to the FMP to update the management program to better align with current fishery needs and priorities, and build upon the Addendum VI action to initiate rebuilding.

In February 2021, the Board approved for public comment the Public Information Document (PID) for Draft Amendment 7. Public comment was received and hearings were held between February and April 2021. At their May 2021 meeting, the Board approved the following four issues for development in Draft Amendment 7:

- Management Triggers (see *Section 4.1*)*;*
- Measures to Protect the 2015 Year Class (see *Section 4.2.2 Ocean Recreational Fishery*)*;*
- Recreational Release Mortality (see *Section 4.2.3*)*;* and
- Conservation Equivalency (see *Section 4.5.2*).

1.1.1 Statement of Problem

1.1.1.1 Management Triggers

The management triggers are intended to keep the Board accountable and were developed at a time when the stock was thought to be at historic high abundance and well above the female spawning stock biomass (SSB) target. However, as perceptions of stock status and fishery

performance have changed, shortfalls with how the management triggers are designed have emerged. When female SSB is below the target level, the variable nature of fishing mortality can result in a continued need for management action. The shorter timetables for corrective action are also in conflict with the desire for management stability. As a consequence, the Board is sometimes criticized for considering changes to the management program before the stock has a chance to respond to the most recent management changes. Furthermore, the use of point estimates in decision-making does not account for an inherent level of uncertainty. Lastly, the observed long period of below average recruitment which contributed to recent declines in biomass has raised questions about the recruitment-based trigger and whether it is designed appropriately.

1.1.1.2 Measures to Protect the 2015 Year Class

A period of low recruitment (age-1 fish entering the population) from 2005 – 2011 is believed to have contributed to the persistent decline in female SSB in recent years. It has been raised by stakeholders and the Board that protection of emerging, strong year classes is of the utmost importance for rebuilding the striped bass stock. The 2015-year class is the strongest year class observed since 2003 and will soon be entering the recreational ocean region slot limit of 28" to less than 35" implemented by the majority of Atlantic coast states under Addendum VI in 2020. If this slot limit is maintained, the 2015 year class may be subject to high recreational harvest for the next several years, reducing its potential to help rebuild the stock. The 2015 year class will also be subject to recreational release mortality as it approaches the lower bound of the slot, and again once the surviving fish have grown larger than the upper bound of the slot.

1.1.1.3 Recreational Release Mortality

Recreational release mortality constitutes a large component of annual fishing mortality— the largest component from 2017 through 2020—because the striped bass fishery is predominantly recreational and an overwhelming majority of the catch is released alive, either due to cultural preferences (i.e., fishing with the intent to catch and release striped bass) or regulation (e.g., the fish is not of legal size). Some stakeholders value the ability to harvest striped bass, while others value the experience of fishing for striped bass regardless of whether they are able to retain fish. The current management program, which primarily uses bag limits and size limits to constrain recreational harvest, is not designed to control effort which makes it difficult to control overall fishing mortality. While the acceptable proportion of release mortality in total removals should reflect the management objectives for the fishery, efforts to reduce overall fishing mortality through harvest reductions may be of limited use unless recreational release mortality can be addressed.

1.1.1.4 Management Program Equivalency (Conservation Equivalency)

There is an essential tension between managing the striped bass fishery on a coastwide basis while affording states the flexibility to deviate from the FMP standard[1] through conservation

[1] FMP standard refers to a management measure specified in the FMP.

equivalency (CE). There is value in allowing states to implement alternative regulations tailored to the needs of their fisheries; however, this creates regulatory inconsistency among states and within shared waterbodies with associated challenges (e.g., enforcement). It is difficult to evaluate the effectiveness of CE programs and their equivalency to the FMP standard once implemented due to the challenge of separating the performance of management measures and outside variables (like angler behavior and availability of fish). Concerns have been raised that some alternative measures implemented through CE could potentially undermine management objectives. And finally, there is also limited guidance on how and when CE should be pursued, particularly when the stock is overfished and rebuilding is required, and how "equivalency" is defined.

1.1.2 Benefits of Implementation

The status and understanding of the striped bass resource and fishery has changed considerably since implementation of Amendment 6 in 2003. Reevaluation of striped bass management processes, specifically management triggers and conservation equivalency, and consideration of recreational fishery measures to address release mortality and protect strong year classes will support stock rebuilding and promote the sustainable management of the striped bass resource and fishery moving forward.

1.1.2.1 Ecological Benefits

Striped bass play an important ecological role in coastal marine ecosystems. Managers and stakeholders have expressed interest in the role of striped bass in the ecosystem from both a top-down perspective (as a predator that could affect other species) and a bottom-up perspective (as a consumer affected by prey availability). Young-of-year striped bass feed primarily on small invertebrates, and as they age, they start eating fish and larger invertebrates, including Atlantic menhaden, herring, bay anchovies, blue crabs, and lobster. Striped bass are also preyed on by other species; as young-of-year and juveniles, they are consumed by adult fish like bluefish, weakfish, and even other striped bass. Sustainable management of striped bass will contribute to maintaining a balanced marine ecosystem.

1.1.2.2 Social/Economic Benefits

Rebuilding the Atlantic striped bass population will enhance the economic and social benefits attributable to this population in the ASMFC member states. Economic benefits of a rebuilt stock would include increased use values (e.g., consumptive and non-consumptive use values related to commercial and recreational fishing) and non-use values (e.g., existence values) for current and future generations. There are many potential socioeconomic impacts that could result from changes in striped bass management, notably potential changes to the recreational size/slot limit and potential implementation of seasonal closures. These potential changes may result in short-term negative impacts to recreational angler welfare. However, the net positive long-term social and economic benefits stemming from stock recovery and subsequent catch increases in successive years will likely outweigh the short-term impacts. Potential restrictions on how and when states can pursue CE programs could result in socioeconomic impacts if there is less flexibility to implement alternative regulations tailored to the needs of each state's

fisheries. Additional gear restrictions, such as requiring barbless hooks or banning treble hooks, could also impact tackle manufacturers and bait and tackle shops by disrupting the supply/demand chain.

1.2 DESCRIPTION OF THE RESOURCE

1.2.1 Species Life History

1.2.1.1 Stock Structure and Geographic Range

Atlantic coastal migratory striped bass inhabit estuaries and the Atlantic Ocean along the eastern coast of North America from the St. Lawrence River in Canada to the Roanoke River and other tributaries of Albemarle and Pamlico Sounds in North Carolina (Merriman, 1941). Some individuals from longer river systems within this range may not undergo coastal migrations, but rather restrict their migrations to within the river and estuary (Morris et al., 2003; Zlokovitz et al., 2003). Stocks which occupy coastal rivers from the Tar-Pamlico River in North Carolina south to the St. Johns River in Florida are primarily endemic and riverine and do not presently undertake extensive Atlantic Ocean migrations as do stocks from the Roanoke River north (Richkus, 1990), based on tagging studies (Callihan et al., 2014; Callihan et al., 2015). Striped bass are also naturally found in the Gulf of Mexico from the western coast of Florida to Louisiana (Merriman, 1941; Musick et al., 1997). Striped bass were introduced to the Pacific Coast using transplants from the Atlantic Coast in 1879 as well as into rivers, lakes, and reservoirs throughout the US and foreign countries such as Russia, France, and Portugal (Hill et al., 1989).

The anadromous populations of striped bass on the Atlantic coast are primarily the product of four distinct spawning stocks: an Albemarle Sound/Roanoke River stock, a Chesapeake Bay stock, a Delaware River stock, and a Hudson River stock (ASMFC 1998). The Atlantic coast fisheries rely primarily on production from the spawning populations in the Chesapeake Bay and in the Hudson and Delaware rivers. Historically, tagging data indicated very little mixing between the Albemarle Sound/Roanoke River stock and so that stock is managed and assessed separately from the coastal stock.

The Chesapeake Bay stock of striped bass is widely regarded as the largest of the four major spawning stocks (Goodyear et al. 1985; Kohlenstein 1980; Fabrizio 1987). Recent tag-recovery studies in the Rappahannock River and upper Chesapeake Bay show that larger and older (ages 7+) female striped bass, after spawning, move more extensively along the Atlantic coast than stripers from the Hudson River stock (ASMFC 2004).

Striped bass abundance in the Delaware River, as measured by juvenile seine surveys, rose steadily following pollution abatement during the mid-1980s and peaked in abundance in 2003 and 2004. Like the Chesapeake Bay and Hudson stocks, spawning in the Delaware River begins during early April and extends through mid-June (ASMFC 1990). Recent tagging studies in the Delaware River show that larger and older (ages 7+) female striped bass undergo extensive

migration northward into New England from July to November that spatially overlap the migratory range of Chesapeake Bay striped bass (ASMFC 2004).

1.2.1.2 Age and Growth

Generally, longevity of striped bass has been estimated as 30 years, although a striped bass was aged to 31 years based on otoliths (Secor 2000). This longevity suggests striped bass populations can persist during long periods of poor recruitment due to a long reproductive lifespan. In general, the maximum ages observed have increased since 1995 when the striped bass fisheries reopened. From 1995 to 2016, the maximum observed female age increased from 16 to 31, with the oldest fish caught in Chesapeake Bay, Virginia, in 2014. During the same period, the maximum observed male age increased from 16 to 24 with the oldest fish caught in Chesapeake Bay, Virginia, in 2011.

As a relatively long-lived species, striped bass are capable of attaining moderately large size, reaching as much as 125 pounds (57 kg) (Tresselt 1952). Growth rates of striped bass are variable, depending on season, age, sex, competition and location. For example, a 35 inch (889 mm) striped bass can be 7 to 15 years of age and a 10-pound (4.5 kg) striped bass can be 6 to 16 years old (ODU CQFE 2006). Growth occurs during the seven-month period between April and October. Within this time frame, striped bass stop feeding for a brief period just before and during spawning, but feeding continues during the upriver spawning migration and begins again soon after spawning (Trent and Hassler 1966). Growth rates and maximum size are significantly different for males and females. Both sexes grow at the same rate until 3 years old; beginning at age-4, females grow faster than males. Females grow to a considerably larger size than males; striped bass over about 30 pounds (14 kg) are almost exclusively female (Bigelow and Schroeder 1953).

1.2.1.3 Spawning and Reproduction

Atlantic striped bass are anadromous, meaning they spend most of their adult life in ocean waters, but return to their natal rivers to spawn in the spring. The rivers that feed into the Chesapeake Bay and the Delaware and Hudson Rivers are the major spawning grounds for the coastal migratory population. The spawning season along the Atlantic coast usually extends from April to June and is governed largely by water temperature (Smith and Wells 1977) and the number of mature ova in female striped bass varies by age, weight, and fork length. Studies have found that older fish produce more eggs than younger fish and heavier fish produce more eggs than smaller fish (Jackson and Tiller 1952; Raney 1952; Goodyear 1984; Mihursky 1987; Richards et al. 2003; Sadler et al. 2006; Gervasi et al. 2019). Newly hatched bass larvae remain in fresh or slightly brackish water until they are about 12 to 15 mm long and move in small schools toward shallow protected shorelines, where they remain until fall. Over the winter, the young concentrate in deep water of rivers.

The 2018 assessment used maturity-at-age values derived from an updated dataset with samples from multiple states along the coast, which estimated that 89% of females are mature by age-8 and 100% are mature by age-9. There are indications that some older striped bass may not spawn every year (Raney 1952) and Jackson and Tiller (1952) reported curtailment of

spawning in about 1/3 of the fish age-10 and older taken from Chesapeake Bay, though they also found striped bass up to age-14 in spawning condition.

Striped bass, like many fish populations, shows high interannual variability in recruitment. Environmental effects have been shown to be correlated with recruitment success in striped bass, including over-winter temperatures, hydrological conditions, and zooplankton prey availability (Hurst and Conover 1998; Martino and Houde 2010 and 2012). However, Martino and Houde (2012) found density-dependent effects on growth and mortality in the upper Chesapeake Bay for age-0 striped bass, where growth rates were higher and mortality rates lower in years with lower juvenile density.

1.2.1.4 Mortality

Because striped bass are a long-lived species, this suggests natural mortality is relatively low. One increasing source of natural mortality is disease. Mycobacteriosis was first detected in the Chesapeake Bay in 1997 (Heckert et al 2001; Rhodes et al. 2001) and may have been apparent in Chesapeake Bay striped bass as early as 1984 (Jacobs et al. 2009a). A rise in *mycobacterium* infection in the Chesapeake Bay could be causing increases in natural mortality (Pieper 2006; Ottinger and Jacobs 2006). Vogelbein et al. (2006) hypothesized that increased natural mortality could be associated with elevated nutrient inputs to the Chesapeake Bay contributing to eutrophication and suboptimal, stressful habitat for striped bass; or, the increased natural mortality could be associated with low abundance of Atlantic menhaden and reductions in Chesapeake Bay forage species resulting in starvation.

Prevalence of *mycobacterium* infection ranges from ~50% (Overton et al. 2003) to 75% with molecular techniques (Kaattari et al. 2005) and is dependent on the age class sampled, with prevalence increasing with age to approximately age 5 and then decreasing in older ages (Kaattari et al. 2005; Gauthier et al. 2008). *Mycobacteriosis* appears to be much less prevalent in other producer areas such as the Delaware Bay (Ottinger et al. 2006) and the Albemarle Sound/Roanoke River (Overton et al. 2006; Matsche et al. 2010). Although fish who are infected with the disease show overall decreased health (Overton et al. 2003), the slow progression of the disease may take years to become lethal in infected fish, thus allowing for multiple spawning opportunities, making determination of the population level impacts of the disease difficult (Jacobs et al. 2009b). In the most recent study, Groner et al. (2018) suggested disease-associated mortality will likely increase with warming temperatures in the Chesapeake Bay.

Striped bass exhibit a number of characteristics identified by NOAA as increasing their vulnerability to climate change effects, including complexity of reproductive strategy, short duration aggregate spawning, sensitivity to temperature, prey-specificity, and specific larval requirements (Morrison et al. 2015). Temperature is correlated with or impacts a number of aspects of striped bass biology, including time to hatch and egg and larval mortality (Massoudieh et al. 2011); larval growth length and yolk utilization (Peterson et al. 2017); activity levels and metabolic rate (Hollema et al. 2017); consumption, and growth (Secor et al. 2000); and growth and mortality in striped bass larvae (Secor et al. 2017). See section 1.4.x for details on climate change impacts to striped bass habitat.

1.2.1.5 Ecological Roles

Young-of-year striped bass feed primarily on small invertebrates like amphipods, bristle worms, and mysid shrimp. As they get older, they start eating fish and larger invertebrates (starting around age-2). Adult striped bass consume a variety of species, including Atlantic menhaden, herring, bay anchovies, blue crabs, and lobster (Schaefer 1970; Hartman and Brandt 1995; Walter et al. 2003; Rudershausen et al. 2005; Ferry and Mather 2012). Their diet varies depending on how big they are, what season it is, where they are feeding, and how abundant their different prey species are (Walter and Austin 2003; Overton et al. 2009). Striped bass are also preyed on by other species. As young-of-year and juveniles, they are consumed by adult fish like bluefish, weakfish, and even other striped bass, and larger striped bass may be eaten by sharks or birds like bald eagles and osprey (ASMFC 2011).

Managers and stakeholders have expressed interest in the role of striped bass in the ecosystem from both a top-down perspective (as a predator that could affect other species) and a bottom-up perspective (as a consumer that was affected by prey availability). The high abundance of striped bass in the late 1990s and early 2000s led to concerns that striped bass could have a negative impact on other species that they preyed on, like shad and river herring, or that they competed with for food, like weakfish (Uphoff 2003; Davis et al. 2012). Declines in striped bass condition and the increasing prevalence of mycobacteriosis in Chesapeake Bay raised concerns that the depletion of key prey species like Atlantic menhaden were negatively affecting striped bass (Jacobs et al. 2009; Overton et al. 2003).

In August 2020, ASMFC adopted an ecosystem approach for the management of Atlantic menhaden using ecological reference points (ERPs) for menhaden management. Ecological modeling indicated striped bass were one of the most sensitive species to menhaden abundance. Therefore, the ERP values that sustained striped bass would likely provide sufficient forage for other predators under current ecosystem conditions. ERPs for the management of Atlantic menhaden are as follows:

- ERP target: The maximum fishing mortality rate on Atlantic menhaden that sustains Atlantic striped bass at their biomass target when striped bass are fished at their F target
- ERP threshold: The maximum fishing mortality rate on Atlantic menhaden that keeps Atlantic striped bass at their biomass threshold when striped bass are fished at their fishing mortality rate target.

These ERPs allow ASMFC to take into account menhaden's role as a forage fish, especially its importance to striped bass, when setting harvest limits for menhaden. However, the biological reference points for striped bass are still set using single-species modeling. ASMFC is working on refining the ERP model and improving the understanding of the role of striped bass in the ecosystem beyond the relationship with menhaden.

1.2.2 Stock Assessment Summary

The 2018 Benchmark Stock Assessment (NEFSC 2019) provides the most recent status of the coastwide striped bass stock for use in fisheries management. The assessment was peer-reviewed at the 66th Northeast Regional Stock Assessment Review Committee (SARC) meeting in November 2018 and approved by the Board for management use in May 2019. The accepted assessment model is a forward projecting statistical catch-at-age (SCA) model which uses catch-at-age data and fishery-dependent and -independent survey indices to produce annual estimates of recruitment, annual fishing mortality (F), and selectivity parameters in order to calculate abundance and female SSB through the assessment terminal year of 2017. As a complement to the SCA model, an instantaneous tag return model (IRCR) was run on data from the U.S. Fish and Wildlife Service (USFWS) coastwide striped bass tagging program through the 2017 tagging year. The IRCR model makes inferences using the numbers of tagged fish that have been recaptured to the numbers of fish that were originally tagged over time to estimate the survival rate of striped bass from year-to-year, fishing mortality rates and natural mortality rates.

The 2018 benchmark was the first assessment for striped bass to use the improved MRIP survey methods to estimate recreational fishery catches. The new time series of recreational catch estimates is on average 2.3 times higher than the values used in previous stock assessments, resulting in higher estimates of stock size. Although the magnitude of these estimates has changed, the overall trend throughout time remains similar for both harvest and total catch (released fish + harvested fish).

1.2.2.1 Abundance and Structure

Striped bass abundance (age-1+) increased steadily from 1982 through 1997 when it peaked around 420 million fish. Total abundance fluctuated without trend through 2004 and from 2005-2009, total abundance declined to around 189 million fish. Total abundance increased to 351 million fish by 2016 before dropping to 249 million fish in 2017. The increase in 2012 was due primarily to the abundant 2011 year class from Chesapeake Bay. Abundance of age-8+ striped bass (representing mature fish) increased steadily through 2004. Between 2004 and 2011, age-8+ abundance oscillated followed by a decline since 2011. Age-8+ abundance in 2017 was estimated at 6.7 million fish, a value near the 30th percentile of the time-series.

1.2.2.2 Fishing Mortality

The current single-stock SCA model separates fishery removals into an ocean fleet and a Chesapeake Bay fleet, but there is one set of coastwide fishing mortality reference points. The ocean fleet includes removals from ocean waters and other areas such as Delaware Bay and Long Island Sound. Fully-recruited fishing mortality in 2017 for the Chesapeake Bay and Ocean fleets was 0.068 and 0.262, respectively. Total fishing mortality has been at or above the threshold in 13 of the last 15 years of the assessment (2003-2017) and was estimated to be 0.31 in 2017.

1.2.2.3 Recruitment

Striped bass experienced a period of strong recruitment (age-1 fish entering the population) from 1994-2004, followed by a period of lower recruitment from 2005-2011 (although not as low as the early 1980s, when the stock was considered collapsed). This period of low recruitment contributed to the decline in female SSB that the stock has experienced since 2010. Recruitment of age-1 fish was high in 2012, 2015, and 2016 (corresponding to strong 2011, 2014, and 2015 year classes), but estimates of age-1 striped bass were below the long-term average in 2013, 2014, and 2017. Recruitment in 2017 was estimated at 108.8 million age-1 fish, below the time series average of 140.9 million fish.

1.2.2.4 Female Spawning Stock Biomass (SSB)

Female SSB peaked in 2003 and has been declining since then; female SSB has been below the threshold level since 2013. Female SSB grew steadily from 1986 through 1996 after which female SSB dropped to just below levels observed in 1995. Female SSB grew steadily between 1999 and 2003 when it peaked around 114,000 thousand metric tons and has generally declined since then.

1.2.2.5 Two-Stock Model Development

Although the coastwide fishing mortality reference points include the effects of harvesting smaller striped bass in the Chesapeake Bay (and in other areas like the Delaware Bay and Hudson River), they do not reflect the heavily male-skewed sex ratio in the Chesapeake Bay catch. During the 2018 benchmark assessment, the current single-stock SCA model was modified into a competing two-stock SCA model; a Chesapeake Bay stock and a mixed ocean stock which included all other stock components of the population. The intent of the two-stock model approach was to develop separate reference points for the Chesapeake Bay stock and the ocean region (which includes the Delaware Bay/Hudson River stock complex); however, this model requires further testing and was not approved for management by the SARC-66 peer review panel.

1.2.3 Current Stock Status

The current stock status determination is based on the 2018 Atlantic Striped Bass Benchmark Stock Assessment (NEFSC 2019). The results of the 2018 benchmark indicate that the Atlantic striped bass stock is overfished and overfishing is occurring. Female SSB in 2017 was estimated at 68,576 metric tons (151 million pounds), which is below the female SSB threshold of 91,436 metric tons (202 million pounds) (Figure 4). Total fishing mortality in 2017 was estimated at 0.31, which is above the fishing mortality threshold of 0.24 (Figure 5). The reference points currently used for management are based on stock conditions in 1995, the year the stock was declared rebuilt. The biomass threshold is the level of female SSB in 1995, the biomass target is 125% of the threshold, and the fishing mortality threshold and target are the levels of fishing mortality projected to achieve the biomass reference points over the long-term, respectively. The specific values of these reference points change when the time series of female SSB is updated with each iteration of the stock assessment model.

1.3 DESCRIPTION OF THE FISHERY

The Atlantic striped bass fishery is predominantly recreational with the recreational sector accounting for over 80% of total removals by number each year since 1985. In 2019, total removals (commercial and recreational combined, including harvest and dead releases) were estimated at 5.5 million fish; the recreational sector accounted for 87% of total removals by number. In 2020, total removals were estimated at 5.1 million fish; the recreational sector accounted for 87% of total removals by number.

1.3.1 Commercial Fishery

Commercial striped bass fisheries operate in the waters of Massachusetts, Rhode Island, New York, Delaware, Maryland, the Potomac River Fisheries Commission, Maryland, Virginia, and North Carolina. The primary gear types for the commercial fisheries are gill nets, hook and line, and pound nets/other fixed gears. Additional gears used in the commercial fishery include haul seines and trawls.

The commercial fishery is managed via a quota system resulting in relatively stable landings since Amendment 6 (approved in 2003; implemented in 2004). From 2004 to 2014, coastwide commercial harvest averaged 6.8 million pounds (942,922 fish) annually (Tables 17-19). From 2015-2019, commercial landings decreased to an average of 4.7 million pounds (619,716 fish) due to implementation of Addendum IV and a reduction in the commercial quota. Commercial landings in 2020 were estimated at 3.6 million pounds (577,363 fish). Commercial discards are estimated to account for <2% of total removals per year since 2003 (Tables 15-16). In 2019, commercial removals (landings plus commercial discards) accounted for 13.5% of total removals (commercial plus recreational) in numbers of fish, and 12.6% of total removals in 2020.

There are two sets of quota allocations; one to all states (Maine through North Carolina, excluding Pennsylvania) for harvest in the ocean, and a second allocation to Maryland, PRFC, and Virginia for harvest in Chesapeake Bay. The ocean region quota is based on average landings during the 1970s and the Chesapeake Bay quota changed annually under a harvest control rule until implementation of a static quota in 2015 through Addendum IV. Although the regional quota allocations are about equal, the majority of commercial harvest comes from Chesapeake Bay; roughly 60% by weight and 80% in numbers of fish since 1990. The differences between landings in weight and in numbers of fish are primarily attributed to the availability of smaller fish and lower size limits in Chesapeake Bay relative to the ocean fishery. Additionally, the ocean fishery tends to underutilize its allocations due to lack of availability in state waters (particularly off of North Carolina) and because commercial fishing is not allowed in some states (Maine, New Hampshire, Connecticut and New Jersey). Furthermore, the underage has increased in recent years since migratory striped bass have not been available to the ocean fishery in North Carolina resulting in zero harvest since 2012 (North Carolina holds 13% of the ocean quota).

1.3.2 Recreational Fishery

The recreational fishery is comprised of private and for-hire components. The private component includes anglers fishing from shore (including all land-based structures) and private/rental boats. The for-hire component is composed of charter boats and headboats (also called party boats). Although charter boats tend to be smaller than headboats, the key distinction between the two types of operations is how the fee is typically determined. On a charter boat trip, the fee charged is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler.

The recreational sector operates in state waters across the entire management unit (Maine through North Carolina) and uses hook and line almost exclusively. The recreational fishery is managed via bag and size limits and therefore recreational catch and harvest vary from year to year with changes in angler effort and the size and availability of fish.

Recreational harvest of striped bass follows a similar trend to the commercial harvest. Since 1984 when recreational harvest was lowest (2.4 million pounds; 264,004 fish), recreational harvest has increased reaching a peak by weight in 2013 at 65 million pounds, and by numbers of fish in 2010 at 5.4 million fish (Tables 21-22). Between 2004 and 2014, recreational harvest remained at a steady level averaging 54.8 million pounds (4.6 million fish) per year. Following the implementation of the size and bag limit changes in the recreational fisheries in Addendum IV due to declining biomass, recreational harvest decreased to an average of 33.6 million pounds (2.8 million fish). In 2020, recreational harvest was estimated at 14.9 million pounds (1.7 million fish).

A large proportion of recreational harvest comes from Chesapeake Bay (Table 20). From 2004-2014, 33% of recreational harvest in numbers of fish came from Chesapeake Bay. From 2015-2019, that percentage increased to 43% in numbers of fish, likely as a result of the strong 2011, 2014, and 2015 year classes moving through the fishery. The majority of recreational harvest in the ocean fishery comes from Massachusetts, New York, and New Jersey.

The vast majority of recreational striped bass catch is released alive either due to angler preference or regulation; roughly 90% annually since 1990 (Figure 23). Based on peer reviewed literature, a 9% release mortality rate is used to estimate the number of fish that die as a consequence of being caught and released. Despite this low rate, the popularity of striped bass as a targeted recreational species means that recreational releases contribute a significant source of mortality to the stock each year. In 2020, recreational anglers caught and released an estimated 30.7 million fish, of which 2.76 (9%) million are assumed to have died; this represents 54% of total striped bass removals (commercial and recreational) in 2020 (Table 16).

1.3.3 Subsistence Fishing

Data describing the exact magnitude of subsistence fishing, (i.e., catching fish in order to provide necessary food) for striped bass does not exist. However, some anglers, usually fishing

from shore, may rely to some degree on striped bass they catch for food. Additionally, the head and carcasses of larger striped bass often discarded by anglers after processing the fillet are highly sought after in some areas.

1.3.4 Non-Consumptive Factors

Catch and release fishing for striped bass is often considered a non-consumptive use of the striped bass resource. A large number of fishermen coastwide target striped bass with the intention of releasing all of the fish that are caught. This practice can take place during no-harvest (i.e., no-take) closures, but is not permitted during no-targeting closures. See *Section 1.3.2* for more details on the number of striped bass released alive.

1.3.5 Interactions with Other Fisheries

In the recreational fishery, anglers targeting striped bass may also be targeting species that commonly occur with striped bass. Or, striped bass anglers may incidentally interact with non-target species. The 2018 stock assessment included analysis identifying recreational species that are commonly caught with striped bass in ocean waters (i.e., species that were intercepted at least 100 times over the entire time series) for each state based on private/rental boat trip data that occurred during Waves 3-5 for states from Maine through Virginia. A Jaccard coefficient was calculated for each species, with a higher coefficient indicating the species is caught more often with striped bass. For most states, bluefish or Atlantic mackerel had the highest Jaccard coefficient, meaning it was the species caught most often with striped bass in ocean waters.

Striped bass are caught as bycatch in non-striped bass commercial fisheries. The commercial discard estimates for striped bass incorporate estimated discards from non-striped bass fisheries based on tag return data.

1.4 HABITAT CONSIDERATIONS

1.4.1 Habitat Use and Migration Patterns

Migration of striped bass occurs at adult and juvenile stages. Adults migrate into rivers to spawn in turbulent fresh water upstream of the estuarine turbidity maximum (ETM) and as far as the Fall Zone (transition zone from Coastal Plain to Piedmont provinces) during spring (Greene et al., 2009). Afterwards, migratory adult striped bass return to the ocean, where they travel north along the coast in summer and fall, and south during the winter; non-migratory adult striped bass return downstream to estuarine waters but do not transit coastal waters during the summer, fall, and winter (Greene et al., 2009).

In general, juveniles migrate downstream in summer and fall. Juvenile striped bass migration varies by locations. In Virginia, the movement of young bass during their first summer is downstream into Chesapeake Bay waters of higher salinity (Setzler et al., 1980). In the Hudson

River, striped bass begin migrating in July. Migration was documented through an increase in the number of juvenile striped bass caught along the beaches and subsequent decline in the numbers in the channel areas after mid-July. Downstream migration continues through late summer, and by the fall, juveniles start to move into Long Island Sound (Raney, 1952). The ASMFC Striped Bass Technical Committee tracks juvenile abundance, and cohort strength, through sampling to produce annual striped bass juvenile abundance indices (JAIs) in six different nursery areas.

Juvenile striped bass rarely complete coastal migrations. The presence of juveniles <20 cm (ages 0-1) in New Jersey's non-natal estuaries indicates some dispersal from Hudson River, Delaware Bay, and Chesapeake Bay (via C&D Canal) estuaries where they were spawned (Able et al., 2012). Many striped bass inhabiting rivers and associated estuaries undergo evacuation into coastal waters following extreme precipitation events that reduce water temperature, salinity, and dissolved oxygen (Bailey & Secor, 2016); events projected to increase in frequency and intensity due to climate change (USGCRP, 2017). In Chesapeake Bay 50% of females, who grow faster, emigrate to coastal waters by age 3 while a significant proportion of young males remain within the estuary (Kohlenstein, 1981); however, emigration cues are under debate and may be more a function of size than age (Secor et al., 2020). From Cape Hatteras (and in some years, Cape Lookout), North Carolina, to New England, fish may migrate in groups along the coast. They migrate north in the summer and south in the winter, however, the extent of the migration varies between sexes and populations (Hill et al., 1989). Larger bass, typically the females, tend to migrate farther distances. Striped bass historically were not usually found more than 6 to 8 km offshore (Bain & Bain, 1982). In the past decade, large schools have been moving between state waters and federal Exclusive Economic Zone (EEZ) waters during the year (Kneebone et al., 2014) and further offshore during the winter months (ASMFC, MDDNR, NCDMF and USFWS, unpublished data) well out into federal EEZ waters (e.g., 25-30 nm, or 46.3 to 55.6 km). These coastal migrations are not associated with spawning and usually begin in early spring, but this time period can be prolonged by the migration of bass that are spawning.

Some areas along the coast are used as wintering grounds for adult striped bass. Historically the inshore zones between Cape Henry, Virginia, and Cape Lookout, North Carolina, served as the wintering grounds for the migratory segment of the Atlantic coast striped bass population (Setzler et al., 1980). Geographic Information Systems (GIS) analysis of cooperative winter tagging cruise data from 1988-2013 did not detect a northward latitudinal shift in highest percent capture of striped bass, although occurrence of a longitudinal shift was not included in the analysis (Osborne, 2018). However, recent Atlantic coastal striped bass winter sampling coordinated by ASMFC indicated that overwintering striped bass have been encountered north of Chincoteague Inlet, Virginia to Ocean City, Maryland and in offshore areas entering the EEZ. There are three or more groups of fish that are found in nearshore ocean waters of North Carolina, Virginia, and Maryland between the months of November and March, the wintering period. These groups include striped bass from Albemarle and Pamlico Sounds, North Carolina, Chesapeake Bay, and Hudson River (ASMFC, MDDNR, NCDMF and USFWS, unpublished data); and of these, large striped bass spend the summer in New Jersey and north (Holland & Yelverton, 1973; Nelson et al., 2010; Pautzke et al., 2010). Based on tagging studies conducted

under the auspices of ASMFC and the Southeast Area Monitoring and Assessment Program (SEAMAP) each winter since 1988, striped bass wintering off North Carolina, Virginia, and Maryland range widely up and down the Atlantic Coast, at least as far north as Nova Scotia, and represent all major migratory stocks (US Fish and Wildlife Service, ASMFC, and partners, unpublished data).

1.4.2 Identification and Distribution of Habitat

1.4.2.1 Spawning and Egg Habitat

Striped bass spawn in fresh water or nearly fresh water of Atlantic Coast rivers and estuaries. They spawn above the tide in mid-February in Florida but in the St. Lawrence River they spawn in June or July. The bass spawn in turbid areas as far upstream as 320 km from the tidal zone (Hill et al., 1989). The tributaries of the Chesapeake Bay are the primary spawning areas for the migratory stock of striped bass, but other major areas include the Hudson River, Delaware Bay, and the Roanoke River. Prior to spawning, females pause below the salt front (Hocutt et al., 1990) while eggs ripen and water temperature reaches 12-18 degrees Celsius (Secor, 2000) before continuing into freshwater reaches. Spawning is triggered by increased water temperature, occurs between 10 and 24 degrees Celsius, and generally peaks at temperatures between 14 and 19 degrees Celsius (Setzler et al., 1980). Spawning is characterized by brief excursions to the surface by females surrounded by males, accompanied by much splashing. Females release eggs in the water where fertilization occurs (Raney, 1952). Spawning occurs during all hours of day and night (Setzler et al., 1980). Striped bass spawning runs may be blocked when the concentration of total suspended solids exceeds 350 mg/L (Radtke & Turner, 1967).

An egg is only viable for about an hour for fertilization. Following fertilization, the fertilized eggs are spherical, non-adhesive, and semi-buoyant and will harden within one to two hours at 18 degrees Celsius (Hill et al., 1989). Survival of striped bass eggs is dependent on environmental conditions. In general, cooler and wetter winter and spring conditions are favorable. A temperature range of 17-19 degrees Celsius is important for egg survival as well as for maintaining appropriate dissolved oxygen levels (Bain & Bain, 1982), although they can tolerate a temperature range of 14-23 degrees Celsius (Mansueti, 1958). Eggs hatch from about 30 hours at 22 degrees Celsius to about 80 hours at 11 degrees Celsius (Hill et al., 1989). Eggs can tolerate dissolved oxygen levels down to 1.5 mg/L and salinities ranging from 0-10 ppt with 1.5-3 ppt being optimal (Mansueti, 1958). Water currents are an important factor for the survival of the eggs. Minimum water velocity of 30 cm/sec, from either current or tidal flow, is needed to keep the eggs suspended in the water column; the optimum flow rate is 100-200 cm/sec (Mansueti, 1958). An oil globule provides some buoyancy for the egg, and it is larger when water velocity is slower (Albrecht, 1964). Without the buoyancy, the eggs sink to the bottom, where the sediment may smother them. It is possible for the eggs to hatch if the sediment is course and not sticky or muddy, but survival is limited (Bayless, 1972). Suspended sediment loads ≥1,000 mg/L were lethal to striped bass eggs but were tolerant to loads of 0-500 mg/L (Auld & Schubel, 1978).

1.4.2.2 Larvae Habitat

There are three stages of larval development. These are: yolk-sac larvae, finfold larvae, and post-finfold larvae (Hill et al., 1989). The yolk-sac larvae occur right after hatching and the stage usually lasts for about 3 to 9 days. They are 2.0 to 3.7 mm in length and contain an easily identified yolk-sac. Yolk-sac larvae occur in open water at varying depths (Setzler et al., 1980). This phase is finished when the yolk-sac is absorbed. The finfold phase lasts for about 11 days and the striped bass reach a length of 12mm (Setzler et al., 1980). Occurrence of finfold larvae varied with time of day and depth (Hill et al., 1989). The last phase is the post-finfold larvae which lasts for about 20 to 30 days and the larvae reach a length of 20 mm (Bain & Bain, 1982). Post-finfold striped bass larvae are present at varying depths in open waters of estuaries.

Survival of the larvae depends on optimal conditions of three main factors: temperature, salinity, and dissolved oxygen. The optimal temperature for larvae is 18 to 21 degrees Celsius, but temperatures of 12 to 23 degrees Celsius can be tolerated (Bain & Bain, 1982). Studies have shown that striped bass larvae do better and have a higher survival rate when they are in low salinity waters (>0-15 ppt) rather than fresh water (Setzler et al., 1980). Abundance was highest in oligohaline portions of the St. Lawrence Estuary ETM zone; 60 times higher than in tidal fresh water and 330 times higher than in mesohaline ETM waters (Vanalderweireldt et al., 2019). The third factor, dissolved oxygen, is equally critical for larvae as it was for the egg stage. A reduction in the dissolved oxygen level reduces the chances of survival of the larvae (Turner & Farley, 1971), which have a lower limit of 3 mg/L (Chittenden, 1971). Poorly buffered rivers may have significant changes in pH. A pH of 5-6.5 in the absence of contaminants causes significant mortality to 11-13 day old fish and a pH of 5.5 is toxic to 159-day-old fish (Buckler et al., 1987). Another factor that influences the survival of striped bass larvae is turbulence. While at first it is necessary for the larvae to reside in turbulent waters to maintain position, the larvae quickly become motile and then are able to maintain position on their own (Doroshev, 1970). Optimum flow for larvae is 30-100 cm/sec although larvae can survive 0-500 cm/sec (Regan et al., 1968). Suspended sediment loads ≥500 mg/L had a significant negative effect on larval survival (Auld & Schubel, 1978).

1.4.2.3 Juvenile Habitat

Striped bass become juveniles at about 30 mm, when the fins are fully developed. At this point they resemble adults. Temperature tolerance for young-of-year striped bass 20-100 mm ranges from 10-30 degrees Celsius and 18-19 degrees Celsius is optimal (Bogdanov et al., 1967, as cited in Setzler, 1980). Salinity does affect striped bass' capacity to survive low temperatures. Young-of-year striped bass exposed to 5 degrees Celsius water had greater survival across a broad range of salinities (5-35 ppt); however, when exposed to 1 degree Celsius water young-of-year striped bass survival was greater within a narrower salinity range of 10-25 ppt (Hurst & Conover, 2002). Striped bass juveniles exhibit a warmwater fundamental temperature niche (Coutant, 2013); e.g., 80-270 mm (0.25-0.72 kg) fish selected 24-27 degree Celsius water (Coutant et al., 1984) and 430-626 mm (0.91-3.52 kg) fish occupied 20-24 degrees Celsius water (Coutant & Carroll, 1980). Juveniles can tolerate water up to 30-33.5 degree Celsius provided there is sufficient dissolved oxygen (Coutant, 2013). As the juvenile bass grow, they migrate to nearshore areas and then to higher salinity areas of an estuary (Raney, 1952) usually remaining

upstream of polyhaline waters (Able et al., 2012) optimally at 10-20 ppt (Bogdanov et al., 1967, as cited in Setzler, 1980). Young-of-year striped bass are less tolerant of low dissolved oxygen than larvae and egg, having a lower limit of 3 mg/l and optimally ≥6 mg/l (Bogdanov et al., 1967, as cited in Setzler, 1980). Juvenile striped bass often occupy waters having a clean sandy bottom, but they have also been found over gravel beaches, rock bottoms, and soft mud areas suggesting that they do not require specific microhabitat conditions (Bain & Bain, 1982; Hill et al., 1989). Association with emergent marsh banks is common throughout the year and especially during spring and fall and commonly with submerged channel embankments in summer (Able et al., 2012). They are usually found in schools of as many as several thousand fish. However, the location of the schools depends on the age of the fish (Hill et al., 1989) and season. Juveniles 21-46 cm (ages 2-5) were most abundant at depths of 5.5-9.1 m in New Jersey nearshore coastal waters (Able et al., 2012), but during winter in Chesapeake Bay juveniles are known to migrate into holes down to 30.5 m deep (Mansueti, 1954).

1.4.2.4 Adult Habitat

Mature adult striped bass in the migratory contingents leave the estuaries and migrate along the coast where they have lower temperature requirements and comparable dissolved oxygen requirements as juvenile bass (Bain & Bain, 1982). The fundamental thermal niche of striped bass ≥3.1 kg is cool water at 17.5 (mean) to 19 (mode) degrees Celsius (Bettoli, 2005). Temperatures 25-30 degrees Celsius could be tolerated for limited durations provided sufficient dissolved oxygen concentrations were present (>2 mg/l), although condition declined and higher mortality occurred for fish >10 kg (Coutant, 2013). Lower temperature boundary for activity is 0.1-1 degree Celsius; rapid temperature changes can be tolerated (Greene et al., 2009). Striped bass are tolerant of a broad range of salinities (0-35 ppt) and abrupt changes to salinity (Greene et al., 2009). Depths occupied range from 0.6-46 m although straying into deeper waters does occur (Greene et al., 2009). Tagging studies indicate that fish from all stocks range widely along the Atlantic Coast, historically generally remaining in state (0-3 miles) waters but more recently in some areas entering the EEZ (3-200 miles; Kneebone et al., 2014; ASMFC, MDDNR, NCDMF and USFWS, unpublished data). GIS analysis of tagging data from 1988-2013 detected a 3-11 m vertical shift to deeper water and a shift to coarser sand grain size associated with the highest percent capture (Osborne, 2018). While in coastal and estuarine waters, striped bass are associated with a variety of habitats including substrates composed of sand, gravel, rock, boulder, eelgrass, and mussel beds; subsurface features such as sand bars, troughs, gullies, and shallow bays; floating rockweed; sandy and rocky shorelines; and in the surf zone (Greene et al., 2009).

1.4.3 Chemical, Biological, and Physical Threats to Striped Bass and Their Habitat

Residual chlorine; chlorinated hydrocarbons such as PCBs; monocyclic aromatic hydrocarbons such as benzene; and metals such as, copper, zinc, cadmium, mercury, and aluminum are known to be toxic to life history stages of striped bass. Residual chlorine causes 50% mortality in eggs when the concentration is 0.22 ppm, and there is 50% mortality in larvae when the concentration is 0.20 ppm (Hill et al., 1989). Chlorine was also observed to be a predominant factor in egg mortality by Hall et al. (1981). Ozone is an effective substitute for chlorine to

reduce fouling (Marine Research Incorporated, 1976). Studies have shown that ozone has a detrimental effect on striped bass eggs (Kosak-Channing & Helz, 1979). Eggs exposed to 0.05 mg/L and 0.10 mg/L of ozone in an estuarine environment were delayed in hatching, but only 70% of the eggs hatched in fresh water under the expected time frame. There was 6% mortality when the eggs were exposed to 0.06 mg/L of ozone for 12 hours, but there was 100% mortality when they were exposed for 36 hours. Effects of ozone and chlorine on striped bass eggs are comparable in estuarine waters, but ozone can have more of an effect if discharged in fresh water located near striped bass spawning areas (Hall et al., 1981). Exposure to sublethal levels of benzene for 24 hours increases the respiratory rates of juveniles and if they are exposed for longer periods of time, reversible narcosis can occur (Brocksen & Bailey, 1973). Chronic exposure to benzene can also result in difficulty locating and consuming prey (Korn et al., 1976). When striped bass are exposed to 6.9 ppm of benzene for 24 hours there is 50% mortality in juveniles (Benville & Korn, 1977). Copper and zinc have an effect on yolk-sac larvae, but eggs are unaffected by these metals. Juveniles can develop lesions in their gill tissue as well as impaired respiration when they are exposed to cadmium and mercury. Low pH increases the toxicity of aluminum (Rago, 1992) and high aluminum levels can severely alter epidermal microridge structures in larvae (Rulifson et al., 1986).

Increased attention is focused on emerging contaminants such as endocrine disruptors (pharmaceuticals, pesticides, industrial compounds, and personal care products), microplastics, and automotive derived compounds. Endocrine disruption of striped bass has not been studied; however, it is known to cause increased disease susceptibility, intersex (Blazer et al., 2007), and altered sexual development (Oberdörster & Oliver, 2001) in fishes. Microplastics are known to enter trophic pathways through ingestion (Au et al., 2017; Bergmann et al., 2015; Bour et al., 2020; Parker et al., 2020) as are nanoplastics through inhalation and gill uptake (Tetra Tech, 2020). Modeling efforts are underway to understand trophic pathways of microplastics exposure and accumulation in striped bass; however, study of potential physiological and behavioral effects is lacking (Tetra Tech, 2020). Striped bass response to automotive derived contaminants has not been studied, although road runoff has the capacity to cause abnormal behavior and physiological change (Chow et al., 2019; McIntyre et al., 2018).

Historically, physical threats to striped bass habitat were attributed to channelization, creation of dams, and land reclamation. In coastal regions, 50% of the original estuarine areas important to striped bass have been lost to filling, road construction, or real estate development (Clark, 1967; Kennish, 2002). In the South Atlantic region, dams restrict the upstream migration on the Roanoke, Tar, Neuse, and Pee Dee rivers (Baker, 1968). Efforts have been undertaken to restore access to historical striped bass spawning habitats through the provision of fishways or through removal of impediments to migration. Contemporary threats to striped bass access to spawning and nursery habitat include alteration of river flow regime by consumptive uses such as agriculture and manufacturing as well as dam operation (Cimino et al., 2009). Furthermore, access to aquatic habitats is largely driven by precipitation. Elevated spring precipitation and river flow increases volume of spawning and nursery habitat available to striped bass (Secor et al., 2017). Heavy winter and spring precipitation events in the northeast and eastern US

continue to increase in frequency and intensity coupled with a northward shift in the rain-snow transition zone (USGCRP, 2017).

Change in water temperature may be localized such as from industrial discharge or regional resulting from climate change. The localized heated water discharged from many power plants can cause thermal shock in the fish with the severity depending on the life stage (Schubel et al., 1976). Eggs are more sensitive and subject to greatly mortality from the high temperatures. Larvae and juveniles decrease in their susceptibility as they grow older, and there is not usually higher than 50% mortality of thermal shock in adults (Hill et al., 1989). Regionally, climate change has the potential to alter temperature and precipitation dynamics which directly affects timing of spawning migration as well as survival, growth, and habitat suitability throughout the year. In Chesapeake Bay, spawning female striped bass migration was earlier when spring water temperature was warmer (~3 days per 1 degree Celsius increase); this trend was more evident for larger females (Peer & Miller, 2014). Model projections for Hudson River spawning indicate occurrence up to 15 days earlier (Nack et al., 2019). Suitable temperatures, precipitation and flow, and prey availability directly affect larval striped bass survival (Martino & Houde, 2010; Millette et al., 2019); the temporal and spatial match of which are subject to disruption by climate change (Cimino et al., 2009). Increased winter temperatures may facilitate feeding efficiency, increase growth, and improve juvenile overwinter survival (Cimino et al., 2009); conversely warming of summer estuarine waters subjected to decreased dissolved oxygen will reduce available juvenile and adult summer habitat (Constantini et al., 2008). Striped bass occupied normoxic Patuxent River (Chesapeake Bay) waters at supraoptimal temperatures up to 31 degrees Celsius because of higher growth rate potential within the tributary (Kraus et al., 2015). The disease mycobacteriosis coupled with elevated summer sea surface temperature (>26 degree Celsius) appears to have a negative effect on striped bass survival in Chesapeake Bay (Groner et al., 2018). Climate warming conditions that raise estuarine and riverine surface water temperatures above 28 degrees Celsius concurrent with hypoxic bottom waters would expose striped bass to annual summer temperature-oxygen squeeze conditions that could limit growth and production (Constantini et al., 2008).

Since colonial times, conversion of forests and wetlands to agricultural, suburban, and urban uses has contributed to increased eutrophication and resultant hypoxic and anoxic conditions in the Chesapeake Bay watershed (Brush, 2009; Kemp et al., 2005) as has happened in many other watersheds. Hypoxic coastal waters reduce the extent of suitable fish habitat. Temperature-oxygen squeeze habitat conditions have been observed in Chesapeake Bay during summer and fall and where striped bass sought to avoid waters >27 degrees Celsius (Itakura et al., 2021). Hypoxia is common in coastal waters receiving inputs of anthropogenic derived nutrients (Hagy et al., 2004); particularly when those waters have strong density stratification, low tidal energy, and high surface temperatures during seasons where oxygen levels are already low (Breitburg, 2002). A contributing factor to hypoxia is the extent of impervious surface within the watershed where increases in impervious surface are associated with increased probability of hypoxic waters and reduced likelihood of young-of-year striped bass presence (Uphoff et al., 2011). In Chesapeake Bay, the volume of suitable juvenile and adult striped bass summer habitat has contracted as the volume of hypoxic water has increased (Cimino et al., 2009). Expansive

hypoxia coupled with warming water temperatures due to climate change will further reduce future summer habitat available to striped bass (Coutant, 1990).

Conversion of forested and wetland areas to agricultural, suburban, and urban uses are known to affect aquatic systems through increase of factors such as runoff volume and intensity; physical instability, erosion, and sedimentation; thermal pollution; contaminant loads including endocrine disruptors and microplastics; road salt; nutrients through nonpoint and direct discharges, sewage leaks and spills, and stormwater runoff; and disruption of organic matter dynamics. Watershed development associated with urban sprawl and population growth has resulted in significant impairment of striped bass habitat in Chesapeake Bay due to sedimentation, eutrophication, contaminants, flow alteration, and thermal pollution (Cimino et al., 2009). Increased urbanization is associated with increased mobilization of contaminants in runoff (Kaushal et al., 2020) which will be exacerbated by increasingly common and intense rain events. Percent impervious surface is a commonly used indicator of watershed development whereby 10% is a threshold for aquatic ecosystem deterioration (Cappiella & Brown 2001; Beach 2002). In essence, a watershed's percent impervious surface is a catchall index of aquatic habitat condition. Watershed percent impervious surface has been used to assess suitability of striped bass spawning and nursery habitat in Chesapeake Bay tributaries (Uphoff et al., 2011; Uphoff et al., 2020).

1.4.4 Habitat Management as an Element of Ecosystem Management

Migratory striped bass require a broad geographic range to complete their life cycle; consequently, the ecosystems used are vast and variable and the cooperative management approach embodied by ASMFC is necessary. Attempts to incorporate ecosystem management into fisheries management are increasing. Ecosystem management can be interpreted as a) the consideration of how the harvest of one species might impact other species in an ecosystem and incorporating that relationship in management decisions and b) the incorporation of the protection and enhancement of habitat features that contribute to fish production into the fishery management process. While the implementation of multispecies management is increasingly common, incorporation of habitat condition in the management framework and decision-making process is rare.

Biologists, fisheries managers, and fishermen all recognize that habitat quality is one of the keys to maintaining and improving fish stocks for harvest. Increasing demands for seafood and recreation requires that fisheries regulations provide for maximizing yield, minimizing bycatch, and rebuilding and maintaining adequate spawning stocks. Effective fishery management requires more than issuing regulations governing sizes, seasons and catch limits. Degraded habitat negatively affects aquatic communities necessary to support fish life, reduces levels of fish, and inhibits management to provide adequate fish for food or recreational experiences.

Fisheries managers recognize that provisions must be made for agriculture, housing, commerce, and transportation that support our present and growing population; however, components of an unaltered watershed including forested uplands, wetlands, and tidal and

nontidal streams are integral for maintaining suitable fish habitat. By 2020 the terrestrial portions of Chesapeake Bay watershed comprised 17% actively used for agriculture, 11% had been developed, and 60% was forested (Chesapeake Conservation Partnership, 2020). These watershed wide percentages are not uniformly distributed among spawning tributaries. For example, the Potomac River is estimated at 26% agriculture and 26% developed, the Choptank River is estimated at 48% agricultural and 10% developed, and the James River is estimated to be 14% agricultural and 11% developed (Chesapeake Bay Program as cited in Chesapeake Bay Foundation, 2021). Population within the Chesapeake Bay watershed will increase from 18 million in 2020 to a projected 22.5 million by 2050 and with it an estimated additional 570,000 acres or 1.3% of land area converted to developed land (Chesapeake Conservation Partnership, 2020). Inherent in land development is increased impervious surface, its veritable permanence, and resultant exacerbation of chemical, biological, and physical threats to striped bass habitat. As ecosystems are altered, production of coastal fishery resources is typically reduced.

Habitat management, as a tool of fisheries management, was traditionally practiced by installation and manipulation of physical structures in the water for the benefit of aquatic life, remediation of point source pollution, removal of stream blockages, and planting of streamside trees. These traditional practices have demonstrated benefit and continue to be employed. However, fisheries management must consider the myriad of impacts that result from land use change and implement environmental protection and restoration activities outside the traditional scope of fish management.

At the federal level, the coastal Regional Fisheries Management Councils' fisheries management plans (FMPs) and Federal EEZ FMPs all now are required to define Essential Fish Habitat (EFH) including Habitat Areas of Particular Concern (HAPC) and to be proactive in protecting it. A report to Congress by an Ecosystems Principles Advisory Panel, Ecosystem-Based Fishery Management (1999), recommended that Regional Management Councils develop Fisheries Ecosystem Plans that recognizes the interrelationships between species and the habitat needs of the managed species. The ASMFC FMP process has habitat protection as one of its objectives (ASMFC, 2019). Each of the cooperating states of the ASMFC should incorporate habitat protection recommendations in its state waters as an element of their fisheries management framework. However, state fisheries management agencies often lack jurisdiction to mandate measures to protect and conserve fish habitat. Variously named state and county departments of natural resources, environment, coastal resources, and health have the primary responsibilities for programs that protect, promote, and enhance environmental quality for residents and living resources. Fisheries management agencies must integrate their fish production objectives with activities of these habitat management agencies. For example, North Carolina has mandated the preparation and implementation of a Coastal Habitat Protection Plan, which requires the collaboration of the state's Coastal Management,

Environmental Management, and Marine Fisheries commissions[2]. Active involvement of fisheries management agencies in strategic planning, application of regulatory controls and permits that feature protection of environmental quality, and production of fish as objectives can provide for human needs while minimizing the impact on ecosystems.

1.5 IMPACTS OF THE FISHERY MANAGEMENT PROGRAM

1.5.1 Biological and Ecological Impacts

Options to address recreational release mortality through seasonal closures, gear restrictions, and/or education and outreach may reduce the number of striped bass released alive (through seasonal closures) or may increase the chance of survival of striped bass caught and released in the recreational fishery (through gear restrictions and education/outreach). Some seasonal closure options would offer additional benefit to the stock by reducing effort during seasons associated with higher post-release mortality rates or by protecting spawning or pre-spawn fish, which could contribute to stock rebuilding. Changes to the recreational size/slot limit to protect the relatively strong 2015 year class, and potentially other strong year classes, would shift recreational harvest effort to different age classes as compared to the status quo, which would have potential impacts on total SSB that will vary depending on the size/slot limit considered. Changes to the management triggers may affect how quickly and how often the fishing mortality rate, which is the rate at which striped bass are dying because of fishing, is adjusted.

1.5.2 Social and Economic Impacts

This Amendment includes several measures which could carry social and economic impacts, notably potential changes to the recreational size/slot limit to protect strong year classes and potential implementation of seasonal closures. Changes in spatial or seasonal closures, gear restrictions, bag and size limits, and other effort controls affect important attributes of a recreational fishing trip, such as the number of fish of each species that anglers catch and are allowed to keep. In turn, these changes in trip attributes will modify the utility (i.e., level of satisfaction) an angler expects to obtain from the fishing trip (McConnell et al. 1995, Haab and McConnell 2003). As a result, the angler may shift target species, modify trip duration or location, or decide not to take the trip and do something else instead. These behavioral responses lead to changes in directed fishing effort, with accompanying changes in harvest, fishing mortality, and angler welfare. This is, however, only a short-term response and stock dynamics will dictate any longer-term effects on the resource, which may subsequently feed back and affect future management decisions and angling behavior.

[2] See https://deq.nc.gov/about/divisions/marine-fisheries/public-information-and-education/habitat-information/chpp for more information.

Assessing the fishery impacts and potential success of proposed policy measures requires a predictive model that links angler participation and decision-making to changes in management measures, stock levels, and fishing conditions. When data describing angler trip-taking, species targeting, and/or harvest decisions are available, fisheries economists can utilize bioeconomic models to assess the impact of changes in regulation on recreational fishing. Bioeconomic models seek to assess the total effect of changes in policy, immediate and future.

Bioeconomic models combine an economic sub-model with a biological sub-model, which are linked via the impact of angler behavior and fishing mortality on stock dynamics. The integrated model is characterized by two-way feedback loops between fish stocks and angler decision-making in terms of participation, species targeting, and harvest. The number of trips, angler preferences for harvest and release, stock sizes, and regulations jointly determine fishing mortality which, in turn, impacts both future stock levels and future recreational fishing outcomes (Jarvis 2011, Lee at al. 2017). The economic sub-model uses anglers' preferences for different trip attributes to derive anglers' demand for recreational trips under alternative policy scenarios. The biological sub-model, typically an age-structured or size-structured population dynamics model in discrete time, specifies the effect of recreational fishing on the future structure and abundance of the population. Before conducting simulations under alternative policy scenarios, the integrated bioeconomic model can be calibrated such that the number of predicted trips under existing regulations corresponds to MRIP effort estimates (Lee at al. 2017, Holzer and McConnell 2017). The use of bioeconomic simulations allows for a wide range of analyses regarding policy options, often including novel regulatory alternatives, and provides both expected outcomes, in terms of stock abundances and angler welfare, as well as confidence levels around these outcomes.

Recent research into striped bass anglers' preferences and behavior illustrates the connection between regulatory policies and fishing effort while also providing information that could be used to operationalize a bioeconomic model for striped bass management in the future.

Murphy et al. (2019) surveyed striped bass anglers from Massachusetts, Connecticut, Virginia, and North Carolina, collecting data on angler motivations, attitudes, behavior and responses to alternative policy measures. The authors found that changes in size and bag limits led to changes in trip-taking, species targeting, and harvest decisions; these changes in behavior were correlated with angler characteristics such as consumptive orientation (i.e., different attitudes toward catching fish, keeping fish, catching large numbers of fish, and catching trophy fish) and that attitudes; and motivations of striped bass anglers were considerably diverse.

Carr-Harris and Steinback (2020) developed an angler behavioral model using stated preference choice experiment data collected from striped bass anglers from Maine through Virginia. The model was used to simulate trip-taking, harvest decisions, fishing mortality, and angler welfare across a range of alternative policy measures for anglers in Massachusetts, Rhode Island, and Connecticut, incorporating the impacts of fish size on angler behavior, utility, and resulting size- and sex-specific fishing mortality. The authors found that the range of economically efficient policies (i.e., policies that maximize angler welfare for a given level of recreational fishing

mortality) was broad if managers were concerned with controlling recreational fishing mortality only, though considerably narrower if protecting female spawning stock was instead the primary management objective. Carr-Harris and Steinback (2020) note their behavioral model could be extended geographically and combined with a population dynamics sub-model to form an integrated bioeconomic model that would be capable of assessing feedbacks and long-run impacts of management decisions on anglers and the striped bass resource. Such an integrated model would allow the ASMFC to estimate the impact of alternative policy options (such as those in draft Amendment 7), as currently done by the New England Fishery Management Council for the cod and haddock recreational fishery (Lee et al. 2017) (see *Section 6.3 Socio-Economic Research Needs*).

1.5.2.1 Striped Bass Fisheries and the Economy

A 2019 report from Southwick Associates[3] indicates 97% of the economic impacts associated with striped bass fishing came from the recreational sector in 2016. According to the report, total revenues in the commercial sector (from Maine to North Carolina) were $19.8 million that year, while total expenditures in the recreational sector amounted to $6.3 billion. The contribution of the commercial sector to the region's gross domestic product (GDP), when attempting to account for all industries involved in harvesting, processing, distributing, and retailing striped bass to consumers, was $103.2 million and supported 2,664 regional jobs. In comparison, the contribution of the recreational sector to the region's GDP was $7.7 billion and supported 104,867 jobs. Importantly, the report acknowledges that it is not intended to be used to set fishery regulations, but rather to demonstrate the economic significance of striped bass to local economies. It should also be noted that these numbers are for the entire region and actual economic impacts are expected to vary by state.

The dollar values above refer to economic impacts, not to the economic value (or net economic benefit for society) associated with the recreational and commercial fisheries. While data required to quantify these measures are not currently available, the effects of changes to the striped bass management program for recreational sector can be qualified as follows: further limitations on the size and number of fish that can be kept can lead to increased effort to retain a legal-sized fish and an increase in dead releases. Conversely, increased fishing restrictions could result in a reduction in number of recreational trips which could translate into a reduction in angler welfare. However, as in the case of the economic impacts (and assuming increased restrictions do not permanently deter stakeholders from the striped bass fishery), these effects are expected to be outweighed by the positive effects on anglers', harvesters', and consumers' welfare associated with stock recovery in successive years.

[3] While this is a useful source of updated information, it is not peer-reviewed and, therefore, the methods behind the report's figures should be considered accordingly.

2.0 GOALS AND OBJECTIVES

2.1 HISTORY OF MANAGEMENT

Atlantic striped bass (*Morone saxatilis*) have supported valuable commercial and recreational fisheries on the U.S. Atlantic coast for centuries. The Commission coordinates interstate management of the species in state waters (0-3 miles from shore), while management authority in the exclusive economic zone (3-200 miles) lies with NMFS. The first Interstate FMP for the species was approved in 1981 in response to poor juvenile recruitment and declining landings. The FMP recommended increased restrictions on commercial and recreational fisheries, such as minimum size limits and harvest closures on spawning grounds. Two amendments were passed in 1984 recommending additional management measures to reduce fishing mortality. To strengthen the management response and improve compliance and enforcement, the Atlantic Striped Bass Conservation Act (P.L. 98-613) was passed in late 1984. The Striped Bass Act mandated the implementation of striped bass regulations passed by the Commission and gave the Commission authority to recommend to the Secretaries of Commerce and Interior that states be found out of compliance when they failed to implement management measures consistent with the FMP.

The first enforceable plan under the Striped Bass Act, Amendment 3, was approved in 1985, and required size regulations to protect the 1982 year class—the first modest size cohort since the previous decade. The objective was to increase size limits to allow at least 95% of the females in the 1982 year class to spawn at least once. Smaller size limits were permitted in producer areas than along the coast. Several states opted for a more conservative approach and imposed a total moratorium on striped bass landings for several years. The amendment contained a trigger mechanism to relax regulations when the 3-year moving average of the Maryland juvenile abundance index (JAI) exceeded an arithmetic mean of 8.0. This was attained with the recruitment of the 1989 year class and led to the development of Amendment 4. Also, in 1985, the Commission determined the Albemarle Sound-Roanoke River (A-R) stock in North Carolina contributed minimally to the coastal migratory population, and was therefore allowed to operate under an alternative management program.

Amendment 4, implemented in 1989, aimed to rebuild the resource rather than maximize yield. The amendment allowed state fisheries to reopen under an interim target fishing morality (F) of 0.25, which was half the estimated F needed to achieve maximum sustainable yield (MSY). The amendment would allow an increase in the target F (0.5) once female SSB was restored to levels estimated during the late 1960s and early 1970s. The dual size limit concept was maintained (28” coastal versus 18” producer areas), and a recreational trip limit and commercial season was implemented to reduce the harvest to 20% of that during 1972-1979. A series of four addenda were implemented from 1990-1994 to maintain protection of the 1982 year class through sequentially higher minimum size limits which reached 34” along the coast by 1994.

In 1990, to provide additional protection to striped bass and ensure the effectiveness of state regulations, NMFS adopted a prohibition on possession, fishing (catch and release fishing), harvest, and retention of Atlantic striped bass in the Exclusive Economic Zone (EEZ), with the exception of a defined transit zone within Block Island Sound (55 Federal Register 40181-02). Atlantic striped bass may be transported through this defined area provided that the vessel is not used to fish while in the EEZ and the vessel remains in continuous transit, and that the fish were legally caught in adjoining state waters. The EEZ has remained closed since 1990. In addition, an Executive Order issued in 2017 prohibits the sale of striped bass caught from the EEZ.

In 1995, the Atlantic striped bass migratory stock was declared recovered by the Commission (the A-R stock was declared recovered in 1997 and the Delaware River stock was declared recovered in 1998) and Amendment 5 was adopted to increase the target F to 0.33, midway between the existing F target (0.25) and F_{MSY}. Target F was allowed to increase again to 0.40 after two years of implementation. Regulations were developed to achieve the target fishing mortality, which included measures to restore commercial harvest to 70% of the average landings during the 1972-1979 historical period, and recreational season , possession (two fish), and size limits (a return to 28" on the coast and 20" for producer areas). States were allowed to submit proposals to implement alternative regulations that were deemed conservationally equivalent to the Amendment 5 measures, provided no size limits were below 18". From 1997-2000[4], a series of five addenda were implemented to respond to the latest stock status information and adjust the regulatory program to achieve each change in target F.

In 2003, Amendment 6[5] was adopted to address five limitations within the existing management program: 1) potential inability to prevent the Amendment 5 exploitation target from being exceeded; 2) perceived decrease in availability or abundance of large striped bass in the coastal migratory population; 3) a lack of management direction with respect to target and threshold biomass levels; 4) inequitable effects of regulations on the recreational and commercial fisheries, and coastal and producer area sectors; and 5) excessively frequent changes to the management program.

[4] The 1997 reauthorization of the Striped Bass Act also required the Secretaries of Commerce and Interior provide a biennial report to Congress highlighting the progress and findings of studies of migratory and estuarine Striped Bass. The ninth such report was recently provided to Congress (Shepherd et al. 2017).

[5] While NMFS continues to implement a complete ban on the fishing and harvest of striped bass in the EEZ, Amendment 6 includes a recommendation to consider reopening the EEZ to striped bass fisheries. In September 2006, NMFS concluded that it would be imprudent to open the EEZ to striped bass fishing because it could not be certain that opening the EEZ would not lead to increased effort and an overfishing scenario. In 2018, the Consolidated Appropriations Act directed NMFS (in consultation with ASMFC) to review the federal moratorium once the 2018 benchmark was completed, and consider lifting the ban, however, there has not been any update from NMFS on this directive.

Amendment 6 modified the F target and threshold, and introduced a new set of biological reference points (BRPs) based on female SSB, as well as a list of management triggers based on the BRPs. The F threshold value was set to achieve MSY and the F target was set to provide a higher long–term yield from the fishery and adequate protection to ensure that the striped bass population is not reduced to a level where the spawning potential is adversely affected. The F target provided a buffer to account for the uncertainty in the estimate of Fmsy threshold. The female SSB threshold value was set equal to the female SSB value in 1995, the year that the striped bass stock was declared rebuilt, while the SSB target was set to 125% of the SSB threshold. New management measures were selected based on the F target.

The coastal commercial quotas were restored to 100% of the states' average landings during the 1972-1979 historical period, except for Delaware's coastal commercial quota which remained at the level allocated in 2002[6]. For the recreational fisheries, a two-fish bag limit with a minimum size limit of 28 inches was established, except for the Chesapeake Bay fisheries and North Carolina fisheries that operate in the A-R. The Chesapeake Bay and A-R regulatory programs were predicated on a more conservative F target than the coastal migratory stock, which allowed these states/jurisdictions (hereafter states) to implement separate seasons, harvest caps, and size and bag limits as long as they remained under that F target. Additionally, states were permitted the flexibility to deviate from the coastwide regulations by submitting conservation equivalency proposals. No minimum size limit could be less than 18 inches under Amendment 6. The same minimum size standards regulated the commercial fisheries as the recreational fisheries, except for a minimum 20 inch size limit in the Delaware Bay spring American shad gillnet fishery.

Five addenda to Amendment 6 have been implemented. Addendum I, approved in 2007, established a bycatch monitoring and research program to increase the accuracy of data on striped bass discards and recommended development of a web-based angler education program. Addendum II was approved in 2010 and established a new definition of recruitment failure such that each index would have a fixed threshold rather than a threshold that changes annually with the addition of each year's data. Addendum III was approved in 2012 and requires all states with a commercial fishery for striped bass to implement a uniform commercial harvest tagging program. The Addendum was initiated in response to significant poaching events in the Chesapeake Bay and aims to limit illegal harvest of striped bass.

Addendum IV was triggered in response to the 2013 benchmark assessment, which indicated a steady decline in SSB since the mid-2000s to the point of approaching the SSB threshold in the terminal year. The Addendum established new F reference points, including the elimination of Chesapeake Bay stock-specific reference points due to modeling limitations, and changed

[6] The decision to hold Delaware's commercial quota at the 2002 level was based on tagging information that indicated F on the Delaware River/Bay stock was too high, and uncertainty regarding the status of the spawning stock for the Delaware River/Bay.

commercial and recreational measures to reduce F to a level at or below the new target. While the 1995 female SSB level had proved to be a useful reference point for striped bass, fishing at (and even below) the Fmsy target reference point did not maintain female SSB at the 1995 level. To address this issue, the 2013 benchmark stock assessment recommended new F reference points that would maintain SSB at or above its 1995 level which Addendum IV adopted. Chesapeake Bay fisheries were required to implement lower reductions than coastal states (20.5% compared to 25%) since their fisheries were reduced by 14% in 2013 based on their management program; however, this included replacing the Bay's variable commercial harvest cap (based on exploitable biomass) with a fixed level based on reducing 20.5% from the 2021 harvest. Along the coast, the measures included 25% coastal commercial quota reductions and a 1-fish limit and 28" minimum size for recreational fisheries. The addendum maintained the flexibility to implement alternative regulations through the conservation equivalency process, which resulted in some variety of regulations among states. All states promulgated regulations prior to the start of their 2015 seasons.

In February 2017, the Board initiated development of Draft Addendum V to consider liberalizing coastwide commercial and recreational regulations. The Board's action responded to concerns raised by Chesapeake Bay jurisdictions regarding continued economic hardship endured by its stakeholders since the implementation of Addendum IV and information from the 2016 stock assessment update indicating that F was below target in 2015, and that total removals could increase by 10% to achieve the target F. However, the Board chose to not advance the draft addendum for public comment largely due to harvest estimates having increased in 2016 without changing regulations. Instead, the Board decided to wait until it reviewed the results of the 2018 benchmark stock assessment (NEFSC 2019) before considering making changes to the management program.

Addendum VI was initiated in response to the 2018 benchmark assessment which indicated the stock was overfished and experiencing overfishing in 2017. Approved in October 2019, the Addendum aims to reduce total removals by 18% relative to 2017 levels in order to achieve the F target in 2020 and begin rebuilding the stock. Specifically, the Addendum reduces all state commercial quotas by 18%, and implements a 1 fish bag limit and a 28"to less than 35" slot limit for ocean fisheries and a 1 fish bag limit and an 18" minimum size limit in Chesapeake Bay to reduce total recreational removals by 18% in both regions. The Addendum's measures are designed to apply the needed reductions proportionally to both the commercial and recreational sectors, although states were permitted to submit alternative regulations through conservation equivalency that achieve an 18% reduction in total removals statewide. The Board reviewed and approved management options for 2020 on a state-by-state basis in February, and all states promulgated regulations by April 1 (Tables 13-14).

Addendum VI also requires the mandatory use of circle hooks when fishing with bait to reduce release mortality in recreational striped bass fisheries. States are encouraged to promote the use of circle hooks through various public outreach and education platforms to garner support and compliance with this important conservation measure. Circle hook regulations were required to be implemented no later than January 1, 2021. In March 2021, the Board approved

a clarification on the definition of bait and methods of fishing that require circle hooks. The Board also approved guidance on how to address incidental catch of striped bass when targeting other species with non-circle hooks with bait attached[7].

2.2 PURPOSE AND NEED FOR ACTION

The purpose of Amendment 7 is to update the management program to align with current fishery needs and priorities given the status and understanding of the resource and fishery has changed considerably since implementation of Amendment 6 in 2003. The Board intends for this amendment to build upon the Addendum VI action to end overfishing and initiate rebuilding in response to the overfished status.

The Board-approved 2018 benchmark stock assessment indicated the striped bass stock is overfished and experiencing overfishing relative to the updated reference points defined in the assessment. By accepting the assessment for management use in 2019, two management triggers were tripped requiring the Board to take action to address both the overfishing and overfished status. Addendum VI was implemented in 2020 to address the overfishing status by implementing measures to reduce F back to F target in 2020. To address the overfished status, the Board must adjust the striped bass management program to rebuild the biomass to the target level within 10 years (by 2029). Addendum VI measures are expected to contribute to stock rebuilding.

This draft amendment presents options that would contribute to stock rebuilding and would update the management program to address concerns raised by the Board and the public (see *Section 1.1.1 Statement of the Problem*). For the recreational fishery, this amendment considers management measures to address recreational release mortality and to protect strong year classes. Regarding management program processes, this amendment considers options to modify the use of conservation equivalency in the Striped Bass FMP and options to modify the management triggers established through Amendment 6. Besides these four issues, all other management measures are consistent with Amendment 6 and its Addenda; however, other issues can be addressed in a separate management document(s) following approval of the final amendment (see *Section 4.6 Adaptive Management*).

2.3 GOAL

The Goal of Amendment 7 to the Interstate Fishery Management Plan for Atlantic Striped Bass is:

> To perpetuate, through cooperative interstate fishery management, migratory stocks of striped bass; to allow commercial and recreational fisheries consistent with the long-term

[7] This guidance on incidental catch could not be implemented as a compliance criterion since incidental catch was not originally part of Addendum VI.

maintenance of a broad age structure, a self-sustaining spawning stock; and also to provide for the restoration and maintenance of their essential habitat.

2.4 OBJECTIVES

In support of this goal, the following objectives are specified:

1. Manage striped bass fisheries under a control rule designed to maintain stock size at or above the target female spawning stock biomass level and a level of fishing mortality at or below the target exploitation rate.
2. Manage fishing mortality to maintain an age structure that provides adequate spawning potential to sustain long-term abundance of striped bass populations.
3. Provide a management plan that strives, to the extent practical, to maintain coastwide consistency of implemented measures, while allowing the States defined flexibility to implement alternative strategies that accomplish the objectives of the FMP.
4. Foster quality and economically viable recreational, for-hire, and commercial fisheries.
5. Maximize cost effectiveness of current information gathering and prioritize state obligations in order to minimize costs of monitoring and management.
6. Adopt a long-term management regime that minimizes or eliminates the need to make annual changes or modifications to management measures.
7. Establish a fishing mortality target that will result in a net increase in the abundance (pounds) of age 15 and older striped bass in the population, relative to the 2000 estimate.

2.5 MANAGEMENT UNIT

The management unit includes all coastal migratory striped bass stocks on the East Coast of the United States, excluding the Exclusive Economic Zone (3-200 nautical miles offshore), which is managed separately by NMFS. The coastal migratory striped bass stocks occur in the coastal and estuarine areas of all states and jurisdictions from Maine through North Carolina. Inclusion of these states in the management unit is also congressionally mandated in the Atlantic Striped Bass Conservation Act (PL 98-613).

2.5.1 Chesapeake Bay Management Area

The Chesapeake Bay management area is defined by the striped bass residing between the baseline from which the territorial sea is measured as it extends from Cape Henry to Cape Charles to the upstream boundary of the fall line. Unlike the Albemarle-Roanoke stock, the striped bass in the Chesapeake Bay are unquestionably part of the coastal migratory stock and are assessed as part of the coastal migratory striped bass management unit. However, Amendment 7 implements a separate management program for the Chesapeake Bay due to the size availability of striped bass in this area.

2.5.2 Albemarle Sound-Roanoke River Management Area

The Albemarle-Roanoke stock is currently assessed and managed as a non-coastal migratory stock by the state of North Carolina[8] under the auspices of ASMFC. The Albemarle-Roanoke management area is defined by the striped bass inhabiting the Albemarle, Currituck, Croatan, and Roanoke Sounds and their tributaries, including the Roanoke River. The Virginia/North Carolina line bound these areas to the north and a line from Roanoke Marshes Point to the Eagle Nest Bay bounds the area to the south. The Bonner Bridge at Oregon Inlet defines the ocean boundary of the Albemarle-Roanoke management area. The Technical Committee will continue to monitor the contribution of the Albemarle-Roanoke stock to the coastal migratory population and make recommendations to the Management Board regarding future management.

2.6 REFERENCE POINTS

The current status of the Atlantic striped bass stock will be determined with respect to its biological reference points through the stock assessment. Amendment 7 maintains the previously existing reference point definitions from Amendment 6, as modified by Addendum IV, for female spawning stock biomass (SSB) and fishing mortality rate (F).

2.6.1 Definition of Overfishing and Overfished

A common approach in fisheries management for evaluating the need for management action as determined by stock status is through the use of a control rule. For striped bass, the control rule is based on the level of: 1) fishing mortality rate (F) and 2) female spawning stock biomass (SSB). Overfishing is defined relative to the rate of removals from the population, as determined by the fishing mortality on the stock, whereas overfished status is defined relative to female SSB. For striped bass, the threshold levels of F and SSB are used to determine overfishing and overfished status, respectively. If F exceeds the F threshold, overfishing is occurring, and if SSB falls below the SSB threshold, the stock is overfished.

The management program is designed to achieve the target F and SSB levels. The use of fishing mortality and spawning stock biomass targets and thresholds will provide managers with a series of factors to use when evaluating the status of the stock. *Section 4.1* outlines a series of management triggers associated with the targets and thresholds.

[8] Estuarine striped bass in North Carolina are currently managed under Amendment 1 to the North Carolina Estuarine Striped Bass Fishery Management Plan (FMP) and its subsequent revision and recent supplement (NCDMF 2013, 2014, 2019). It is a joint plan between the North Carolina Marine Fisheries Commission (NCMFC) and the North Carolina Wildlife Resources Commission (NCWRC).

The following sections identify SSB and F reference points for the coastwide population, which includes the Chesapeake Bay, Hudson River and Delaware River/Bay as a metapopulation. These reference points are consistent with those accepted in the Striped Bass 2018 Benchmark Assessment and Peer Review (NEFSC 2019).

The State of North Carolina will manage the Albemarle Sound/Roanoke River stock using reference points from the latest North Carolina Albemarle Sound/Roanoke River stock assessment accepted by the Technical Committee and approved for management use by the Board (Figures 6-7). The recreational and commercial fisheries in the Albemarle Sound and Roanoke River will operate under North Carolina's Fishery Management Plan while the recreational and commercial fisheries in the Atlantic Ocean will continue to operate under the Commission's management measures as the rest of the coastal fisheries.

Additional work is being conducted by the TC and SAS to develop management area-based reference points (e.g., for the Chesapeake Bay) for future Board consideration.

2.6.1.1 Female Spawning Stock Biomass Target and Threshold

The biomass target and threshold is based on the sexually mature females in the striped bass population. The 1995 estimate of female SSB is currently used as the SSB threshold because many stock characteristics, such as an expanded age structure, were reached by this year, and this is also the year the stock was declared recovered. The female SSB target is equal to 125% female SSB threshold. Based on the results from the 2018 assessment, the SSB threshold is 91,436 metric tons (202 million pounds) and the SSB target is 114,295 metric tons (252 million pounds) (Table 1). Female SSB target and threshold values will be updated with future stock assessments because these reference point values are estimated based on the best available data.

The striped bass population will be considered overfished when the female spawning stock biomass falls below the threshold spawning stock biomass level. *Section 4.1* outlines management triggers based on female SSB reference points.

The use of the word "target" is not intended to imply that the management program will try to limit the population from expanding beyond the target level. In other words, when the population is above the target it is not the intent to reduce the population back to target levels.

2.6.1.2 Fishing Mortality Target and Threshold

Fishing mortality based reference points are designed to manage the rate at which individual striped bass die because of fishing. The fishing mortality target and threshold are the values of F estimated to achieve the respective SSB target and threshold over the long-term. If the current F exceeds the F threshold, then overfishing is occurring. This means the rate at which striped bass are dying because of fishing (i.e., harvest and dead discards) exceeds the stock's ability to maintain itself at SSB threshold. The value of the F target is set at a cautionary level intended

to safeguard the fishery from reaching the overfishing threshold[9]. The F target and threshold values will be updated with future stock assessments because these reference point values are estimated based on the best available data.

Section 4.1 outlines management triggers based on the F reference points.

Table 1. Coastwide Population Reference Points

Reference Point	**Definition**	**Value (as estimated in 2018 benchmark stock assessment)***
$SSB_{THRESHOLD}$	SSB in 1995	202 million pounds
SSB_{TARGET}	125% of SSB in 1995	252 million pounds
$F_{THRESHOLD}$	F associated with achieving the SSB threshold	0.24
F_{TARGET}	F associated with achieving the SSB target	0.20

*The target and threshold values will be updated with future stock assessments because they are estimated based on the best available data.

2.7 STOCK REBUILDING PROGRAM

2.7.1 Stock Rebuilding Targets

Should the Atlantic striped bass population be overfished at any time, it is the intent under Amendment 7 to rebuild the female spawning stock biomass to the target level (defined in *Section 2.6.1.1*) within the timeframe established in *Section 2.7.2*.

2.7.2 Stock Rebuilding Schedules

If at any time the Atlantic striped bass population is declared overfished and rebuilding needs to occur (as specified in *Section 4.1 Management Triggers*), the Management Board will determine the rebuilding schedule at that time. The only limitation imposed under Amendment 7 is that the rebuilding schedule is not to exceed 10 years.

2.7.3 Maintenance of Stock Structure

Using the outputs from the stock assessment model, the Technical Committee will monitor the status of the age structure in the striped bass population. If the Technical Committee identifies a persistent change in the age structure that could jeopardize recruitment then the Management Board could modify the exploitation pattern to increase survival of target age

[9] F target is calculated by the stock assessment model, which includes incorporating recruitment from the values observed from 1990 to the terminal year of the assessment. If an alternative recruitment management trigger is selected from *Section 4.1,* an interim F target may be calculated based on recruitment values from a low recruitment time period only, as specified in *Section 4.1*.

classes. In addition, if an individual stock exceeds threshold limits for biomass or exploitation the Board should consider management changes for that stock.

3.0 MONITORING PROGRAM SPECIFICATION

In order to achieve the goals and objectives of Amendment 7, the collection and maintenance of quality data is necessary. All state fishery management agencies are encouraged to pursue full implementation of the standards of the Atlantic Coastal Cooperative Statistics Program (ACCSP).

3.1 COMMERCIAL CATCH AND LANDINGS INFORMATION

States and jurisdictions with commercial striped bass fisheries are required to collect commercial fishery data elements consistent with ACCSP standards and adhere to the ACCSP standard of mandatory trip-level reporting for catch and effort data collection. These data are used to support commercial quota monitoring efforts to prevent annual quota overages. Commercial quotas are allocated on a calendar year basis with quota monitoring being conducted annually during the Fishery Management Plan Review process based on landings information submitted in state compliance reports. States also conduct quota monitoring during the fishing season. Any overages incurred by a state or jurisdiction is deducted from that state or jurisdictions allowable quota in the following year.

3.1.1 Commercial Tagging Program

States and jurisdictions are required to implement a tagging program for all commercially harvested striped bass within state or jurisdictional waters. Further descriptions of the program requirements are provided in the following sections.

Tag Information and Type

All states and jurisdictions with a commercial striped bass fishery are required to submit a Commercial Tagging Report to ASMFC no later than 60 days prior to the start of the first commercial fishery in that state or jurisdiction. The Commercial Tagging Report will include a picture of the tag(s), as well as a description of the tag color, style, and inscription for all gears and/or seasons issued. Additionally, it should include the number of tags issued or printed and a description of the biological metric used to determine the number of tags printed and distributed to participants. All tags used in a state or jurisdictions tagging program must be tamper-evident. Tags are required to be valid for only one year or fishing season. Tags are required to be inscribed with, at a minimum, the year of issue, the state of issue, and a unique number that can be linked back to the permit holder. Where possible, tags should also be inscribed with size limit. States should consider the use of bar codes or QR codes imprinted on tags, for use in tracking fish from harvester to dealer to buyer, as the technology becomes more available. Changes to the tags, with the exception of year, are required to be reported to ASMFC as specified in *Section 5.3*.

Tag Timing

States or jurisdictions with a commercial striped bass fishery may choose to implement their commercial tagging program at either the point of harvest or the point of sale.

Tag Allowance

States and jurisdictions with a commercial striped bass fishery are required to allocate commercial tags to permit holders based on a biological metric. This option is intended to help prevent state or jurisdictional commercial quota overages, which will contribute to the health and sustainability of the striped bass population. The biological metric used to allocate tags to participants is required to be included in the annual Commercial Tag Report.

Tag Accounting

States and jurisdictions with a commercial striped bass fishery must require permit holders to turn in unused tags or provide an accounting report for any unused tags prior to the start of the next fishing season. Tags or the accounting report shall be turned into the agency issuing the tags. The accounting report must include the disposition of all tags issued to the permittee (e.g., used, unused, broken, lost). Permit holders who do not comply with this section may be subject to penalties as set forth below.

Reporting for Tagging Program

States and jurisdictions with a commercial striped bass fishery shall, at a minimum, approve the ACCSP standards for catch and effort data collection. The ACCSP standard for commercial catch and effort data is mandatory, trip-level reporting of all species commercially harvested with reporting of specific minimum data elements; including species, quantity, state and port of landing, market grade and category, areas fished and hours fished. Dealers and/or harvesters landing catches must report to the state of landing monthly or more frequently, if possible. Each gear and area combination should be detailed; such as separate listings each time the fisherman changes gear or fishing area within a trip. Price data are preferred at the trip-level, but partners may opt to collect prices through dealer surveys.

Striped Bass Processing

For all commercial striped bass tagging programs, tags must remain affixed to the fish until processed for consumption by the consumer. Retail markets may prepare portions of legally tagged striped bass for the consumer but must retain the tagged carcass until all portions are sold. The tag must then be removed from the rack and destroyed (e.g. by cutting the tag in two). Possession of untagged striped bass or striped bass fillets or steaks without the properly tagged carcass in establishments where fish are sold or offered for sale (including wholesale establishments, retail establishments and restaurants) is presumptive evidence of intent to sell, trade, or barter such striped bass.

Striped Bass Exportation

It is unlawful to sell or purchase commercially caught striped bass without a commercial tag. This is to prevent the sale or purchase of untagged striped bass into a state or jurisdiction where there is currently no commercial fishery program.

Penalties

It is recommended that states and jurisdictions strengthen their penalties for striped bass violations, including counterfeit tag operations, so that the penalties are sufficient to deter illegal harvest of striped bass. License revocation or suspension is supported as a primary penalty for state or federal violations. Civil and/or criminal penalties can be effective deterrents.

It is recommended that if the permit holder issued tags cannot account for unused commercial striped bass tags, then that individual will not be issued a commercial striped bass permit for the subsequent fishing year.

3.2 RECREATIONAL CATCH AND INFORMATION

The Marine Recreational Information Program (MRIP) contains estimated Atlantic striped bass catches starting in 1981 for shore, private/rental boats, and for-hire modes. Recreational harvest of striped bass was previously collected through the Marine Recreational Fisheries Statistics Survey (MRFSS), which was a recreational data collection program used from 1981-2003. The MRFSS program was replaced by MRIP in 2004 and was designed to provide more accurate and timely reporting as well as greater spatial coverage. The MRFSS and MRIP programs were simultaneously conducted in 2004-2006 and this information was used to calibrate past MRFSS recreational harvest estimates against MRIP recreational harvest estimates.

In 2018, MRIP implemented the Fishing Effort Survey (FES) which used an improved methodology to address several concerns with the prior Coastal Household Telephone Survey. These concerns included under-coverage of the angling public, declining number of households with landline telephones, reduced response rates, and memory recall issues. Past estimates have been recalibrated to the FES. This calibration resulted in much higher recreational catch estimates compared to previous estimates. The 2018 striped bass benchmark assessment incorporated these newly calibrated MRIP estimates.

Recreational catches of striped bass were downloaded from https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries using the query option.

A description of MRIP survey methods can be found online: https://www.fisheries.noaa.gov/recreational-fishing-data/types-recreational-fishing-surveys#access-point-angler-intercept-survey.

3.3 SOCIAL AND ECONOMIC COLLECTION PROGRAMS

Data on a number of variables relevant to social and economic dimensions of striped bass fisheries are collected through existing ACCSP data collection programs and MRIP; however, no explicit mandates to collect socioeconomic data for this species currently exist. In addition to

landed quantities, commercial harvesters and dealers may report ex-vessel prices or value, fishing and landing locations, landing disposition, and a variety of measures capturing fishing effort. MRIP regularly collects information on recreational fishing effort and landings, and occasionally gathers socioeconomic data on angler motivations and expenditures.

3.4 BIOLOGICAL DATA COLLECTION PROGRAM

3.4.1 Fishery-Dependent Data Collection

Required fishery-dependent data collection programs are as follows:

1. Catch composition information will be gathered by those states/jurisdictions with commercial fisheries (currently Massachusetts, Rhode Island, New York, Delaware, Maryland, Virginia, Potomac River Fisheries Commission, and North Carolina) and by those states with significant recreational fisheries (Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, and the Potomac River Fisheries Commission). Samples shall be representative of location and seasonal distribution of catch, and appropriate biological data shall be collected.

2. Representative catch and effort data will be gathered by those states with significant commercial fisheries (currently Massachusetts, New York, Delaware, Maryland, Virginia, and the Potomac River Fisheries Commission) and by those agencies monitoring recreational fisheries (National Marine Fisheries Service, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, and the Potomac River Fisheries Commission).

3. Striped bass tagging programs currently executed by the U.S. Fish and Wildlife Service, National Marine Fisheries Service, Southeastern Monitoring and Assessment Program, Massachusetts Division of Marine Fisheries, New York Department of Environmental Conservation, New Jersey Department of Environmental Protection, Maryland Department of Natural Resources, Virginia Marine Resources Commission, and North Carolina Division of Marine Fisheries will be continued to generate estimates of migration and mortality rates.

3.4.2 Fishery-Independent Data Collection

3.4.2.1 Young-of-Year (YOY) Surveys

Annual juvenile recruitment (appearance of juveniles in the ecosystem) of striped bass which comprise the Atlantic Coast migratory population is measured in order to provide an indication of future stock abundance. When low numbers of juvenile fish (age 0) are produced in a given year, recreational and commercial catches from that year class may be lower four years later when surviving fish become available to the fisheries. Recruitment is measured by sampling current year juvenile fish abundance in nursery areas. Currently, these juvenile abundance indices are determined annually for stocks in the Kennebec River, Hudson River, Delaware River, Chesapeake Bay and its tributaries, and Roanoke River/Albemarle Sound. Since there is a time delay of several years between the measurement of recruitment and initial harvest of

those fish, managers have ample time to protect year classes that have not yet been exploited.

The juvenile index values for the Hudson River, Delaware River, Chesapeake Bay and its tributaries serve as input to the assessment model. Juvenile indices can also serve as another indicator of the status, and future status, of the striped bass population.

The following states are currently required to conduct juvenile abundance index surveys on an annual basis: Maine for the Kennebec River; New York for the Hudson River; New Jersey for the Delaware River; Maryland for the Chesapeake Bay tributaries; Virginia for Chesapeake Bay tributaries; and North Carolina for the Roanoke River/Albemarle Sound.

The requirements for measurement of juvenile indices are as follows:

1. The sampling protocol (stations, sampling intensity and gear type) shall be consistent throughout the period for which the index is to be used. For new indices, the following information will be required: details of the sampling design of the study yielding the data used to develop the index; a description of the analyses performed; and a presentation of the results of those analyses. The Technical Committee shall review any such submittal and either accept or reject it. If rejected, the Committee will provide a written explanation to the sponsor explaining the reasons for rejection.

2. In order to be validated, the index should exhibit a significant ($p<0.05$) positive correlation to either the magnitude of future landings (lagged 2-7 years) from the stock, or to the relative abundance of the same year class later in life (i.e., relative abundance of juveniles versus the relative abundance of yearling fish of the same year class).

3. The Management Board may require juvenile abundance surveys in additional river systems to evaluate the level of striped bass productivity.

3.4.2.2 Spawning Stock Biomass Surveys

Spawning stock surveys are required to be monitored in each of the following areas: Hudson River, Delaware River, Chesapeake Bay, and Albemarle Sound/Roanoke River.

The requirements for monitoring spawning stock biomass are as follows:

1. The Technical Committee shall examine output from the stock assessment model when stock assessment benchmarks or updates are conducted and use those estimates to evaluate the status of the striped bass stock relative to the female spawning stock biomass targets and thresholds in this Amendment.

2. Jurisdictions bordering the Hudson River, Delaware River, Chesapeake Bay, and Albemarle Sound/Roanoke River (currently New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina) shall be responsible for conducting spawning stock assessment surveys in those river systems. Accepted studies for fulfilling this requirement currently

include: **New York**: Hudson River haul seine survey and shad by-catch analysis; **Maryland**: Gill net surveys; **Virginia**: spring pound net survey; **North Carolina**: spring electroshocking survey of spawning stock; **Pennsylvania-New Jersey-Delaware**: Delaware River electroshocking/gill net survey. Any changes to the survey methodology must be reviewed by the Technical Committee and approved by the Management Board prior to implementation.

3.4.2.3 Observer Programs

As a condition of state and/or federal permitting, many vessels are required to carry at-sea observers when requested. A minimum set of standard data elements are to be collected through the ACCSP at-sea observer program (refer to the ACCSP Program Design document for details). Specific fisheries priorities will be determined by the Discard/Release Prioritization Committee of ACCSP.

3.4.2.4 Tagging Studies/Program

Tagging of fish with individually-numbered tags is a proven technique for determining movement and migration routes and rates, growth rates and patterns, estimation of mortality/survival, estimation of population size (if assumptions are met), stock identification and determination of movement/migration corridors and habitat use. The use of more sophisticated electronic tags can provide additional habitat information such as temperature (of both water and fish body), depth and specific location. The species' Advisory Panel, Stock Assessment Subcommittee, Technical Committee and/or Management Board (for ASMFC), Advisory Panel or Committee (for Fishery Management Councils) and working groups for International Fisheries Commissions may decide to recommend that tagging studies be performed. Alternatively, such studies may be initiated independently by one or more of the partners in the fishery management process.

Fish tagging is a technical activity which is usually conducted by scientific personnel; however a number of other entities have become involved in or conducted their own tagging studies. Should a new tagging study be proposed for striped bass, a number of considerations should be addressed. Any proposed study must have stated objectives, which directly relate to scientific or management purposes. A second important consideration is whether a species can be tagged with minimal mortality, as the utility of study data will be highly questionable if handling/tagging mortality is high. The ideal tag should be one which has a unique alpha-numeric identifier and organization contact information, is easily implanted, has a high rate of retention, is readily visible to potential recoverers without increasing an animal's susceptibility to predation, and remains permanently legible, or in the case of internally-embedded coded wire (CWT) or passive integrated transponder (PIT) tags, is easily and consistently detectable. The implantation location and type of CWT or PIT tags should be fully coordinated with other investigators tagging the same species. Tag number sequences and colors of externally visible tags should be coordinated with other investigators conducting similar studies, via the Interstate Tagging Committee, to ensure that duplication does not occur, and contact information for recoveries and returns should be clearly imprinted on the tag. Tagging should be conducted in a consistent manner by personnel who have been properly trained.

Consideration should be given to requiring certification of both professional staff and volunteer angler taggers by the sponsoring organization, in order to increase both the efficiency of tagging and the survival of tagged fish through minimization of handling/tagging mortality. The ASMFC Interstate Tagging Committee has developed a certification for tagging programs, for which sponsoring organizations may wish to apply.

Tagging studies should be highly publicized among the fishing public to maximize the rate of return from both commercial and recreational sectors. In most cases, efforts should be undertaken to accurately measure the rate of tag encounter and reporting. Ideally each study conducted should assess short-term tagging (handling) mortality; short and long-term tag loss; and reporting rates for each fishery sector. Advertised/promised rewards should be provided promptly upon receipt of data. Study managers should insist on complete and accurate return information. Numbers of animals tagged should be sufficiently high to ensure that the desired information will be produced by the study. Careful and appropriate study design (i.e., purpose, location, sample size, duration, recapture procedures, analysis) is vital to ensure success. Prior to study implementation, a repository for any resultant data should be specified, and long-term commitments made by the sponsoring program, and resources made available to analyze and publish the results. Funds should be provided/reserved to process recaptured tagged fish reported after the program has ended. In angler programs, participants with tagging kits should be notified when the program has ended. All incoming tagging data should be added to the existing database until no additional data are received. Failure to respond to reports of recaptured fish will be detrimental to surrounding tagging programs. Tag reporting apathy develops in anglers when they do not receive replies from the tagging entity.

Investigators may wish to consider collaboration with existing tag database managers (e.g. NMFS Northeast Fishery Science Center, Woods Hole, MA; or U.S. Fish and Wildlife Service, Fishery Resources Office, Annapolis, MD; Atlantic States Marine Fisheries Commission, 1050 N Highland Ave, Suite 200 A-N, Arlington, VA 22201, 703-842-0740, info@asmfc.org) for data entry and analysis. Studies should not be undertaken without adequate consideration of all of these issues. The Interstate Tagging Committee strongly encourages programs which are implemented with: 1) connection to an agency or scientific entity for study design and data analyses; 2) an established constituent base to promote the program; 3) training for individuals on proper fish handling and tagging techniques; and 4) identified research needs and objectives.

Any public or private entity proposing new tagging studies should seek guidelines from and provide a proposal to the Interstate Tagging Committee for review and coordination prior to initiation of any study. The proposal should use the ASMFC's Protocols for Tagging Programs as guidance in developing the proposed study. If the proposed study is an integral component of the FMP, study design should ideally be reviewed and approved by the Stock Assessment Subcommittee and/or Technical Committee as well, during the FMP review process. Tagging studies outside the ASMFC jurisdiction may choose not to participate in the ASMFC review process.

The ASMFC's Interstate Tagging Committee was developed to serve as a technical resource for jurisdictions other than the ASMFC, as well as for private, non-profit tagging groups, who may plan to tag. Protocols have been developed by the Committee as a source of information, advice and coordination for all Atlantic coast tagging programs. A copy of the protocol is available on the ASMFC web site. Copies of proposals for review and coordination should be provided to the Interstate Tagging Coordinator at the ASMFC.

3.5 ASSESSMENT OF STOCK CONDITION

An Atlantic striped bass stock assessment update or benchmark assessment will be performed by the Stock Assessment Subcommittee (SAS) on a regular schedule recommended by the Assessment Science Committee and as approved by the Interstate Fisheries Management Program Policy Board (ISFMP Policy Board). The Board can request a stock assessment at any time. The SAS and TC will meet to review the stock assessment and all other relevant data sources. The stock assessment report shall follow the general outline as approved by the ISFMP Policy Board for all Commission-managed species. In addition to the general content of the report as specified in the outline, the stock assessment report may also address the specific topics detailed in the following sections. Specific topics in the stock assessment may change as the SAS continues to provide the best model and metrics possible to assess the Atlantic striped bass stock.

3.5.1 Assessment of Population Age/Size Structure

Estimates of Atlantic striped bass age and size structure are monitored based on results of the stock assessment. As of the 2018 benchmark assessment, the accepted model for use in striped bass stock assessments is a forward projecting statistical catch-at-age (SCA) model, which uses catch-at-age data and fishery-dependent and -independent survey indices to estimate annual population size and fishing mortality. Indices of abundance track relative changes in the population over time while catch data provide information on the scale of the population size. Age structure data (numbers of fish by age) provide additional information on recruitment (number of age-1 fish entering the population) and trends in mortality.

3.5.2 Assessment of Annual Recruitment

Recruitment (age-1) of Atlantic striped bass is currently estimated by the SCA stock assessment model. The SCA model uses several fishery-independent indices of relative abundance for young-of-year (YOY) and age-1 fish (New York and Maryland YOY and Yearling Surveys, and New Jersey and Virginia YOY Surveys).

3.5.3 Assessment of Spawning Stock Biomass

Spawning stock biomass is currently estimated by the SCA stock assessment model and those estimates are compared to target and threshold levels (i.e., biological reference points) in order to assess the status of the stock. The 1995 estimate of female SSB is currently used as the SSB threshold because many stock characteristics, such as an expanded age structure, were reached

by this year, and this is also the year the stock was declared recovered. The female SSB target is equal to 125% female SSB threshold.

3.5.4 Assessment of Fishing Mortality

The fishing mortality rate is currently estimated by the SCA stock assessment model and that estimate is compared to target and threshold levels (i.e., biological reference points) in order to assess the status of the stock. The F threshold and target are calculated to achieve the respective SSB reference points in the long term.

3.6 STOCKING PROGRAM

There is currently no stocking program in place for Atlantic striped bass.

3.7 BYCATCH DATA COLLECTION PROGRAM

In general, states shall undertake every effort to reduce or eliminate the loss of striped bass from the general population due to bycatch discard mortality. The Technical Committee shall examine trends in estimated bycatch during benchmark stock assessments and stock assessment updates.

The overarching goal of the bycatch data collection program (established through Addendum I to Amendment 6) is to develop more accurate estimates of striped bass discards and discard mortality. Additional sector-specific goals are listed below.

<u>Commercial Fisheries</u>

- Implement at-sea observer coverage on commercial vessels that are targeting striped bass, as well as vessels that may encounter striped bass, to collect information on the number of fish being discarded from various commercial gears. Ideally, the sampling effort will be optimally allocated, both seasonally and spatially, among directed and non-directed fishing that has a strong likelihood of generating striped bass bycatch.
- Determine the discard mortality associated with all of the commercial gear types currently encountering striped bass.
- Document the level of bycatch in identified problem fisheries in annual state compliance reports.

<u>Recreational Fisheries</u>

- Determine proportional use of different gear types and fishing practices (e.g. fly fishing, live bait fishing, circle hooks, treble hooks, etc.).
- Determine the discard mortality associated with each gear type and fishing practice.
- Document the level of bycatch in identified problem fisheries in annual state compliance reports.

<u>For-Hire Fisheries</u>

- Determine proportional use of different gear types and fishing practices (e.g. fly fishing, live bait fishing, circle hooks, treble hooks, etc.).
- Determine the discard mortality associated with each gear type and fishing practice.
- Document the level of bycatch in identified problem fisheries in annual state compliance reports.

3.7.1 Requirements and Recommendations for Bycatch Data and Research

MANDATORY DATA COLLECTION

- Collect commercial fishery data elements consistent with ACCSP standards.
- Coordinate with NMFS to ensure coverage in federal waters.
- Continue collection of quantitative data on the bycatch of finfish species as reported by interviewed fishermen through existing recreational and for-hire intercept surveys (ACCSP standard).

RECOMMENDED DATA COLLECTION

- Implement commercial at-sea observer coverage on 2-5% of the total trips in state waters. Applicable to all states with commercial fisheries (directed and non-directed) that encounter striped bass.
- Develop "add-on" questions for interview surveys to collect information on gear/terminal tackle used (circle hooks, J-Hooks, treble hooks, fly fishing, live bait, etc.) in recreational and for-hire fisheries.
- Develop a survey to estimate size composition of discarded fish. The Board will need to work with the TC to determine an effective way to collect these data. Approaches for consideration include, but are not limited to, volunteer angler surveys, additional questions for intercept survey, and expansion of data collected in for-hire fisheries.

MANDATORY DISCARD MORTALITY STUDIES

- Review existing commercial discard studies to determine what information has already been collected.
- Review existing recreational studies for various species and gears to develop estimates of striped bass discard mortality.

RECOMMENDED DISCARD MORTALITY STUDIES

- Conduct studies to estimate the discard mortality associated with the following commercial gear types: trawl (highest priority), gill net, fixed nets (pound net/fyke net/floating fish trap), hook and line, haul seine. These studies do not need to be conducted in all states, but should be conducted to reflect the fishing activities (gear type, temperature, salinity, etc.) that encounter striped bass.
- Conduct additional studies on recreational post-release mortality associated with a range of temperature, salinity, and gear types.

MANDATORY TECHNICAL COMMITTEE ANALYSES

- Analyze any newly collected commercial at-sea observer data to determine if any discarding "hot spots" can be reliably identified.
- Develop estimates for the proportion of discards based on water temperature and salinity, if possible. Apply existing post-release mortality rates to the proportions to determine the effect on estimated discard mortality. For example, if 20% of the catch occurs in warm brackish water, that portion of the catch is likely to have a higher mortality rate than discards in cold ocean water.

RECOMMENDED TECHNICAL COMMITTEE ANALYSES

- Analyze the number and type of all fishing trips from each state, by season and area if possible, and determine ideal allocation of recommended observer coverage.

MANDATORY DATA REPORTING

- Once any mandatory or recommended elements of this program are implemented, states are required to report any bycatch and/or data monitoring as part of the annual compliance report to the Commission.

4.0 MANAGEMENT PROGRAM

This section includes four issues with options for Board consideration and public comment: *Section 4.1 Management Triggers; Section 4.2.2 Ocean Recreational Fishery: Measures to Protect the 2015 Year Class; Section 4.2.3 Measures to Address Recreational Release Mortality; and Section 4.5.2 Management Program Equivalency.*

As defined in Addendum VI, the striped bass ocean fishery (also referred to as "ocean region") is defined as all fisheries operating in coastal and estuarine areas of the U.S. Atlantic coast from Maine through North Carolina, excluding the Chesapeake Bay and Albemarle Sound-Roanoke River management areas. The Chesapeake Bay fishery is defined as all fisheries operating within Chesapeake Bay. However, Addendum IV specifies the Chesapeake Bay spring trophy fishery is part of the coastal fishery for management purposes.

Note: The Board should decide how to categorize the Chesapeake Bay trophy fishery for Draft Amendment 7.

The Albemarle Sound-Roanoke River stock is managed separately by the State of North Carolina.

Draft Amendment 7 continues to use bag and size limits to manage recreational striped bass fisheries, and quotas and minimum size limits to regulate the striped bass commercial fisheries. Draft Amendment 7 also considers options for effort controls (seasonal closures), additional gear restrictions, and outreach efforts to manage the recreational fishery and address recreational release mortality.

4.1 MANAGEMENT TRIGGERS

The management triggers are intended to keep the Board accountable and were developed at a time when the stock was thought to be at historic high abundance and well above the SSB target. However, as perceptions of stock status and fishery performance have changed, shortfalls with how the management triggers are designed have emerged. When female SSB is below the target level, the variable nature of fishing mortality can result in a continued need to for management action. Additionally, the shorter timetables for corrective action are in conflict with the desire for management stability, and the use of point estimates introduces an inherent level of uncertainty in decision making. Furthermore, the Board is sometimes criticized for considering changes to the management program before the stock has a chance to respond to the most recent set of management changes. Lastly, the observed long period of below average recruitment which contributed to recent declines in biomass has raised questions about the recruitment-based trigger and whether it is designed appropriately.

The following options consider how to set the management triggers in Amendment 7. Upon reaching any (or all) of the specified management triggers, the Management Board is required to alter the management program to ensure the objectives of Amendment 7 are achieved.

The Status Quo option is defined by the management triggers as specified in Amendment 6 to the Atlantic Striped FMP (listed below). To account for the various combinations of management trigger methods, timeframes, implementation deadlines, and deferment options, the following management alternatives have been divided into four (4) tiers. The first tier outlines the F-based trigger methods, the second tier outlines the SSB-based trigger methods, the third tier outlines the recruitment trigger methods, and the fourth tier outlines deferred management options if a management trigger is tripped and certain criteria are met. Within each tier is a set of primary options and sub-options (alternatives) for the Board to choose from.

An alternative under each primary option within a tier must be chosen to complete each management trigger package. For example, to achieve the current management triggers specified in Amendment 6 (status quo), the Board would select: Tier 1, Sub-options A1, B1, and C1; Tier 2, Sub-options A1, B1, and C1; Tier 3, Sub-options A1 and B1; and Tier 4, Option A. This decision framework is designed to provide the Board the option to maintain, remove, or change any of the existing management triggers individually. The intent is to evaluate the triggers against the most recent year(s) of data from the most recent stock assessment update or benchmark stock assessment accepted by the Board for management use.

Amendment 6 Management Triggers:

1) If the fishing mortality threshold is exceeded in any year, the striped bass management program must be adjusted to reduce the fishing mortality to a level that is at or below the target within one year.

2) If female SSB falls below the threshold, the striped bass management program must be adjusted to rebuild the biomass to the target level within an established timeframe [not to exceed 10-years].
3) If the fishing mortality target is exceeded in two consecutive years and the female SSB falls below the target within either of those years, the striped bass management program must be adjusted to reduce the F to a level that is at or below the target within one year.
4) If female SSB falls below the target for two consecutive years and the fishing mortality rate exceeds the target in either of those years, the striped bass management program must be adjusted to rebuild the biomass to a level that is at or above the target within an established timeframe [not to exceed 10-years].
5) If any Juvenile Abundance Index shows recruitment failure (i.e., an index value lower than 75% of all other values in the dataset) for three consecutive years, then the Board will review the cause of recruitment failure (e.g., fishing mortality, environmental conditions, and disease) and determine the appropriate management action.

Tier 1 Options: Fishing Mortality (F) Management Triggers

Option A: Timeline to Reduce F to the Target

- **Sub-option A1 (status quo):** Reduce F to a level that is at or below the target within one year.

- **Sub-option A2:** Reduce F to a level that is at or below the target within two years.

- **Sub-option A3:** Reduce F to a level that is at or below the target within three years.

Option B: F Threshold Triggers

- **Sub-option B1 (status quo):** If F exceeds the F threshold, the striped bass management program must be adjusted to reduce F to a level that is at or below the target within the timeframe selected under Option A.

- **Sub-option B2:** If the three-year average F exceeds the F threshold, the striped bass management program must be adjusted to reduce F to a level that is at or below the target within the timeframe selected under Option A.

Option C: F Target Triggers

- **Sub-option C1 (status quo):** If F exceeds the F target for two consecutive years and female SSB falls below the SSB target in either of those years, the striped bass management program must be adjusted to reduce F to a level that is at or below the target within the timeframe selected under sub-option A.

- **Sub-option C2:** If F exceeds the F target for two consecutive years and female SSB is below the SSB target in both of those years, the striped bass management program must be

adjusted to reduce F to a level that is at or below the target within the timeframe selected under sub-option A.

- **Sub-option C3:** If F exceeds the F target for three consecutive years, the striped bass management program must be adjusted to reduce F to a level that is at or below the target within the timeframe selected under sub-option A.

- **Sub-option C4:** If the five-year average F exceeds the F target, the striped bass management program must be adjusted to reduce F to a level that is at or below the target within the timeframe selected under sub-option A.

- **Sub-option C5:** No management trigger related to F target.

Tier 2 Options: Female Spawning Stock Biomass (SSB) Management Triggers

Option A: Deadline to Implement a Rebuilding Plan

- **Sub-option A1 (status quo):** No Deadline to Implement a Rebuilding Plan
  There would not be any requirement regarding how quickly the Board must implement a rebuilding plan when an SSB-based management trigger is tripped, as long as the rebuilding timeframe does not exceed 10-years from when the management trigger was tripped (i.e., the Board may implement a rebuilding a plan at any time in response to the management trigger). A management trigger is not considered tripped until the Board formally reviews (and accepts, if necessary) the results of the relevant stock assessment.

- **Sub-option A2:** Two-Year Deadline to Implement a Rebuilding Plan
  The Board must implement a rebuilding plan within two years from when an SSB-based management trigger is tripped. A management trigger is not considered tripped until the Board formally reviews (and accepts, if necessary) the results of the relevant stock assessment.

Option B: SSB Threshold Trigger

- **Sub-option B1 (status quo):** If female SSB falls below the SSB threshold, the striped bass management program must be adjusted to rebuild the biomass to the target level within an established timeframe [not to exceed 10-years].

- **Sub-option B2:** No management trigger related to the female SSB threshold. The Board cannot choose this option in combination with Sub-option C5 below (i.e., there must be an SSB-based management trigger). This option recognizes that if managing to the SSB target is more conservative than managing to the SSB threshold, and if the management response is the same (i.e., rebuild to the SSB target within 10 years) for both types of SSB triggers, then there does not necessarily have to be a trigger for both.

Option C: SSB Target Trigger

- **Sub-option C1 (status quo):** If female SSB falls below the target for two consecutive years and the fishing mortality rate exceeds the target in either of those years, the striped bass management program must be adjusted to rebuild the biomass to a level that is at or above the target within an established timeframe [not to exceed 10-years].

- **Sub-option C2:** If female SSB falls below the target for two consecutive years and the three-year average fishing mortality rate exceeds the target, the striped bass management program must be adjusted to rebuild the biomass to a level that is at or above the target within an established timeframe [not to exceed 10-years].

- **Sub-option C3:** If female SSB falls below the target for three consecutive years, the striped bass management program must be adjusted to rebuild the biomass to a level that is at or above the target within an established timeframe [not to exceed 10-years].

- **Sub-option C4:** If female SSB is below the target and stock projections indicate female SSB has at least a 50% probability of falling below the SSB threshold within three years, the striped bass management program must be adjusted to rebuild biomass to a level that is at or above the target within an established timeframe [not to exceed 10-years].

- **Sub-option C5:** No management trigger related to the female SSB target. The Board cannot choose this option in combination with Sub-option B2 above (i.e., there must be an SSB-based management trigger).

Tier 3 Options: Recruitment Triggers

Option A: Recruitment Trigger Definition

The status quo trigger (sub-option A1) was designed and has performed adequately to identify true recruitment failure (i.e., a prolonged period of very low recruitment events as seen during the 1970s and 1980s). Sub-options A2 and A3 are designed to identify periods of recruitment that are not necessarily at historically low levels, but are lower than the previous period of high recruitment seen in the late 1990s and early 2000s. As requested by the Board, these trigger alternatives are more sensitive than the status quo trigger in order to alert the Board to periods of low recruitment. The alternative trigger options are designed to be an early warning sign of reduced productivity of the stock following multiple weak year classes entering the population.

The status quo recruitment trigger includes the years of very low recruitment in the 1970s and 1980s. Sub-options A2 and A3 would change the reference period to exclude those years of very low recruitment which results in more sensitive trigger options. Sub-options A2 and A3 use a reference period of 1992-2006, which was identified as a period of high recruitment (i.e., high recruitment regime) by a change point analysis on the Maryland JAI. This period spans the time of high recruitment seen in the late 1990s and through the early 2000s. The Maryland JAI was used as the basis for this analysis because the Maryland JAI is closely correlated to the coastwide age-1 estimates from the stock assessment model and it provides the longest time

series to evaluate changes in high and low periods over time. If sub-option A2 or A3 is selected, the TC will update the change point analysis during benchmark assessments to evaluate whether definition of the high recruitment period for the trigger has changed with new years of data.

- **Sub-option A1 (status quo):** Any JAI (ME, NY, NJ, MD, VA, NC) shows recruitment failure, which is defined as a value that is below 75% of all values (i.e., below the 25th percentile) in a fixed time series appropriate to each juvenile abundance index, for three consecutive years. This status quo trigger tripped one time (NC in 2020) since approval of Amendment 6 in 2003 (Table 2). The state JAIs and reference periods are as follows:

State JAI	Water Body	Reference Period*
ME	Kennebec River	1987-2009
NY	Hudson River	1985-2009
NJ	Delaware River	1986-2009
MD	Chesapeake Bay	1957-2009
VA	Chesapeake Bay	1980-2009
NC	Albemarle-Roanoke	1955-2009

*Reference period established through Addendum II (2010).

- **Sub-option A2:** Any of the four JAIs used in the stock assessment model[10] to estimate recruitment (NY, NJ, MD, VA) shows an index value that is below 75% of all values (i.e., below the 25th percentile) from 1992-2006, which represents a period of high recruitment, for three consecutive years. This trigger alternative has a moderate sensitivity; it is more sensitive than the status quo but less sensitive than sub-option A3 (Table 2).
    - This trigger alternative would have tripped three times since 2003: NY in 2006; MD in 2010; MD in 2014 (Table 2).
    - Three consecutive year classes that are below the 25th percentile of high recruitment period would signal to the Board that the productivity of the stock may decline. While the stock has not quite reached recruitment failure if this trigger is tripped, the stock would be in a period of very low recruitment.

- **Sub-option A3:** Any of the four JAIs used in the stock assessment model (NY, NJ, MD, VA) shows an index value that is below the median of all values from 1992-2006, which represents a period of high recruitment for three consecutive years. This trigger alternative has a higher sensitivity than both the status quo trigger and sub-option A2.

[10] The NC JAI for the Albemarle Sound-Roanoke River (A-R) is not used in the stock assessment because the A-R stock is managed and assessed separately by the state of North Carolina; the ME JAI for the Kennebec River is not used in the stock assessment because that stock is small and assumed to only contribute a small amount to the coastwide stock.

- This trigger alternative would have tripped six times since 2003: NY in 2006; MD in 2008; MD in 2009; MD and VA in 2010; NY in 2013; MD in 2014 (Table 2).
- Three consecutive year classes that are below the median of the high recruitment period would signal to the Board that the productivity of the stock may decline.

Table 2. When the status quo and alternative juvenile abundance index (JAI) triggers would have tripped (black shaded cells) compared to the model estimates of recruitment. Note: "Core" JAIs are the four JAIs used in the stock assessment model to estimate recruitment (NY, NJ, MD, VA).

	Recruitment (Model age 1 estimates lagged back 1 year)	Sub-option A1 Status Quo		Sub-option A2	Sub-option A3
		Ref. period = Established through Addendum II		Ref. period = High recruitment (1992-2006)	
		One or more JAI below 25th Percentile for 3 consecutive years		One or more of the "core" JAIs below 25th Percentile for 3 consecutive years	One or more of the "core" JAIs below Median for 3 consecutive years
2003					
2004					
2005					
2006					
2007					
2008					
2009					
2010					
2011					
2012					
2013					
2014					
2015					
2016					
2017					
2018					
2019					
2020					
	# Years tripped	**1**		**3**	**6**

Below average recruitment
Above average recruitment
No data available
Trigger not tripped
Trigger tripped

Option B: Management Response to Recruitment Trigger

The following sub-options are alternatives for the management response that would be paired with the recruitment trigger definition selected under Option A. Sub-options B2 and B3, which would require reducing F target, are intended to reduce fishing pressure as the weak year classes enter the population. These management response options are not necessarily designed to increase recruitment in the future, given the weak stock-recruit relationship for striped bass.

Juvenile abundance indices and model recruitment estimates provide information on the near-term productivity of the stock. Several years of poor recruitment results in fewer fish entering the exploitable population and the spawning stock biomass, and levels of removals that were sustainable during average or above average recruitment regimes may not be sustainable in the future. If the Board wants to be proactive about responding to periods of lower recruitment, the Board could redefine the F target or the rebuilding framework to be more precautionary (sub-options B2 and B3).

The F target for striped bass is defined as the level of F that will maintain the population at the SSB target in the long-term. That F target is calculated by drawing recruitment from the values observed from 1990 to 2017; this time period does not include the very low values in the 1980s, but it does include both high and low values from later in the time series. If recruitment is only drawn from a below-average period instead of the full 1990-2017 period, for example, the F target would be lower. If the population is fished at the current F target but average recruitment remains lower than the 1990-2017 mean, then the population may not rebuild to the SSB target in the long term.

Sub-option B1 (status quo): If the trigger is tripped, the Board would review the cause of recruitment failure (e.g., fishing mortality, environmental conditions, and disease) and determine the appropriate management action.

- **Sub-option B2:** If the trigger is tripped, the Board would manage the stock under a lower, interim *F* target calculated for the low recruitment regime, including reducing *F* to the interim *F* target if *F* was above the interim *F* target in the terminal year of the most recent stock assessment[11]. The interim F target would remain in place at least until the next stock assessment update or benchmark assessment is approved for management use. The Board would determine which F target to move forward with by considering factors such as stock status as determined by the assessment, recent JAI data and TC input.

[11] For example, the current *F* target is 0.20 based on recruitment from 1990-2017. When recruitment is drawn from the low recruitment regime identified by the change point analysis (2008-2017 for age-1 model estimates), the *F* target is 0.18.

- This option would require the Board to react to a period of low recruitment and higher F, regardless of SSB status, by taking actions to reduce F immediately in the short term.
- Sub-options B2 and B3 could be selected separately or together.

- **Sub-option B3:** If the trigger is tripped and SSB is below the SSB target, the Board would adjust F to rebuild the stock to the SSB target within 10 years using the low recruitment regime assumption[12]. The interim F target would remain in place at least until the next stock assessment update or benchmark assessment is approved for management use. The Board would determine which F target to move forward with by considering factors such as stock status as determined by the assessment, recent JAI data, and TC input.
  - This option would require the Board to react to a period of low recruitment and lower SSB, regardless of F status, by taking actions to reduce F to rebuild SSB over a longer period.
  - Sub-options B2 and B3 could be selected separately or together.

Identifying Recruitment Regimes: Based on a change point analysis of the MD JAI with data through 2020, the TC has identified 1992-2006 to represent the high recruitment period (i.e., high recruitment regime) and 2007-2020 to represent the low recruitment period (i.e., low recruitment regime). This translates to years 1993-2007 and 2008-2017 for age-1 model estimates of recruit abundance used to calculate the new F targets for sub-options B2 and B3. If B2 and/or B3 is selected, the TC will update the change point analysis during benchmark assessments to evaluate whether definition of the high recruitment period for the trigger has changed with new years of data.

Tier 4 Options: Deferred Management Action

Under Amendment 6, if a management trigger is tripped at any time, the Board must take the corresponding action. However, the following options provide the Board flexibility to defer management action when a management trigger is tripped and certain criteria are met. The Board may choose more than one option, unless it chooses Option A (status quo): No Deferred Management Action. Options C, D and E are invalid if the Board chooses Tier 1, Sub-option C5 (no F target management trigger).

These options were developed in response to the Board's concern about the frequent need for management action due to triggers tripping with each stock assessment update or benchmark. Stock assessment updates are typically conducted about every 2 years with benchmark assessments conducted about every 5 years. The alternative Options B-F would defer

[12] For example, under a low recruitment regime, total removals of 5.60 million fish per year will rebuild stock to the current SSB target in 10 years, compared to the total removals of 7.49 million fish per year that would be allowed under the high recruitment regime.

management action until the following stock assessment. The Board can request an additional stock assessment or request a change to the stock assessment schedule at any time.

Option A (status quo): No Deferred Management Action.

If any (or all) of the management triggers are tripped following a benchmark stock assessment or assessment update, the Board is required to respond to that trigger regardless of when the last management action was implemented in response to any management trigger.

Option B: Management action can be deferred until the next assessment if it has been less than three years since the last management action was implemented in response to a management trigger.

If any (or all) of the management triggers are tripped following a benchmark stock assessment or assessment update, and it has been less than three years since the last management action was implemented (i.e., the assessment incorporates less than three years of data under the new fishery regulations) in response to a management trigger, the Board may defer the management response until the management triggers are reevaluated after the next stock assessment.

Option C: Management action may be deferred until the next assessment if the F target management trigger is tripped and SSB is above the target.

If the F target management trigger is tripped but SSB is at or above the SSB target, the Board may defer the management response until the management triggers are reevaluated after the next stock assessment.

Option D: If the F target management trigger is tripped and SSB is projected to increase or remain at the current level over the next five years, management action may be deferred until the next assessment.

If the F target management trigger is tripped, and if none of the SSB management triggers are tripped and projections indicate SSB will increase or remain at the current level over the next five years, the Board may defer the management response until the management triggers are reevaluated after the next stock assessment.

Option E: If the F target management trigger is tripped and there is at least a 50% probability of SSB remaining above the SSB threshold over the next three years, management action may be deferred until the next assessment.

If the F target management trigger is tripped, and if none of the SSB management triggers are tripped and projections indicate SSB has at least a 50% probability of remaining above the SSB threshold over the next five years, the Board may defer the management response until the management triggers are reevaluated after the next stock assessment.

Option F: If a management trigger trips after the Board has already initiated action in response to a different management trigger, the Board can defer management action in response to the subsequent trigger until the next assessment.

For example, this scenario would most likely occur if the Board selects a new recruitment trigger that would require reducing F in response. The recruitment trigger could trip and the Board could initiate action in response; however, a few months later an F or SSB trigger could trip based on results of a stock assessment. Under this option, the Board could defer responding to the F or SSB trigger until the next assessment because the Board is already taking action in response to the recruitment trigger.

Figure 1a. Summary of management trigger options Tiers 1-2: fishing mortality (F) and female spawning stock biomass (SSB) triggers.

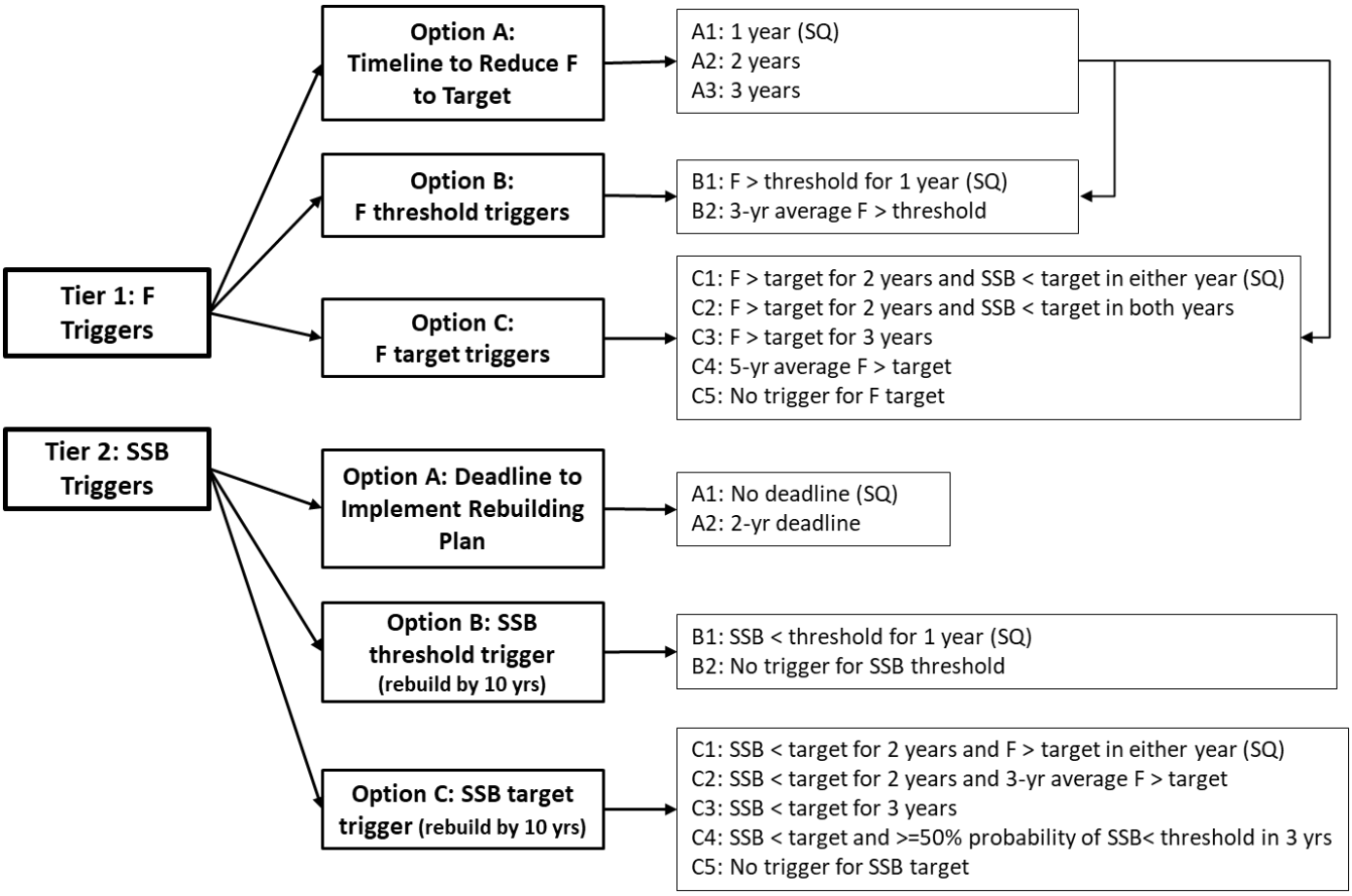
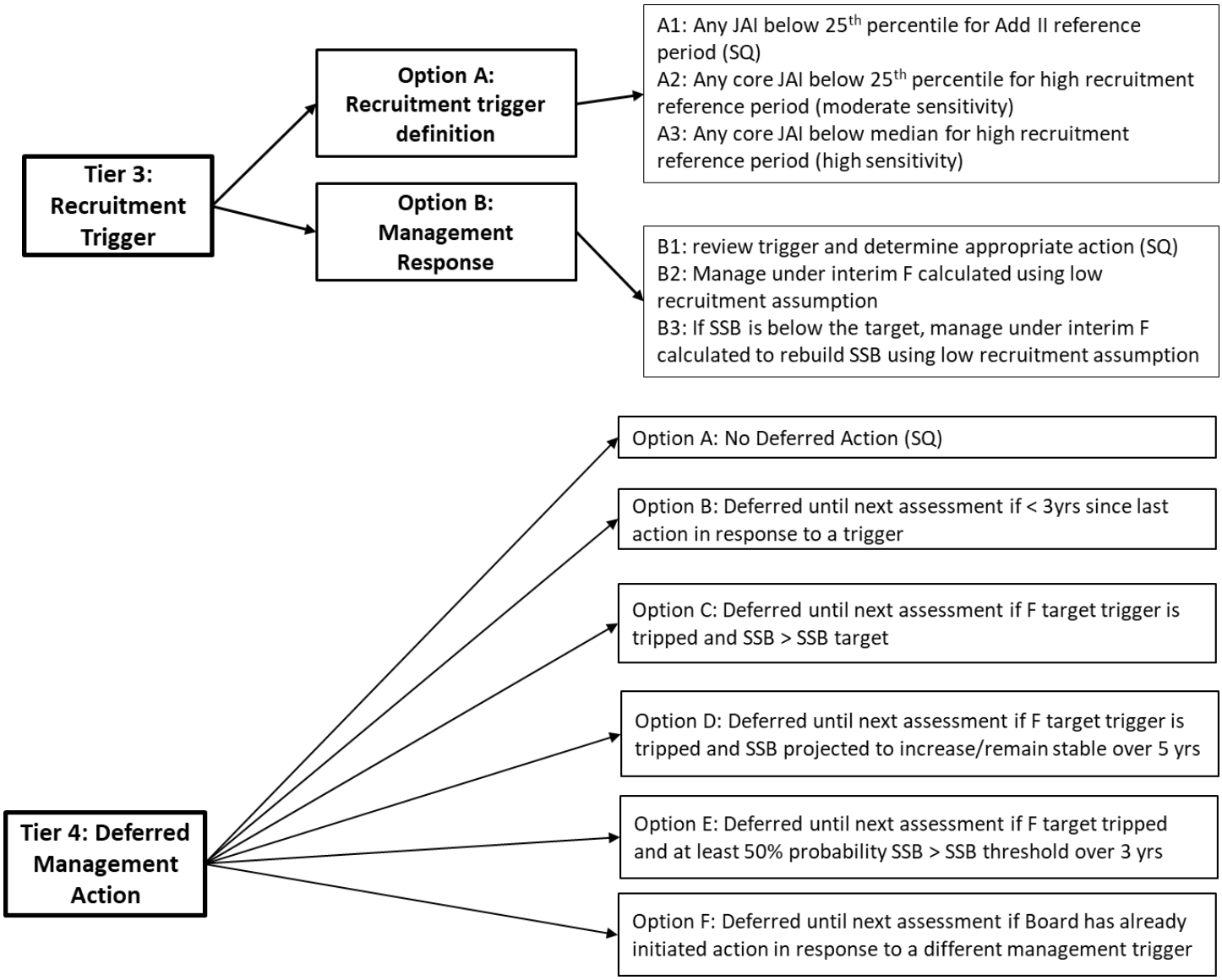


Figure 1b. Summary of management trigger options Tiers 3-4: recruitment-based triggers and deferred management action.



4.2 RECREATIONAL FISHERY MANAGEMENT MEASURES

All bag limits are per person per day. All minimum size and slot size limits are in total length. States are required to maintain the same seasons that were in place in 2017[13].

4.2.1 Chesapeake Bay Recreational Fishery

All recreational fisheries operating in the Chesapeake Bay are constrained by a one fish bag limit and an 18 inches minimum size limit.

4.2.2 Ocean Recreational Fishery: Measures to Protect the 2015 Year Class

It has been raised by stakeholders and the Board that protection of emerging, strong year classes is of the utmost importance for rebuilding the striped bass stock. The 2015-year class is the strongest year class observed since 2003 and will soon be entering the recreational ocean region slot limit of 28" to less than 35" adopted by the majority of Atlantic coast states under Addendum VI in 2020. If this slot limit is maintained, the 2015 year class may be subject to high recreational harvest mortality for the next several years, reducing its potential to help rebuild the stock. The 2015 year class will also be subject to recreational release mortality as it approaches the lower bound of the slot, and again once the surviving fish have grown larger than the upper bound of the slot. In addition to the 2015 year class, the Striped Bass Technical Committee (TC) noted that both the 2017 and 2018 year classes were above average in multiple juvenile abundance indices (JAIs) and recommended including those year classes in this analysis.

The following options consider whether to alter the ocean recreational fishery measures to enhance protection of emerging strong year classes. These options to protect strong year classes are directed at the ocean recreational fishery because the relatively strong 2015 year class is approaching the ocean fishery's status quo slot limit.

The status quo 28" to <35" slot limit (Option A) was adopted under Addendum VI to achieve the 18% reduction in total recreational removals from 2017 needed to reduce F to the target in 2020. In addition to the status quo option, the options in this section include two options from Draft Addendum VI that were projected to achieve a similar level of reduction (Option B's 35" minimum size limit and Option C's 32" to <40" slot limit); a narrower slot limit (Option D's 28" to <32" slot limit) that is projected to result in a greater level of reduction from the 2017 recreational removals (Table 3); and a complete harvest moratorium (Option E).

Each of these options is analyzed in terms of the level of protection it would afford a year class as it ages through the population; i.e., the percent of each year class that is outside the size/slot

[13] Some states have implemented alternative seasons through conservation equivalency for Addendum VI.

limit over time based on length-at-age estimates developed by the TC (Tables 4-5, Figure 2). For example, Option B's 35" minimum size limit would provide the 2015 year class with more protection from harvest in 2023 (when those fish are age-8) compared to the status quo slot limit (Option A); however, the 2015 year class's protection from the 35" minimum size limit will decrease over time as fish reach that minimum size, as compared to having increased protection over time under the slot limit.

While changing the size/slot limit may protect a year class from harvest in the near-term, the potential effects on long-term stock productivity also need to be considered. Accordingly, stock projections were conducted to compare the alternative options to the status quo. For the size/slot Options B-D, projections were developed using the same level of fishing mortality, but different selectivity patterns, based on what proportion of each age was vulnerable to the fishery for each option. This assumes that effort will remain constant regardless of which set of regulations are implemented. However, Option E (harvest moratorium) is intended to change the level of fishing mortality and effort overall, not the selectivity pattern. Because of the difficulty in predicting the effect of a harvest moratorium on effort and removals, Option E was not included in the projections, as it would not be comparable to the results for the other options.

Figure 3 shows the change in total female SSB for all year classes for Options B–D compared to the status quo (Option A), assuming the stock is fished at the target rate under each scenario. The projections indicate that for all options, the 2015 year class would have a higher contribution to stock productivity than the 2017 and 2018 year classes. The projections also indicate that the stock recovery timeline (i.e., the year SSB exceeds the threshold and the year SSB exceeds the target) is the same for all four options. For all options, there is uncertainty around how angler behavior and effort would change in response to a change in size/slot limit[14]. Additionally, slot limits are associated with more recreational releases and a large minimum size limit could also result in more releases.

Table 3. Estimated percent change in harvest, recreational release mortality, and total recreational removals relative to 2017 for ocean size/slot options A-D.

Option (with 1 fish bag limit)	**% change from 2017**		
	Harvest	Release Mortality	Total Removals
Option A: 28" to <35" slot	-46%	+3%	-19%
Option B: 35" minimum	-43%	+3%	-18%
Option C: 32" to <40" slot	-49%	+4%	-21%
Option D: 28" to <32" slot	-62%	+4%	-26%

Note: Because of the difficulty in predicting the effect of the harvest moratorium on effort and removals, Option E is not included in this table.

[14] While release mortality is included in the projections through the selectivity patterns, the projections assume that total effort is the same across all scenarios.

Table 4. Estimated mean striped bass size-at-age based on the 2012-2016 state age data (weighted by state recreational catch) compiled for the 2018 benchmark stock assessment. The ages of the 2015, 2017, and 2018 year classes are in bold. Note: Size-at-age is highly variable along the coast and there is overlap among age classes. Source: ASMFC.

Age	Estimated Mean Total Length (in)	
0	3.8	
1	6.4	
2	12.7	
3	17.0	
4	20.9	
5	**24.1**	**2016 year class in 2023**
6	**26.4**	**2017 year class in 2023**
7	28.7	
8	**31.6**	**2015 year class in 2023**
9	33.8	
10	35.5	
11	37.2	
12	39.1	
13	41.0	
14	42.2	
15+	44.0	

Table 5. Percent of fish protected from harvest (outside the size/slot limit) for each age. The ages of the 2015, 2017, and 2018 year classes in 2023 are in bold. Note: The percent protected for ages 15 and above is the percent of all fish age 15+ combined.

					2018 YC in 2023	**2017 YC in 2023**		**2015 YC in 2023**							
Option	A1	A2	A3	A4	**A5**	**A6**	A7	**A8**	A9	A10	A11	A12	A13	A14	A15+
Option A: 28 to <35	100	100	100	98.9	**90.0**	**68.8**	46.6	**33.4**	40.1	56.9	75.1	92.0	98.4	99.7	100
Option B: 35 min	100	100	100	100	**100**	**99.4**	95.5	**82.9**	64.0	44.2	25.1	8.0	1.6	0.3	0.0
Option C: 32 to <40	100	100	100	100	**99.5**	**95.1**	81.3	**55.8**	32.7	22.9	24.2	38.1	64.1	80.3	93.9
Option D: 28 to <32	100	100	100	98.9	**90.5**	**73.2**	61.0	**61.4**	74.6	86.7	94.8	99.3	99.9	100	100

Figure 2. Percent of fish in the 2015, 2017, and 2018 year classes that is protected from harvest over time starting in 2023, under each option. Note: The percent protected for ages 15 and above is the percent of all fish age 15+ combined.

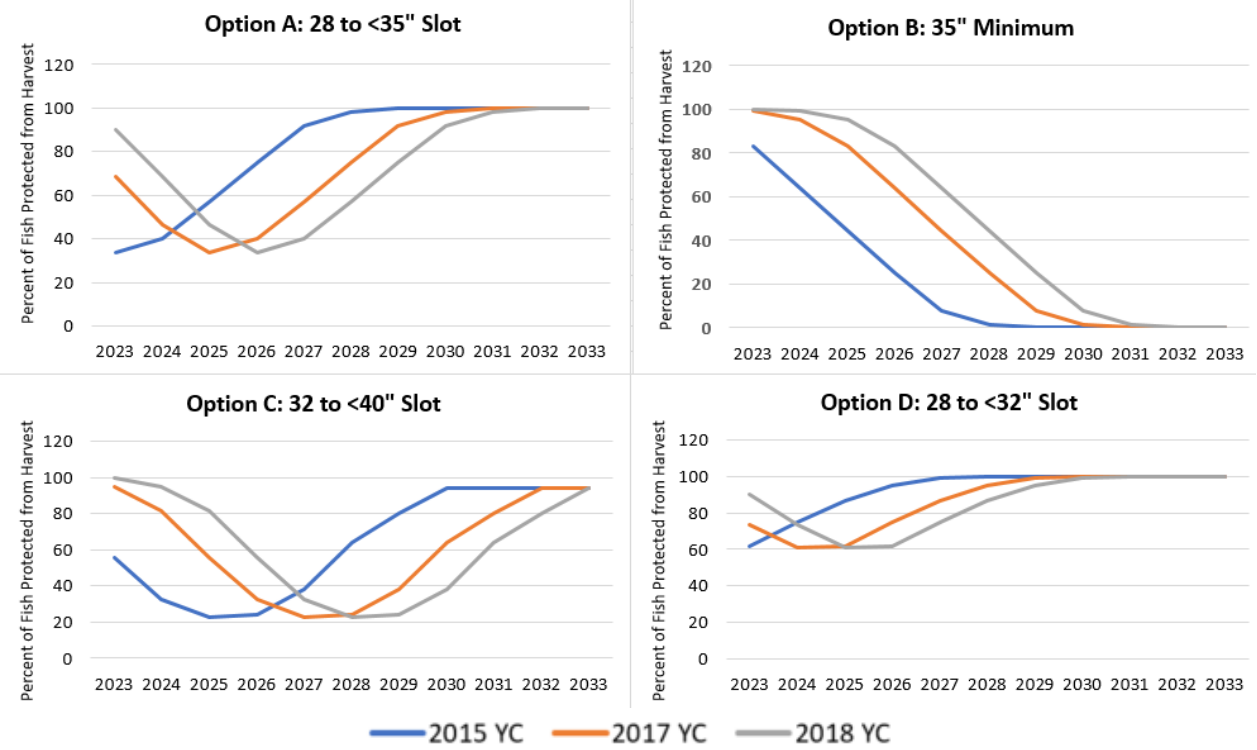
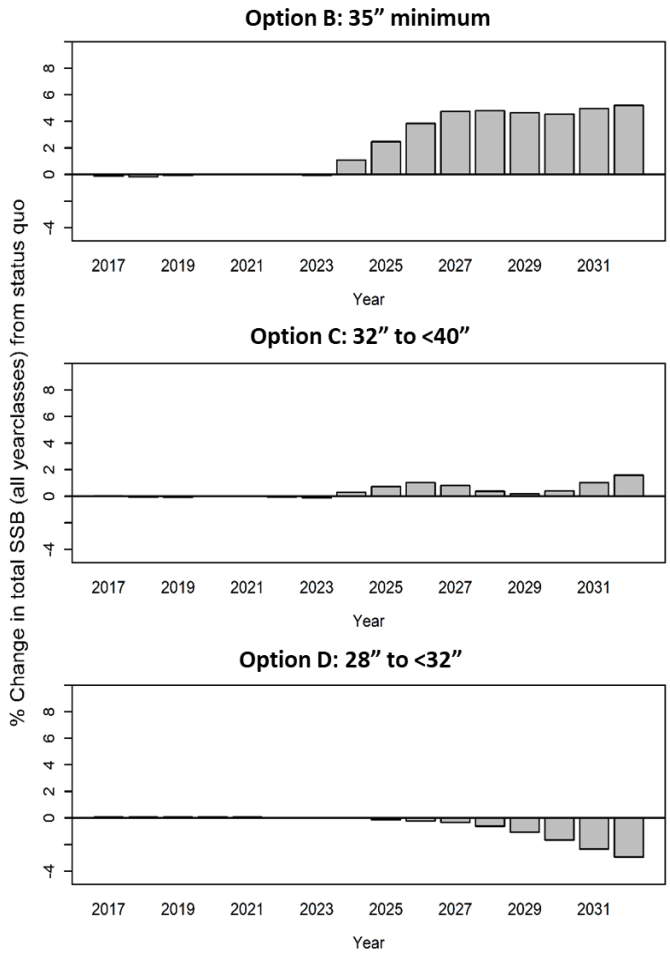


Figure 3. Change in total female SSB for all year classes for each size/slot option compared to the status quo. Note: Because of the difficulty in predicting the effect of the harvest moratorium on effort and removals, Option E was not included in the projections.



OPTIONS

Option A. (status quo): The current recreational slot limit for the ocean fishery of 28" to <35" and one fish bag limit would be maintained, along with all current (approved in 2020[15]) state implementation plans and CE programs with Addendum VI.

- In 2023, the 28" to less than 35" slot limit is estimated to protect 33.4%, 68.8%, and 90.0% of the surviving 2015, 2017, and 2018-year classes from harvest, respectively (Table 5). See Figure 2 for how this protection changes over time. Fish that are not subject to release mortality.

[15] Addendum VI state implementation plans and CE programs were approved in 2020 with the exception of Maryland's updated summer no-targeting closure dates (changed from August 16-31 closure in 2020 to July 16-31 closure in 2021), which was discussed at the August 2021 Board meeting.

Option B. (minimum size): The recreational minimum size for the ocean fishery would be 35" and a one fish bag limit.

- In 2023, this option is projected to protect 82.9%, 99.4%, and 100% of the surviving 2015, 2017, and 2018 year-classes from harvest, respectively (Table 5). See Figure 2 for how this protection changes over time. Fish that are not subject to harvest are still subject to release mortality.
- Under this option, total SSB (all year classes in the population combined) is projected to increase over time relative to the status quo with a maximum increase of just over 4% at the terminal projection year of 2032 (Figure 3).
- If this option is selected, the Board must select an option under Tier 1 and Tier 2.

Option C. (larger slot): The recreational slot limit for the ocean fishery would be 32" to less than 40" and a one fish bag limit.

- In 2023, this option is projected to protect 55.8%, 95.1%, and 99.5% of the surviving 2015, 2017, and 2018-year classes from harvest, respectively (Table 5). See Figure 2 for how this protection changes over time. Fish that are not subject to harvest are still subject to release mortality.
- Under this option, total SSB (all year classes in the population combined) is projected to slightly increase for a few years, followed by a slight decrease, and finally increasing again relative to the status quo with a maximum increase of less than 2% at the terminal projection year of 2032 (Figure 3).
- If this option is selected, the Board must select an option under Tier 1 and Tier 2.

Option D. (narrower slot): The recreational slot limit for the ocean fishery would be 28" to <32" and a one fish bag limit.

- In 2023, this option is estimated to protect 61.4%, 73.2%, and 90.5% of the surviving 2015, 2017, and 2018-year classes from harvest, respectively (Table 5). See Figure 2 for how this protection changes over time. Fish that are not subject to harvest are still subject to release mortality.
- Under this option, total SSB (all year classes in the population combined) is projected to slightly decrease over time relative to the status quo with a maximum decrease of about 3% at the terminal projection year of 2032 (Figure 3).
- If this option is selected, the Board must select an option under Tier 1 and Tier 2.

Option E. Harvest Moratorium: Implement a coastwide moratorium on the recreational harvest of striped bass. This harvest moratorium option is the most conservative approach to protect the 2015, 2017, and 2018-year classes. The Board would select a sunset date from sub-options E1-E4. In general, a harvest moratorium would expedite stock rebuilding by eliminating recreational harvest. Although some recreational harvest trips may shift to catch-and-release fishing, which could increase the number of releases, striped bass removals would likely decrease overall with the reduction in harvest, assuming total effort remains about the same. For all sub-options, the status quo 28" to <35" slot and 1-fish bag limit would be implemented when the moratorium ends. If this option is selected, CE would not be permitted.

- **Sub-option E1**: End on December 31, 2024. By 2025, the 2015 year class will be age-10. 100% of females are estimated to be mature by age-9 so all 2015 year class females would have had a chance to spawn. By 2025, 57% of the surviving 2015s (age-10) would be protected from harvest under the current slot (Table 5 above).
- **Sub-option E2**: End on December 31, 2025. By 2026, 75% of the surviving 2015s (age-11) would be protected from harvest under the current slot (Table 5 above).
- **Sub-option E3**: End on December 31, 2026. By 2027, 92% of the surviving 2015s (age-12) would be protected from harvest under the current slot (Table 5 above).
- **Sub-option E4**: End on December 31, 2027. By 2028, 98% of the surviving 2015s (age-13) would be protected from harvest under the current slot (Table 5 above).

Tier 1: Conservation Equivalency Consideration for Ocean Size/Slot Limits
The Board must select an option under Tier 1 if option B, C, or D (alternative size/slot limit) is selected.

- **Option A**: CE would be permitted if CE is allowed to be used based on any CE restrictions or requirements selected by the Board in *Section 4.5.2*.

- **Option B**: CE would not be permitted.

Tier 2: Addendum VI Conservation Equivalency Programs Splitting the Reduction between Sectors
The Board must select an option under Tier 2 if option B, C, D (alternative size/slot limit) is selected. Tier 2 considers how changing the ocean recreational size limit through Amendment 7 would impact those Addendum VI CE programs that combined recreational and commercial measures to achieve at least an 18% reduction statewide; specifically those CE programs that implemented a less than 18% reduction in commercial quota which was offset by a larger reduction in recreational removals. If the ocean recreational size/slot limit is changed through Amendment 7, the recreational measures implemented through CE would no longer apply for those CE programs; however, the Board needs to consider whether the quota reductions implemented through those CE programs would carry forward.

- **Option A**: The recreational component of approved Addendum VI CE programs that split the Addendum VI reduction between sectors would no longer be valid, but the commercial quota levels implemented through those CE programs would carry forward (Table 6). Under this option, the commercial quota levels implemented through Addendum VI CE for those states would be continued forward into Amendment 7 resulting in some commercial quota levels that are less than an 18% reduction from the Addendum IV quotas.

- **Option B**: The recreational and commercial components of Addendum VI CE programs that split the Addendum VI reduction between sectors would not be valid under Amendment 7. Under this option, those states would be subject to the quotas specified in *Section 4.3*.

Table 6. Addendum VI base quota and 2020 CE-adjusted quota.

State	Add VI (base)	2020 CE-Adjusted Quota^
Ocean		
Maine*	154	154
New Hampshire*	3,537	3,537
Massachusetts	713,247	735,240
Rhode Island	148,889	148,889
Connecticut*	14,607	14,607
New York	652,552	640,718
New Jersey**	197,877	215,912
Delaware	118,970	142,474
Maryland	74,396	89,094
Virginia	113,685	125,034
North Carolina	295,495	295,495
Ocean Total	**2,333,409**	**2,411,154**
Chesapeake Bay		
Maryland	**2,588,603**	1,442,120
Virginia		983,393
PRFC		572,861
Bay Total		**2,998,374**

* Commercial harvest/sale prohibited, with no re-allocation of quota.
** Commercial harvest/sale prohibited, with re-allocation of quota to the recreational fishery.
^ 2020 quota changed through conservation equivalency by either changing size limit with equivalent 18% quota reduction (MA, NY), or by taking a greater than 18% reduction in recreational removals to offset a less than 18% commercial quota reduction (NJ, DE, MD, PRFC, VA).

Note: Maryland's Chesapeake Bay quota for 2020 was adjusted to account for the overage in 2019.

4.2.3 Measures to Address Recreational Release Mortality

Recreational releases are fish caught and released alive during recreational fishing trips. A proportion of releases die as a result of that fishing interaction, which is referred to as release mortality (or dead releases). The number of striped bass that die after being caught and released is estimated by multiplying the total number of live releases by an estimated rate of hooking mortality. The stock assessment currently applies a 9% hooking mortality rate to all recreationally released striped bass. This does not mean that every time a fish is released alive it has a 9% chance of dying. Under some conditions, the released fish has a higher or lower probability of dying, but overall, coastwide, it is assumed that 9% of all striped bass released alive die.

This 9% hooking mortality rate estimate is from a study by Diodati and Richards (1996) which took place in a saltwater environment and encompassed a range of variables including hook types, hooking locations, and angler experience levels. The TC conducted a meta-analysis of other striped bass release mortality studies which confirmed that an overall 9% discard mortality rate accounts for the variation in conditions and factors that attribute to release mortality coastwide.

Since 1990, roughly 90% of all striped bass caught recreationally were released alive either due to cultural preferences (i.e., fishing with the intent to catch and release striped bass) or regulation (e.g., the fish is not of legal size, was caught out of season, or the angler already caught the bag limit). Each year since 2017, more fish were estimated to have died from catch and release fishing than were harvested by the recreational fishery (2.76 million fish estimated to have died from catch and release fishing and 1.71 million fish harvested in 2020). Because release mortality accounts for a significant proportion of total fishing mortality, Addendum VI sought to lower the rate at which fish die after being released by requiring the use of non-offset circle hooks when fishing for striped bass with bait (circle hooks have been proven to help reduce rates of gut-hooking when fished correctly). In addition to hook type, studies have shown other factors influence release mortality including environmental conditions (e.g., salinity, air and water temperatures), angler experience, and angler behavior (e.g., how fish are handled). Addendum VI also encouraged states to develop education campaigns to increase compliance with circle hook regulations and to encourage responsible angler behavior.

If management action is taken to influence where mortality (harvest vs. discard) is coming from, managers will have to consider the impacts those actions will have on the fishery. For example, management measures focusing on reducing discards could discourage participation from anglers that value food fish and negatively impact the industry which caters to those anglers.

The current management program, which primarily uses bag limits and size limits to control harvest, is not designed to control the catch and release fishery which makes it difficult to control overall fishing mortality. Some stakeholders value the ability to harvest striped bass, either commercially or recreationally, while others value the experience of fishing for striped bass regardless of whether they are able to retain fish. The acceptable proportion of release mortality in total removals should reflect the management objectives for the fishery. Nonetheless, in order to better control all sources of fishing mortality, managers could consider additional gear restrictions to help increase the chance of survival after being released, or additional effort controls (i.e., time and area closures) to reduce the number of trips interacting with striped bass and thus the overall number of striped bass released alive.

In addition to the circle hook requirement implemented through Addendum VI (Option A. Status Quo), the Board could consider the following types of options to address recreational release mortality:

- Option B. Effort Controls (Seasonal Closures)
- Option C. Gear Restrictions
- Option D. Outreach and Education

Although the impact of many of these options on the stock are difficult to quantify, they are intended to reduce the number of recreational releases or improve post-release survival. The Board could select one or more sub-options from one or more primary option categories that would be implemented in addition to the status quo circle hook measures.

Option A. Status Quo (Addendum VI circle hook measures)
Under the status quo option, the circle hook requirement implemented through Addendum VI to Amendment 6 (Addendum VI Section 3.2) would remain in place as the only measure implemented specifically to address recreational release mortality:

> *The use of circle hooks, as defined herein, is required when recreationally fishing for striped bass with bait, which is defined as any marine or aquatic organism live or dead, whole or parts thereof. This shall not apply to any artificial lure with bait attached. A circle hook is "a non-offset hook where the point is pointed perpendicularly back towards the shank". The term "non-offset" means the point and barb are in the same plane as the shank (e.g. when the hook is laying on a flat surface, the entire hook and barb also lay flat). States have the flexibility to further specify details of the regulation to address specific needs of the state fishery. In order to promote the use of circle hooks, states are encouraged to develop public education and outreach campaigns on the benefits of circle hooks when fishing with bait. The intent of the requirement is to reduce striped bass discard mortality in the recreational fishery. It is recommended that striped bass caught on any unapproved method of take must be returned to the water immediately without unnecessary injury…*
>
> *The use of circle hooks by anglers targeting striped bass with bait, live or chunk, has been identified as a method to reduce the discard mortality of striped bass in recreational fisheries. When a circle hook begins to exit the mouth of a fish, the shape causes the shaft to rotate towards the point of resistance and the barb is more likely to embed in the jaw or corner of the fish's mouth. Circle hooks can reduce rates of "gut-hooking" and lower the likelihood of puncturing internal organs if the hook is swallowed…*

Option B. Effort Controls (Seasonal Closures)
Recreational release mortality could be addressed by reducing effort in the recreational fishery through seasonal closures, which are intended to reduce the number of live releases by reducing the number of fishing trips (effort) that interact with striped bass. The following options outline a variety of seasonal closures for consideration[16]. Some closure options would offer additional benefit to the stock by reducing effort during seasons associated with higher post-release mortality rates or by protecting spawning or pre-spawn fish, which could contribute to stock rebuilding. When considering effort controls, the Board must weigh the cost of limiting access to the fishery with the potential benefit of decreasing recreational release mortality.

[16] In the criteria for CE proposals for Addendum VI, the TC noted season closures less than two weeks duration are unlikely to be effective. For that reason, the following options do not include any closures less than two weeks duration.

Closures could be no-harvest closures (i.e., catch and release fishing is allowed) or no-targeting closures (i.e. no person may take, attempt to take, target, or have in possession any striped bass). Although there are enforceability concerns and uncertainty about angler compliance with no-targeting closures, the PDT assumes maximum reduction of effort, and thus reduction in number of releases, would be achieved with a no-targeting closure. While no-harvest closures would reduce harvest removals, angler behavior may shift to catch-and-release fishing trips, thereby increasing the number of releases, which is counter to the objective of reducing release mortality. The most appropriate approach may depend on the reason for the closure; for example, implementing a no-targeting closure during high temperature periods when release mortality rates are increased. The majority of options developed by the PDT are no-targeting options in order to address recreational releases resulting from both harvest trips and catch-and-release fishing trips. It is important to note that with any type of closure, there would still be fishing trips targeting other species that incidentally catch and release striped bass. For 2018-2019, for example, an average of 24% of all trips interacting with striped bass were non-targeted trips or trips where striped bass was the secondary target, and these trips would likely still occur during a striped bass no-targeting closure. Additionally, closures may result in shifting effort to targeting other species or shifting effort to other times of year when the fishery is open.

A coastwide closure would ensure consistency in the timing of closures across all states, but would present an equitability challenge. Recreational fisheries operate very differently along the coast based on timing (availability of fish), among other biological, environmental, and socioeconomic considerations, so coastwide closures would result in different levels of effort reduction across states. State-specific or regional closure options could help account for these differences, but this may result in a patchwork of season closures across the coast. States would need to develop closure proposals to pursue through their state public processes and submit for TC review and Board approval as part of state implementation plans.

Note on Estimating Reduction in Removals: Estimating the reduction in removals from a no-targeting season closure depends on assumptions about changes in angler behavior, which is highly uncertain. The TC[17] has not established a standardized method for estimating the reduction in removals from a no-targeting season closure. Given the no-targeting closure options being considered in Draft Amendment 7 as well as the potential for other states to propose no-targeting closures in future CE proposals, the PDT recommends the TC discuss and establish such methods in advance of implementation of subsequent management actions. The TC may need guidance from the Board on this discussion.

[17] In their review of Addendum VI CE proposals, the TC noted "the TC supports the use of closed seasons to reduce effort and dead discards, but stresses that the predicted savings, particularly from a "no targeting" provision, are highly uncertain due to current data limitations and predicting changes in angler behavior."

The Board can select one seasonal closure option among sub-options B1, B2, and B3; if the Board selects one of these options, the Board must consider sub-option B4. The Board can select sub-option B5 (spawning closures) independent of or in addition to the other closure options.

- **Sub-option B1. Wave 4 Coastwide Closure:** All recreational targeting of striped bass would be prohibited coastwide for a time period during Wave 4 selected from sub-options B1-a through B1-d (at a minimum). A no-targeting closure during Wave 4 would reduce effort during a time when all states have an active fishery (Table 7). Additionally, a closure during Wave 4 would reduce effort during a time when there are environmental stressors, including peak air and water temperatures[18], associated with higher post-release mortality rates. The Board should consider seasonal peaks in air and water temperatures and relevant water quality data (dissolved oxygen, salinity, etc.) when considering these sub-options. If this option is selected, the use of CE would not be permitted.
    - **B1-a. July 1-15**
    - **B1-b. July 16-31**
    - **B1-c. August 1-15**
    - **B1-d. August 16-31**

- **Sub-option B2. Wave 4 State-Specific Closures:** All recreational targeting of striped bass would be prohibited for a minimum two-week or minimum three-week period during Wave 4, as specified in sub-options B2-a through B2-c. No-targeting closures during Wave 4 would reduce effort during a time when all states have an active fishery (Table 7). Additionally, closures during Wave 4 would reduce effort during a time when there are environmental stressors, including peak air and water temperatures, associated with higher post-release mortality rates. State implementation plans should consider seasonal peaks in air and water temperatures and relevant water quality data (dissolved oxygen, salinity, etc.). If this option is selected, CE would not be permitted.

    - **B2-a. State-Specific 2-Week Closures in Wave 4:** Each state would select a two-week period (at minimum) during Wave 4 during which all recreational targeting of striped bass would be prohibited.

    - **B2-b. State-Specific 2- or 3-Week Closures in Wave 4:** Each state, except Maine and New Hampshire, would select a three-week period (at minimum) during

[18] The PDT reviewed climate normal data for one coastal city in each state and noted air temperatures tend to peak in late July for most states (https://www.ncei.noaa.gov/access/us-climate-normals/). The PDT reviewed NOAA buoy data for one station in/near each state's waters and water temperatures tend to peak in August (https://www.ndbc.noaa.gov/).

Wave 4 during which all recreational targeting of striped bass would be prohibited. Maine and New Hampshire would select a two-week period (at minimum) during Wave 4 during which all recreational targeting of striped bass would be prohibited.

- This option was developed to address the concern about the relatively large proportion of annual directed striped bass trips that occur during Wave 4 in some states and the shorter period of time that large striped bass are available in some areas.
- This option is based on MRIP striped bass directed trip (primary or secondary target) data from 2017-2019 (Table 7; Table 8). All states with a Wave 4 proportion of annual directed trips greater than one standard deviation from the mean of Wave 4 proportions across all states would implement a two-week closure. The Wave 4 proportion of annual directed trips in ME and NH is greater than 36.5 (mean of 21.0 plus one standard deviation of 15.5).
- The Board could identify an alternative method to determine which states could require a shorter closure than other states.

- **B2-c. Region-Specific 2-Week Closures in Wave 4:** Each region (as defined below or defined otherwise by the Board) would select a two-week period (at minimum) during Wave 4 during which all recreational targeting of striped bass would be prohibited.
  - Gulf of Maine: ME, NH, MA
  - Long Island/Block Island Sound: RI, CT, NY
  - Mid-Atlantic: NJ, DE, MD ocean, VA ocean, NC ocean
  - Chesapeake Bay: MD Chesapeake Bay, VA Chesapeake Bay

  Note: The Board may re-define these regions before final approval of Draft Amendment 7.

- **Sub-option B3. State-Specific Closures Any Wave:** All recreational targeting of striped bass would be prohibited for a minimum two-week period, as specified in sub-options B3-a and B3-b, to reduce effort during times when the striped bass fishery is active (i.e., directed trips are occurring) as defined in the sub-options. In addition to the directed trips criteria outlined in the sub-options, state implementation plans should consider protection for spawning/pre-spawn fish, extreme air and water temperatures and relevant water quality data (dissolved oxygen, salinity, etc.), alongside socioeconomic considerations and regulatory consistency within shared waterbodies. If this options is selected, CE would not be permitted.

  - **B3-a. State-Specific 2-Week Closures (15% trips per wave):** Each state would select a two-week period (at minimum) during which all recreational targeting of striped bass would be prohibited. Each state's closure must occur during a Wave with at least 15% of the state's striped bass directed trips. At least two waves in each state/region meets this 15% minimum threshold (Table 7).

- This option was developed based on MRIP striped bass directed trip (primary or secondary target) data from 2017-2019.
- Considering the limited availability of MRIP data for Pennsylvania, Potomac River Fisheries Commission, and District of Columbia, those three jurisdictions would determine which state listed in Table 7 most closely aligns with their distribution of effort.

- **B3-b. State-Specific 2-Week Closures (25% trips per wave):** Each state would select a two-week period (at minimum) during which all recreational targeting of striped bass would be prohibited. Each state's closure must occur during a Wave with at least 25% of the state's annual striped bass directed trips. At least one wave in each state/region meets this 25% minimum threshold (Table 7).
  - This option was developed based on MRIP striped bass directed trip (primary or secondary target) data from 2017-2019.
  - Considering the limited availability of MRIP data for Pennsylvania, Potomac River Fisheries Commission, and District of Columbia, those three jurisdictions would determine which state listed in Table 7 most closely aligns with their distribution of effort.

Table 7. Proportion of each state's striped bass directed trips (primary and secondary target) by wave for 2017-2019. Note: the distribution of directed trips reflects closures that were already in place in 2017-2019 and so may not fully reflect when fish are available. Source: MRIP

	Jan-Feb Wave 1* Percent	Mar-Apr Wave 2* Percent	May-Jun Wave 3 Percent	Jul-Aug Wave 4 Percent	Sep-Oct Wave 5 Percent	Nov-Dec Wave 6* Percent
MAINE	0.0%	0.0%	34.7%	41.6%	23.7%	0.0%
NEW HAMPSHIRE	0.0%	0.0%	25.6%	53.7%	20.8%	0.0%
MASSACHUSETTS	0.0%	2.3%	33.7%	34.5%	23.8%	5.7%
RHODE ISLAND	0.0%	12.9%	30.3%	20.6%	19.2%	17.1%
CONNECTICUT	0.0%	22.9%	29.9%	18.7%	13.2%	15.3%
NEW YORK	0.0%	21.3%	26.3%	13.5%	20.3%	18.6%
NEW JERSEY	0.0%	24.7%	18.4%	4.1%	11.7%	41.1%
DELAWARE	0.0%	30.9%	15.3%	8.1%	7.8%	38.0%
MD CHES BAY	0.0%	14.6%	21.1%	26.7%	17.7%	19.9%
VA CHES BAY	0.0%	7.7%	5.5%	1.6%	15.0%	70.1%
MD OCEAN	0.0%	0.6%	20.7%	0.4%	40.7%	37.6%
VA OCEAN	0.0%	1.3%	24.1%	31.4%	0.0%	43.2%
NC OCEAN	5.1%	9.0%	12.2%	17.8%	1.7%	54.3%

*During Wave 1, the Fishing Effort Survey (FES) is not administered in any state except NC. During Waves 2 and 6, the FES is not administered in ME.

Table 8. Percent of each state's annual striped bass directed trips (primary and secondary target) estimated to occur within a 2-, 3-, and 4-week period during Wave 4 based on 2017-2019 directed trips. Source: MRIP

	% State's Annual Directed Trips in 2-wk closure Wave 4	% State's Annual Directed Trips in 3-wk closure Wave 4	State's Annual Directed Trips in 4-wk closure Wave 4
MAINE	9.4%	14.1%	18.8%
NEW HAMPSHIRE	12.1%	18.2%	24.2%
MASSACHUSETTS	7.8%	11.7%	15.6%
RHODE ISLAND	4.6%	7.0%	9.3%
CONNECTICUT	4.2%	6.3%	8.5%
NEW YORK	3.0%	4.6%	6.1%
NEW JERSEY	0.9%	1.4%	1.8%
DELAWARE	1.8%	2.7%	3.7%
MD CHES BAY	6.0%	9.0%	12.1%
VA CHES BAY	0.4%	0.5%	0.7%
MD OCEAN	0.1%	0.1%	0.2%
VA OCEAN	7.1%	10.6%	14.2%
NC OCEAN	4.0%	6.0%	8.0%
COASTWIDE	**4.8%**	**7.2%**	**9.6%**

- **Sub-option B4. Applicability of Existing No-Targeting Closures:** If the Board selects sub-option B1, B2, or B3, the Board needs to consider whether existing no-targeting closures implemented in 2020, as part of a CE program to meet the Addendum VI reduction, would meet the seasonal closure requirements for the above closure options.
    - **B4-a.** The existing no-targeting closures implemented in 2020 would fulfill the requirements of sub-options B2 or B3. If sub-option B1 is selected, the closure dates would shift to match the selected coastwide closure dates.
    - **B4-b**. The existing no-targeting closures implemented in 2020 would not fulfill the requirements of sub-options B1, B2, or B3. States that implemented no-targeting closures in 2020 would need to choose between the following actions:
        - Implement additional closures to meet the new season closure requirements of the selected option (B1, B2, or B3); OR
        - Implement only the new seasonal closure requirement by the selected sub-option (B1, B2, or B3) and implement the FMP standard size limit for the Chesapeake Bay recreational fishery (*Section 4.2.1*).

- **Sub-option B5. Spawning Area Closures**: The Board can select either or both of the following options B5-a and B5-b. Existing spawning closures would be applied toward

meeting the requirements of the selected option(s)[19]. Spawning area closures during the spawning season could contribute to stock rebuilding by eliminating harvest and/or reducing releases of spawning and pre-spawn fish. Reducing releases during this time is particularly important to reduce stress and injury to fish as they move into lower salinity spawning areas. If new information on the timing of striped bass spawning is published in the future, the TC would conduct a review of that research and recommend changes to the timing of spawning closures if needed. If this option is selected, CE would not be permitted.

- **B5-a. No-Harvest Spawning Closure Required**: All recreational harvest of striped bass would be prohibited during Waves 1 and 2 in spawning areas (Chesapeake Bay, Delaware Bay/River, Hudson River, Kennebec watershed) in order to protect pre-spawn and spawning fish. Prohibiting harvest for a long period of time may eliminate some striped bass trips altogether, and therefore reduce releases, during this period. Most spawning areas are already closed to harvest during Wave 1 and some spawning areas are closed for all or part of Wave 2 (Figure 4).

- **B5-b. No-Targeting Closure Required**: All recreational targeting of striped bass would be prohibited for a two-week period (at minimum) on all spawning grounds (not necessarily the entire spawning area) during Wave 2 or Wave 3, as determined by states to align with peak spawning, in order to protect spawning fish. Some spawning areas in New Jersey (Delaware River) and Chesapeake Bay (Maryland) have no-targeting closures in place during part of Wave 2 and/or 3 (Figure 4).

[19] For example, if sub-option B5-a was selected and a state already has a no-harvest closure in place for Waves 1 and 2, that state would already be considered in compliance with the closure requirement.

Figure 3. 2021 seasonal closures in the **ocean region** by state.

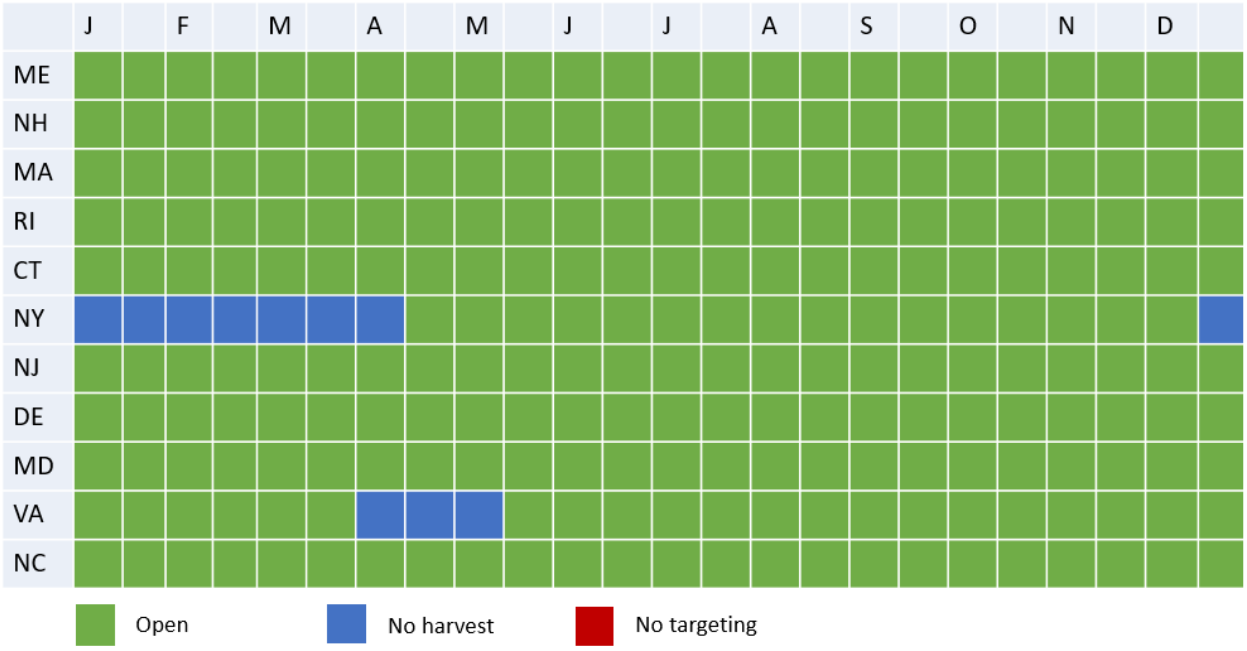
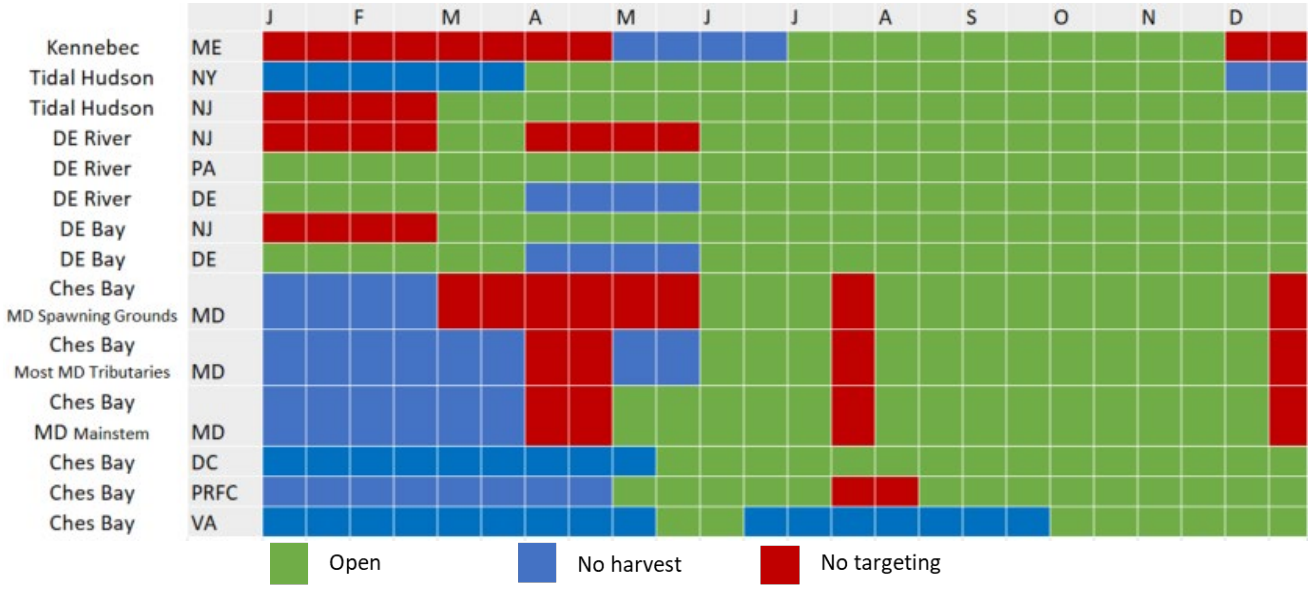


Figure 4. 2021 closures in **spawning areas** by state.



Option C. Additional Gear Restrictions

In addition to the status quo circle hook requirement, the Board could consider additional gear restrictions outlined in the following options to increase the chance of survival of striped bass caught and released in the recreational fishery. The benefit of gear restrictions is difficult to quantify. It is unknown how many anglers already use these tactics and thus it is unknown how many anglers would change their fishing behavior to comply with new gear restrictions. This leads to uncertainty in how many additional fish could be saved if new gear restrictions are put in place.

There are also enforcement and compliance challenges. As evidenced by the implementation Addendum VI circle hook requirement, it is very difficult for enforcement officers to prove angler intent or target species (i.e., gear restrictions are difficult to enforce for one species if it is an acceptable gear to use when targeting a different species in the same place and time).

The Board may select one or more of the following sub-options[20].

- **Sub-option C1**: Recreational anglers would be prohibited from using any device other than a nonlethal device to remove a striped bass from the water or assist in the releasing of a striped bass. A non-lethal device means any tool used in the removal of striped bass from the water or to assist in the releasing of striped bass that does not pierce, puncture, or otherwise cause invasive damage to the fish that may result in its mortality. Some states already have regulations that ban the use of gaffs, but the language presented in this option would encompass a broader suite of lethal devices, including gaffs.

- **Sub option C2**: Recreational anglers would be prohibited from using treble hooks when fishing for striped bass. Treble hooks on artificial lures would be required to be replaced with single hooks. There are mixed results in studies that compare release mortality rates of fish caught on treble hooks on artificial lures compared to other hook types (Nuhfer and Alexander 1992, Nelson 1998, Diodati and Richards 1996). Using single hooks or limiting the number of hook points on artificial lures could lead to shorter dehooking times and increase the chance of survival of released striped bass.

- **Sub-option C3**: Recreational anglers would be required to use of barbless hooks when fishing for striped bass. Studies have shown that fish caught on barbed hooks had higher release mortality rates than fish caught on barbless hooks (Taylor and White 1992). Using barbless hooks can lead to shorter dehooking times and increase the chance of survival of released striped bass.

[20] These options were developed based on public comment received on Addendum VI and on the Draft Amendment 7 Public Information Document.

- **Sub-option C4**: Recreational anglers would be prohibited from trolling with wire when fishing for striped bass. Some stakeholders have noted concern about the exhaustion of a fish when it gets to the surface after chasing the hook and being dragged through the water for a period of time.

- **Sub-option C5**: Striped bass caught on any unapproved method of take would be returned to the water immediately without unnecessary injury[21].
    - Selecting this option would make this a requirement for striped bass that are incidentally caught on any unapproved method of take, including non-circle hooks with bait attached (as implemented through Addendum VI) and any other gear restrictions selected from sub-options C1-C4.

Option D: Outreach and Education

States have already implemented outreach and education campaigns related to circle hooks, as encouraged by Addendum VI, and related to best handling and fishing practices. These options are intended to more explicitly recognize those efforts as part of Amendment 7. ***The Board may select sub-option D1 or D2.***

- **Sub-option D1**: States would be required to promote best striped bass handling and release practices by developing public education and outreach campaigns. States must provide updates on public education and outreach efforts in annual state compliance reports. Best practices include**:**
    - Be attentive and set the hook immediately to prevent the fish from swallowing the hook (setting the hook is not necessary with circle hooks).
    - If the hook is swallowed, do not forcefully remove it. Cut the line off as close to the mouth as possible and then release the fish.
    - Leave the fish in the water when possible, including while removing the hook, to minimize stress and injury to the fish. If you need to remove the fish from the water, wet your hands or use a wet rag in order to preserve the protective mucous layer on the outside of the fish.
    - Don't use the gills or eyes as a handhold. On larger fish, support under the belly.
    - Reduce the fight time.
    - Once an angler has retained their bag limit, consider targeting a different species.

- **Sub-option D2**: It is recommended states continue to promote best striped bass handling and release practices by developing public education and outreach campaigns.

[21] The Board approved this language on incidental catch as guidance to Addendum VI in March 2021; this incidental catch guidance could not be a compliance criterion as part of Addendum VI since incidental catch was not originally part of Addendum VI.

States should provide updates on public education and outreach efforts in annual state compliance reports. Best practices include those listed in sub-option D1.

4.3 COMMERCIAL FISHERY MANAGEMENT MEASURES

4.3.1 Size Limits

All commercial fisheries are required to maintain their 2017 size limits[22].

4.3.2 Quota Allocation

The table below indicates the commercial quota in pounds for the ocean region and for Chesapeake Bay (Table 9).

Table 9. Ocean Region and Chesapeake Bay Commercial Quota

Region	Quota (Pounds of Fish)
Chesapeake Bay Total	2,588,603
Ocean Total	2,333,408

The Chesapeake Bay commercial quota is allocated to Maryland, Virginia, and the Potomac River Fisheries Commission per the state/jurisdiction's mutual agreement. Each state's commercial quota for the ocean region is detailed in the table below (Table 10).

Table 10. Ocean region commercial quota.

State	Quota (Pounds of Fish)
Maine*	154
New Hampshire*	3,537
Massachusetts	713,247
Rhode Island ^	148,889
Connecticut*†	14,607
New York	652,552
New Jersey *†	197,877
Delaware	118,970
Maryland ^	74,396
Virginia	113,685
North Carolina	295,495
Ocean Total	2,333,408

* Commercial harvest/sale prohibited.
† Under Addendum IV, New Jersey and Connecticut reallocated its commercial quota to the recreational sector through conservation equivalency but must resubmit for conservation equivalency in order to maintain these recreational fishery bonus programs under Addendum VI. Accordingly, the quota presented herein is an 18% reduction from the quota as listed in Addendum IV.
^ Rhode Island (181,572 lbs Add IV CE-adjusted) and Maryland (90,727 lbs Add IV CE-adjusted) implemented reduced quotas through conservation equivalency under Addendum IV. An 18% reduction was calculated relative to these reduced quotas.

[22] Some states have implemented alternative commercial size limits through conservation equivalency.

All quotas represent an 18% reduction from the Addendum IV quotas. Quotas are allocated on a calendar year basis[23]. In the event a state exceeds its allocation, the amount in excess of its annual quota is deducted from the state's allowable quota in the following year.

Note: Refer to section 4.2.2 for options to consider how changing the recreational size limit through Amendment 7 could impact Addendum VI CE programs that combined recreational and commercial measures to achieve at least an 18% reduction statewide, including changes to commercial quotas.

4.3.2.1 Commercial Quota Transfers

Addendum IV to Amendment 6 specified that commercial quota transfers are not permitted. In August 2021, concurrent with the development of Draft Amendment 7, the Board initiated Addendum VII to Amendment 6 to consider allowing the voluntary transfer of commercial striped bass quota between states/jurisdictions that have commercial quota. If Draft Addendum VII is approved for public comment, public comment will be conducted through the separate Draft Addendum VII process. This section will be updated if Draft Addendum VII is approved.

4.4 HABITAT CONSERVATION AND RESTORATION RECOMMENDATIONS

Each State should engage their county, township, and other local jurisdictions to implement protection for striped bass habitat to ensure the sustainability of that portion of the migratory or resident stock. Such a program should inventory historical habitats, identify habitats presently used, specify those targeted for recovery, and impose or encourage measures to retain or increase the quantity and quality of striped bass essential habitats.

Habitats essential for maintaining striped bass populations include spawning, nursery, wintering areas, and migration corridors. Each state jurisdiction should monitor those habitats located within state waters to ensure adequate water and substrate quality; the quantity, timing, and duration of freshwater flows into spawning and nursery areas; water, substrate quality, and integrity of wintering areas; and open and free access to migration corridors, especially ocean inlets. Federal agencies should work with state partners in addressing these needs in state waters and in the EEZ. State and Federal agencies should partner to develop detailed maps of striped bass habitat use, by life stage, to provide a basis for regulatory review of proposed federal or state actions which could adversely affect striped bass populations. Parameters of particular concern to which jurisdictions should be attentive include nutrient loading, long-term adverse changes in water quality, hypoxia events, substrate extraction in areas used by striped bass (e.g., proposed Corps of Engineers sand mining off NJ and NC, as well as navigational

[23] North Carolina's fishing year is December 1 – November 30.

dredging), and projects which could potentially jeopardize striped bass habitat quality or access.

4.4.1 Preservation of Existing Habitat

1) States in which striped bass spawning occurs should notify in writing the appropriate federal and state regulatory agencies of the locations of habitats used by striped bass. Regulatory agencies should be advised of the types of threats to striped bass populations and recommended measures which should be employed to avoid, minimize, or eliminate any threat to current habitat quantity or quality.

2) Where available, States should seek to designate striped bass essential habitats for special protection. Tools available include High Quality Waters, Outstanding Resource Waters, and Fish Habitats of Concern (as defined by ASMFC, in preparation) designations. Designations should, where possible, be accompanied by requirements of nondegradation of habitat quality, including minimization of nonpoint source runoff, prevention of significant increases in contaminant loadings, and prevention of the introduction of any new categories of contaminants into the area (via restrictions on National Pollutant Discharge Elimination System (NPDES) discharge permits for facilities in those areas).

3) State fishery regulatory agencies should develop protocols and schedules for providing input on water quality regulations to the responsible agency, to ensure that water quality needs for striped bass are met.

4) State fishery regulatory agencies should develop protocols and schedules for providing input on Federal permits and licenses required by the Clean Water Act, Federal Power Act, and other appropriate vehicles, to ensure that striped bass habitats are protected.

5) Water quality criteria for striped bass spawning and nursery areas should be established or existing criteria should be upgraded to levels which are sufficient to ensure successful reproduction. Any action taken should be consistent with Federal Clean Water Act guidelines and specifications.

6) All State and Federal agencies responsible for reviewing impact statements and permit applications for projects or facilities proposed for striped bass spawning and nursery areas should ensure that those projects will have no or only minimal impact on local stocks. Natal rivers of stocks considered depressed or undergoing restoration are of special concern. Any project which would result in the elimination of essential habitat should be avoided.

7) State agencies should engage with local jurisdictions during comprehensive development planning to ensure impacts to striped bass spawning and nursery areas are avoided or minimized.

4.4.2 Habitat Restoration and Improvement

1) Each State should survey existing literature and data to determine the historical extent of striped bass occurrence and use within its jurisdiction. An assessment should be conducted of those areas not presently used for which restoration is feasible.

2) Every effort should be made to eliminate existing contaminants from striped bass habitats where a documented adverse impact occurs (e.g., PCBs from the Hudson River).

3) States should work in concert with the USFWS and NMFS, Office of Habitat Conservation, to identify federally-regulated hydropower dams which pose significant impediment to striped bass migration and target them for appropriate recommendations during FERC relicensing.

4.4.3 Avoidance of Incompatible Activities

1) Federal and State fishery management agencies should take steps to limit the introduction of compounds which are known to be accumulated in striped bass tissues and which pose a threat to striped bass health or human health.

2) Each State should establish windows of compatibility for activities known or suspected to adversely affect striped bass such as navigational dredging, bridge construction, and dredged material disposal and notify the appropriate construction or regulatory agencies in writing.

3) Projects involving water withdrawal (e.g., power plants, irrigation, water supply projects) should be scrutinized to ensure that adverse impacts resulting from impingement, entrainment, and/or modification of flow and salinity regimes due to water removal will not adversely impact on striped bass stocks.

4) Each state which encompasses spawning rivers within its jurisdiction should develop water use and flow regime guidelines which are protective of striped bass spawning and nursery areas, and which will ensure the long-term health and sustainability of the stock.

4.4.4 Fishery Practices

The use of any fishing gear deemed by management agencies to have an unacceptable impact on striped bass habitat should be prohibited within appropriate essential habitats (e.g., trawling in spawning areas or primary nursery areas should be prohibited).

4.5 ALTERNATIVE STATE MANAGEMENT REGIMES

Once approved by the Atlantic Striped Bass Management Board, a state may not amend its regulatory program without the approval of the Board, except when implementing more restrictive measures. All other proposed changes to state regulations must be submitted in

writing to the Commission. When implementing more restrictive measures, states should notify the Commission of the new measures in its annual compliance report.

Under no circumstances will states be allowed to institute minimum sizes below 18 inches in alternative management regimes.

4.5.1 General Procedures

A state may submit a proposal for a change to its regulatory program or any mandatory compliance measure under this amendment to the Commission. Such changes shall be submitted to the Chair of the Plan Review Team (PRT), who shall distribute the proposal to appropriate groups, including the Board, the PRT, the TC, and the Advisory Panel (AP).

The PRT is responsible for gathering the comments of the TC and the AP. The PRT is also responsible for presenting these comments to the Board for decision.

The Board will decide whether to approve the state proposal for an alternative management program if it determines that it is consistent with the management program detailed in this Amendment.

4.5.2 Management Program Equivalency

Management program equivalency (also known as "conservation equivalency" or CE) refers to actions taken by a state which differ from the specific requirements of the FMP, but which achieve the same quantified level of conservation for the resource under management. It is the responsibility of the state to demonstrate that the proposed management program is equivalent to the FMP standards and consistent with the restrictions and requirements for CE determined by the Board.

The Commission's Conservation Equivalency Policy and Technical Guidance Document (CE Guidance Document) provides specific guidance on development, submission, review and approval of CE proposals[24].

Option A (Status Quo): Board Discretion on CE Restrictions and Requirements

The Board will determine conservation equivalency. The Board has final discretion regarding the use of CE and approval of CE programs. The Board may restrict the use of CE on an ad hoc basis for any FMP requirement. Restrictions may include, but are not limited to:

- measures that are not applicable for CE;
- restrictions on rationale for pursuing CE;

[24] As of September 2021, the CE Guidance Document is under review for potential updates.

- limitations on the range of measures that may be proposed (e.g., maximum or minimum size limits)
- the definition of "equivalency" (e.g., based on harvest or total removals; achieving the predicted state-specific or coastwide reduction);
- minimum levels of precision for catch and effort data used in CE proposals;
- whether proposals must include an uncertainty buffer on the reduction/liberalization target;
- if states may implement, without further Board review, alternative measures than those specifically approved by the Board if developed using the same methodology; and
- if additional sampling or fishery monitoring is required.

When setting restrictions, the Board should consider such factors as stock status, stock structure, data availability, range of species, socio-economic information, and management goals and objectives.

The following sets of options consider whether to adopt new default restrictions or requirements for the use of CE (Options B–E) or eliminate the use of CE from the FMP (Option F). Sub-options selected under Options B–E would automatically apply to new FMP standards approved through Amendment 7 and all subsequent management actions and CE proposals; additional restrictions and requirements for the use of CE could be identified on an ad hoc basis per the Board's discretion (as described above under the Status Quo option). Options B-E are intended to address concerns about CE at the front end of the CE process (i.e., considering when CE can be used and requirements for CE proposals)[25]. For each Option B–E, the Board may select one sub-option (or more, depending on the option); if a sub-option is not selected under an option, the Status Quo (Board discretion) remains in place on that issue.

Alternatively, the Board may select Option F to eliminate the use of CE from the FMP; if this occurs, Options B–E are not valid.

To inform consideration of these options, Table 11 outlines the CE programs implemented for Addendum VI[26].

[25] It is difficult to evaluate the effectiveness of CE programs and their equivalency to the FMP standard after program implementation due to the challenge of separating the performance of management measures and outside variables (like angler behavior and availability of fish). Because of this, options for CE accountability were not developed.

[26] The conflict between allowing flexibility through CE and achieving regulatory consistency among states was most recently realized with the implementation of Addendum VI to Amendment 6. For the recreational fishery, the Addendum implemented measures to reduce recreational removals by 18% coastwide. However, at the state level, some states were predicted to reduce removals by more than 18% (and some by less), but CE proposals had to achieve 18% regardless. Also, a majority of states pursued CE and submitted a very large number of options for TC review, which raised questions for additional guidelines regarding the development of CE proposals.

Table 11. CE programs implemented for Addendum VI.

State	Recreational Fisheries	Commercial Fisheries
MA	N/A	Changed size limit (35” minimum) with equivalent quota change
NY	Hudson River: Alternative size limit (18” to 28”) to achieve 18% removals reduction in combination with standard Ocean slot	Changed size limit (26” to 38”) with equivalent quota reduction
NJ	Alternative size limit (28 to < 38”) to achieve 25% removals reduction; established Bonus Program with commercial quota (24 to < 28”, 1 fish/day)	Decreased commercial quota reduction (to 0%) with surplus recreational fishery reduction and transferred commercial quota to recreational fishery
PA	DE River and Estuary downstream Calhoun St Bridge: Alternative size and bag limit on limited seasonal basis (2 fish/day at 21 to <24” during 4.1–5.31) to achieve 18% removals reduction	N/A
DE	DE River/Bay/tributaries: Alternative slot on limited seasonal basis (20" to <25" during 7.1–8.31) to achieve 20.4% removals reduction in combination with standard Ocean slot	Decreased commercial quota reduction (to -1.8%) with surplus recreational fishery reduction
MD	Chesapeake Bay: Alternative Summer/Fall for-hire bag limit with restrictions (2 fish, only 1 >28”, no captain retention) through increased minimum size (19”), April and two-week Wave 4 targeting closures, and shorter spring trophy season (May 1–15) to achieve 20.6% removals reduction; Ocean: FMP standard slot	Decreased Ocean and Chesapeake Bay commercial quota reduction (to -1.8%) with surplus Chesapeake Bay recreational fishery reduction
PRFC	Alternative Summer/Fall minimum size and bag limit (20” min, 2 fish/day) with a no targeting closure (7.7–8.20) and shorter spring trophy season (May 1–15) to achieve a 20.5% removals reduction	Decreased Chesapeake Bay commercial quota (to -1.8%) with surplus recreational fishery reduction
VA	Chesapeake Bay: Alternative slot limits during 5.16–6.15 (20” to 28”) and 10.4–12.31 (20” to 36”) and no spring trophy season to achieve a 23.4% removals reduction (reduction was the result of lowering prior bag limit from 2 to 1-fish per angler); Ocean: Alternative slot limit (28” to 36”)	Decreased Ocean commercial quota (to -7.7%) and Chesapeake Bay commercial quota (to -9.8%) with surplus recreational fishery reduction

Option B. Restrict the Use of CE Based on Stock Status

The following options would establish default restrictions on the use of CE for certain fisheries depending on striped bass stock status (as determined by the results of the most recent benchmark assessment or assessment update reviewed by the Board). When the stock conditions are met, CE programs would not be approved. Previously existing CE programs would remain in place until Board action is taken on new FMP standards relevant to the specific fishery.

B1. Restrictions: CE programs would not be approved when *[sub-option B1 and B2 are mutually exclusive; sub-option B3 may be selected alone or in addition to sub-option B1 or B2]:*

> **Sub-option B1-a**: the stock is at or below the biomass threshold (i.e., overfished). CE programs would not be considered until a subsequent stock assessment indicates stock biomass is above the threshold level.
>
> **Sub-option B1-b**: the stock is below the biomass target. CE programs would not be considered until a subsequent stock assessment indicates the stock biomass is at or above the target level.
>
> **Sub-option B1-c**: fishing mortality is at or above the fishing mortality threshold (i.e., overfishing is occurring). CE programs would not be considered until a subsequent stock assessment indicates fishing mortality is below the threshold level.

The stock status restriction(s) selected in Option B1 would apply (at a minimum) to the non-quota managed recreational fisheries in the Ocean region and Chesapeake Bay region, with the exception of the Hudson River, Delaware River, Delaware Bay, and Chesapeake Bay spring trophy recreational fisheries. Most of the concerns surrounding CE, as identified during scoping on the Draft Amendment 7 Public Information Document, pertain to non-quota managed fisheries due to use of uncertain data, modeling assumptions, and challenges measuring the effectiveness of the program post-implementation. Quota-managed fisheries (including commercial fisheries as well as recreational "bonus program" fisheries that operate on a fixed harvest limit with transferred commercial quota[27)] remain accountable to a CE-adjusted quota using census level harvest data, whereas non-quota managed fisheries have a CE-adjusted harvest target that may be exceeded as subsequently determined by survey-based harvest estimates. Commercial state-by-state quota management is also characterized by wide ranging fishery measures (with regards to trip limits, seasons, and gear types) among the states regardless of CE programs being in place, which may have contributed to the minimal concern

[27] Currently, only New Jersey operates such a recreational bonus program using commercial quota. Connecticut formerly operated a bonus program but suspended it indefinitely in 2020. Such programs are classified herein as commercial CE programs due to commercial quota basis.

directed at the existing commercial fishery CE programs[28]. Additionally, the public's concerns were seldom focused on the long-standing management program equivalencies for the recreational fisheries in the Hudson River, Delaware River, and Delaware Bay that (due to the size availability of fish in these areas) allow harvest of smaller fish than would otherwise be permitted under the Ocean region's measures, hence their exemption here. While some public concern was expressed about the Chesapeake Bay spring trophy fishery[29] continuing to target adult migrant fish, the Management Board allowed the Chesapeake Bay states to maintain the trophy fishery regulations that were in place in 2017 without having to pursue CE when implementing Addendum VI, hence the fishery was exempted here again. However, the Board may choose to add to the default list of affected fisheries through Option B2.

B2. Applicability: The stock status restrictions selected in Option B1 would apply to the following additional fisheries *[one or more sub-options may be selected]*:

> **Sub-option B2-a**: the Hudson River, Delaware River, and Delaware Bay recreational fisheries
>
> **Sub-option B2-b**: the Chesapeake Bay spring trophy fisheries
>
> **Sub-option B2-c**: quota-managed recreational fisheries (e.g., "bonus programs")
>
> **Sub-option B2-d**: commercial fisheries (all of which are quota managed)

Option C. Precision Standards for MRIP Estimates Used in CE Proposals

The following options would establish default precision standards for MRIP catch and effort estimates used in CE proposals. The options are based on the percent standard error (PSE, a measure of precision) associated with MRIP estimates. NMFS warns that "[MRIP] Estimates should be viewed with increasing caution as PSEs increase beyond 30. Large PSEs—those above 50—indicate high variability around the estimate and therefore low precision."[30] In addition, NMFS is implementing new Recreational Fishing Survey and Data Standards under which estimates will not be published if the PSE is greater than 50 and estimates with a PSE of 30 or

[28] States which have different commercial size limits than the FMP standard (i.e., different from the size limits implemented in 2017) through CE at the time this Amendment was developed include Massachusetts and New York.

[29] The Chesapeake Bay spring trophy fishery allows recreational fishermen in the Chesapeake Bay to take adult migrant fish during a limited seasonal fishery subject to a possession limit and minimum size separate from the rest of the Chesapeake Bay recreational fishery or Ocean recreational fishery. The fishery was originally controlled by a Board-approved harvest cap as well, but in 2008 the Board approved non-quota management until a stock assessment indicated that corrective action was necessary to reduce F on the coastal stock. Virginia closed its spring trophy fishery beginning in 2019, while Maryland and PRFC currently have a May 1–15 season during which 1 fish at 35" or greater may be taken. The recreational minimum size limit in the Bay during other open seasons is 19" or 20" depending on jurisdiction.

[30] See: www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries

greater will be presented with a warning that they "are not considered sufficiently reliable for most purposes, and should be treated with caution"[31].

CE proposals would not be able to use MRIP estimates associated with a PSE exceeding *[only one sub-option may be selected]*:

Sub-option C1: 50

Sub-option C2: 40

Sub-option C3: 30

Should states find themselves unable to propose certain CE programs because of the MRIP precision standard, they are encouraged to increase MRIP Access Point Angler Intercept Survey (APAIS) sampling to improve the PSE associated with their state's MRIP estimates. Increased APAIS sampling is recommended for all states, as resources allow, regardless of CE programming.

Option D. CE Uncertainty Buffer for Non-Quota Managed Fisheries

The following options would establish a default uncertainty buffer for CE proposals for non-quota managed fisheries. An uncertainty buffer is intended to increase the alternative measures' probability of success in achieving equivalency with the FMP standard (i.e., not exceeding a harvest/removals target). Quota-managed CE fisheries have reactive accountability measures of in-season quota closures and quota overage paybacks in the subsequent year. The uncertainty buffer would provide a proactive accountability measure for non-quota managed CE fisheries that are not subject to such reactive accountability measures.

Proposed CE programs for non-quota managed fisheries would be required to include an uncertainty buffer of *[only one sub-option may be selected]*:

Sub-option D1: 10%

Sub-option D2: 25%

Sub-option D3: 50%

When CE is pursued to implement new FMP requirements, the buffer applies to the percent reduction required or liberalization allowed for the non-quota managed fishery (after any potential transfer of reduction/liberalization between fisheries). For example, if a 20% reduction is required with a 10% uncertainty buffer, proposed CE programs would need to demonstrate a 22% reduction. Similarly, if a 20% liberalization is allowed with a 10% uncertainty buffer, proposed CE programs may liberalize up to 18%. The uncertainty buffer still applies when CE is requested separate from an implementation plan (e.g., a CE proposal

[31] See: www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-survey-and-data-standards

submitted after a required 20% reduction was implemented would need to demonstrate a 2% reduction rather than no change).

The Board may need to further determine how the buffer is applied for some future management actions, particularly when CE proposals may include measures for both quota-managed and non-quota managed fisheries (e.g., a reduction can be split between sectors). The Board may request guidance from the TC and/or PRT.

Option E. Definition of Equivalency for CE Proposals with Non-Quota Managed Fisheries
The following options would establish a default definition of what "equivalency" means for CE proposals associated with the implementation of coastwide actions (in non-quota managed fisheries). In other words, the percent reduction or liberalization that must be met in a CE proposal when the FMP standard is projected to have different effects at the coastwide and state-specific levels. The intent is to add transparency and consistency to the use of CE across management actions. Refer to Table 12 for an example of how these options would apply.

Proposed CE programs would be required to demonstrate equivalency to *[only one sub-option may be selected]:*

Sub-Option E1: the percent reduction/liberalization projected for the FMP standard at the coastwide level. (This represents the requirements for CE under Addendum VI to Amendment 6.)

Sub-option E2: the percent reduction/liberalization projected for the FMP standard at the state-specific level.

Table 12. *This table provides a hypothetical example to explain the difference between Option E's sub-options. Suppose an FMP standard is adopted that achieves a 20% change in fishery removals when applied coastwide. However, at the state level, the FMP standard is projected to achieve a 25% change in State A and a 10% change in State B. The options vary in the amount of reduction required or liberalization allowed if each state requested alternative measures to the FMP standard through CE.*

Notably, sub-option E1 may undermine an overall targeted reduction (due to State A's CE) or lead to exceeding an overall targeted liberalization (due to State B's CE). Sub-option E1 may make it impossible for State B to apply for CE under a reduction scenario (no way to meet the higher coastwide reduction amount). Sub-option E2 holds State A's CE to a greater reduction than the coastwide standard, but would allow a greater liberalization than the coastwide standard as well. Sub-option E1 represents the requirements for CE under Addendum VI to Amendment 6.

	State Change to be Demonstrated in a CE Proposal under Each Sub-option	
(FMP Standard achieves a 20% change when applied coast-wide)	Sub-option E1: Use coastwide change	Sub-option E2: Use state-specific change

State A (25% state change under FMP standard)	20%	25%
State B (10% state change under FMP Standard	20%	10%

Option F. Prohibition on the Use of CE
This option would remove the allowance for CE from the striped bass management program (with the exception of management program equivalencies that are written into the FMP) until reinstated by the Board in a future management action. Previously existing CE programs would remain in place until states are required to implement new FMP standards relevant to the specific fishery. If Amendment 7 alters any of the FMP standards for a specific fishery (i.e., Ocean recreational, Ocean commercial, Chesapeake Bay recreational, and Chesapeake Bay commercial), the relevant states must implement the FMP standard and CE would not be allowed. Note that if Amendment 7 changes the Ocean region's status quo recreational 28" to less than 35" slot limit, the new size limit(s) would apply to the Hudson River, Delaware River, and Delaware Bay recreational—unless the FMP establishes separate standards for these fisheries.

4.5.3 De Minimis Fishery Guidelines

The ASMFC Interstate Fisheries Management Program Charter (ISFMP Charter) defines *de minimis* as "a situation in which, under the existing condition of the stock and scope of the fishery, the conservation and enforcement actions taken by an individual state would be expected to contribute insignificantly to a coastwide conservation program required by a Fishery Management Plan or amendment," (ASMFC 2016).

4.5.3.1 Qualifications for De Minimis
States may apply for *de minimis* status if, for the last two years, their combined average commercial and recreational landings (by weight) constitute less than one percent (1%) of the coastwide commercial and recreational landings for the same two-year period. When petitioning for *de minimis* status, the state should also propose the type of exemption associated with *de minimis* status. In addition to determining if the state meets the criteria for *de minimis* status, the Board will evaluate the proposed exemption to be certain it does not compromise the goals and objectives of Amendment 7. The States may petition the Atlantic Striped Bass Management Board at any time for *de minimis* status, if their fishery falls below the threshold level. Once *de minimis* status is granted, designated states must submit annual reports to the Management Board justifying the continuance of *de minimis* status. States must include *de minimis* requests as part of their annual compliance reports.

4.5.3.2 Procedure to Apply for De Minimis Status
States must specifically request *de minimis* status each year. Requests for *de minimis* status will be reviewed by the PRT as part of the annual FMP review process (*Section 5.3: Compliance Reports*). Requests for *de minimis* must be submitted to the ASMFC Atlantic Striped Bass FMP

Coordinator as a part of the state's yearly compliance report. The request must contain the following information: all available commercial landings data for the current and 2 previous full years of data, commercial and recreational regulations for the current year, and the proposed management measures the state plans to implement for the year *de minimis* status is requested. The FMP Coordinator will then forward the information to the PRT.

In determining whether or not a state meets the *de minimis* criteria, the PRT will consider the information provided with the request, the most recent available coastwide landings data, any information provided by the TC and SAS, and any additional information deemed necessary by the PRT. The PRT will make a recommendation to the Board to either accept or deny the *de minimis* request. The Board will then review the PRT recommendation and either grant or deny the *de minimis* classification.

The Board must make a specific motion to grant a state *de minimis* status, including the measures the state would be excused from implementing. The state should request which measures they would like to be excused from as part of the *de minimis* request.

If landings in a *de minimis* state exceed the *de minimis* threshold, the state will lose its *de minimis* classification, will be ineligible for *de minimis* in the following year, and will be required to implement all provisions of the FMP. If the Board denies a state's *de minimis* request, the state will be required to implement all the provisions of the FMP. When a state rescinds or loses its *de minimis* status, the Board will set a compliance date by which the state must implement the required regulations.

If the coastwide fishery is closed for any reason through Emergency Procedures (*Section 4.7*), *de minimis* states must close their fisheries as well.

Any additional components of the FMP, which the Board determines necessary for a *de minimis* state to implement, can be defined at the time *de minimis* status is granted.

4.6 ADAPTIVE MANAGEMENT

The Board may vary the requirements specified in this Amendment as a part of adaptive management in order to conserve the Atlantic striped bass resource. The elements that can be modified by adaptive management are listed in *Section 4.6.2*. The process under which adaptive management can occur is provided below.

4.6.1 General Procedures

The PRT will monitor the status of the fishery and the resource and report on that status to the Board annually or when directed to do so by the Board. The PRT will consult with TC, the SAS, and the AP in making such review and report.

The Board will review the report of the PRT, and may consult further with the TC, SAS, or AP. The Board may, based on the PRT report or on its own discretion, direct the PDT to prepare an addendum to make any changes it deems necessary. The addendum shall contain a schedule for the states to implement the new provisions.

The PDT will prepare a draft addendum as directed by the Board, and shall distribute it to all states for review and comment. A public hearing will be held in any state that requests one. The PDT will also request comment from federal agencies and the public at large. After a 30-day review period, staff, in consultation with the PDT, will summarize the comments received and prepare a final version of the addendum for the Board.

The Board shall review the final version of the addendum prepared by the PDT, and shall also consider the public comments received and the recommendations of the TC, LEC, and AP. The Board shall then decide whether to adopt, or revise and then adopt, the addendum.

Upon adoption of an addendum by the Board, states shall prepare plans to carry out the addendum, and submit them to the Board for approval according to the schedule contained in the addendum.

4.6.2 Measures Subject to Change

The following measures are subject to change under adaptive management upon approval by the Board:

(1) Goal
(2) Objectives
(3) Management areas and unit
(4) Reference points, including:
    (a) overfishing and overfished definition
    (b) region-specific reference points
(5) Rebuilding targets and schedules
(6) Management triggers and planning horizon
(7) Recreational Fishery Management Measures
(8) Commercial Fishery Management Measures, including:
    (a) commercial quota allocation
(9) Management Program Equivalency
(10) Recommendations to the Secretaries for complementary actions in federal jurisdictions
(11) Any other management measures currently included in Amendment 7

4.7 EMERGENCY PROCEDURES

Emergency procedures may be used by the Board to require any emergency action that is not covered by, is an exception to, or a change to any provision in Amendment 7. Procedures for

implementation are addressed in the ASMFC Interstate Fisheries Management Program Charter, Section Six (c)(10) (ASMFC 2016).

4.8 MANAGEMENT INSTITUTIONS

The management institutions for Atlantic striped bass shall be subject to the provisions of the ISFMP Charter (ASMFC 2016). The following is not intended to replace any or all of the provisions of the ISFMP Charter. All committee roles and responsibilities are included in detail in the ISFMP Charter and are only summarized here.

4.8.1 Atlantic States Marine Fisheries Commission and ISFMP Policy Board

The ASMFC (Commission) and the ISFMP Policy Board are generally responsible for the oversight and management of the Commission's fisheries management activities. The Commission must approve all fishery management plans and amendments, including Amendment 7. The ISFMP Policy Board reviews any non-compliance recommendations of the various Boards and, if it concurs, forwards them to the Commission for action.

4.8.2 Atlantic Striped Bass Management Board

The Board was established under the provisions of the Commission's ISFMP Charter (Section Four; ASMFC 2016) and is generally responsible for carrying out all activities under this Amendment.

The Board establishes and oversees the activities of the PDT, PRT, TC, SAS, Tagging Subcommittee, and the AP. In addition, the Board makes changes to the management program under adaptive management, reviews state programs implementing the amendment, and approves alternative state programs through conservation equivalency. The Board reviews the status of state compliance with the management program annually, and if it determines that a state is out of compliance, reports that determination to the ISFMP Policy Board under the terms of the ISFMP Charter.

4.8.3. Atlantic Striped Bass Plan Development Team

The Plan Development Team (PDT) is composed of personnel from state and federal agencies who have scientific knowledge of Atlantic striped bass and management abilities. The PDT is responsible for preparing and developing management documents, including addenda and amendments, using the best scientific information available and the most current stock assessment information. The ASMFC FMP Coordinator chairs the PDT. The PDT will either disband or assume inactive status upon completion of Amendment 7.

4.8.4 Atlantic Striped Bass Plan Review Team

The Plan Review Team (PRT) is composed of personnel from state and federal agencies who have scientific and management ability and knowledge of Atlantic striped bass. The PRT is responsible for providing annual advice concerning the implementation, review, monitoring, and enforcement of Amendment 7 once it has been adopted by the Commission. After final action on Amendment 7, the Board may elect to retain members of the PDT as members of the PRT, or appoint new members.

4.8.5 Atlantic Striped Bass Technical Committee

The Atlantic Striped Bass Technical Committee (TC) consists of representatives from state or federal agencies, Regional Fishery Management Councils, the Commission, a university, or other specialized personnel with scientific and technical expertise, and knowledge of the Atlantic striped bass fishery. The Board appoints the members of the TC and may authorize additional seats as it sees fit. The role of the TC is to assess the species' population, provide scientific advice concerning the implications of proposed or potential management alternatives, and respond to other scientific questions from the Board, PDT, or PRT. The SAS reports to the TC.

4.8.6 Atlantic Striped Bass Stock Assessment Subcommittee

The Atlantic Striped Bass Stock Assessment Subcommittee (SAS) is appointed and approved by the Board, with consultation from the Atlantic Striped Bass TC, and consists of scientists with expertise in the assessment of the Atlantic striped bass population. Its role is to assess the Atlantic striped bass population and provide scientific advice concerning the implications of proposed or potential management alternatives, and to respond to other scientific questions from the Board, TC, PDT or PRT. The SAS reports to the TC.

4.8.7 Atlantic Striped Bass Tagging Subcommittee

The Tagging Subcommittee will consist of those scientists with the expertise in analysis of tag and recapture data for striped Bass. Its role is to assess the available data for inclusion in the assessment of the striped bass populations, which will be provided to the Stock Assessment Subcommittee for inclusion in the annual status of the stock report. The Tagging Subcommittee is also responsible for responding to Management Board questions using the available tagging data, when possible. The Tagging Subcommittee will report to the TC.

4.8.8 Atlantic Striped Bass Advisory Panel

The Atlantic Striped Bass Advisory Panel (AP) is established according to the Commission's Advisory Committee Charter. Members of the AP are citizens who represent a cross-section of commercial and recreational fishing interests and others who are concerned about Atlantic

striped bass conservation and management. The AP provides the Board with advice directly concerning the Commission's Atlantic striped bass management program.

4.8.9 Federal Agencies

4.8.9.1 Management in the Exclusive Economic Zone

Management of Atlantic striped bass in the EEZ is within the jurisdiction of the three Regional Fishery Management Councils under the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.). In the absence of a Council Fishery Management Plan, management is the responsibility of the National Marine Fisheries Service as mandated by the Atlantic Coastal Fishery Cooperative Management Act.

4.8.9.2 Consultation with Fishery Management Councils

At the time of adoption of Amendment 7, none of the Regional Fishery Management Councils had implemented a management plan for Atlantic striped bass, nor had they indicated an intent to develop a plan.

4.9 RECOMMENDATION TO THE SECRETARY OF COMMERCE FOR COMPLEMENTARY MEASURES IN FEDERAL WATERS

The Board will discuss this during final approval of the Draft Amendment.

4.10 COOPERATION WITH OTHER MANAGEMENT INSTITUTIONS

The Board will cooperate, when necessary, with other management institutions during the implementation of this amendment, including NMFS and the New England, Mid-Atlantic, and South Atlantic Fishery Management Councils.

5.0 COMPLIANCE

The full implementation of the provisions included in this amendment is necessary for the management program to be equitable, efficient, and effective. States are expected to implement these measures faithfully under state laws. ASMFC will continually monitor the effectiveness of state implementation and determine whether states are in compliance with the provisions of this fishery management plan.

The Board sets forth specific elements that the Commission will consider in determining state compliance with this fishery management plan, and the procedures that will govern the evaluation of compliance. Additional details of the procedures are found in the ASMFC Interstate Fishery Management Program Charter (ASMFC 2016).

5.1 MANDATORY COMPLIANCE ELEMENTS FOR STATES

A state will be determined to be out of compliance with the provision of this fishery management plan according to the terms of Section Seven of the ISFMP Charter if:

- Its regulatory and management programs to implement Amendment 7 , or any addendum prepared under adaptive management (*Section 4.6*), have not been approved by the Board; or
- It fails to meet any schedule required by *Section 5.2* or within any addendum prepared under adaptive management (*Section 4.6*); or
- It has failed to implement a change to its program when determined necessary by the Board; or
- It makes a change to its regulations required under *Section 4* or any addendum prepared under adaptive management (*Section 4.6*), without prior approval of the Board.

5.1.1 Regulatory Requirements

To be considered in compliance with this fishery management plan, all state programs must include a regime of restrictions on Atlantic striped bass fisheries consistent with the requirements of *Section 3.1: Commercial Catch and Landings Programs; Section 3.4: Biological Data Collection Programs; Section 4.2 Recreational Fishery Management Measures;* and *Section 4.3: Commercial Fishery Management Measures*. A state may propose an alternative management program under *Section 4.5: Alternative State Management Regimes*, which, if approved by the Board, may be implemented as an alternative regulatory requirement for compliance.

States may begin to implement Amendment 7 after final approval by the Commission. Each state must submit its required Atlantic striped bass regulatory program to the Commission through ASMFC staff for approval by the Board. During the period between submission and Board approval of the state's program, a state may not adopt a less protective management program than contained in this Amendment or contained in current state law or regulation. The following lists the specific compliance criteria that a state/jurisdiction must implement in order to be in compliance with Amendment 7:

- Recreational fishery management measures as specified in *Section 4.2*
- Commercial fishery management measures as specified in *Section 4.3*
- Monitoring requirements as specified in *Section 3.0*, including the Commercial Tagging Program (*Section 3.1.1*), Fishery-Dependent Data Collection (*Section 3.4.1*), and Fishery-Independent Data Collection (*Section 3.4.2*)
- All state programs must include law enforcement capabilities adequate for successful implementation of the compliance measures contained in this Amendment.
- There are no mandatory research requirements at this time; however, research requirements may be added in the future under Adaptive Management, *Section 4.6*.

- There are no mandatory habitat requirements in Amendment 7. See *Section 4.4* for habitat recommendations.

For monitoring programs, states must submit proposals for all intended changes to required monitoring programs, which may affect the quality of the data or the ability of the program to fulfill the needs of the fishery management plan. State proposals for making changes to required monitoring programs will be submitted to the Technical Committee. Proposals must be on a calendar year basis. The Technical Committee will make recommendations to the Management Board concerning whether the proposals are consistent with Amendment 7.

In the event that a state realizes it will not be able to fulfill its fishery independent monitoring requirements, it should immediately notify the Commission in writing. The Commission will work with the state to develop a plan to secure funding or plan an alternative program to satisfy the needs outlined in Amendment 7. If the plan is not implemented 90 days after it has been adopted, the state will be found out of compliance with Amendment 7.

5.2 COMPLIANCE SCHEDULE

States must implement this Amendment according to the following schedule:

Month Day, 202X: Submission of state programs to implement Amendment 7 for approval by the Board. Programs must be implemented upon approval by the Board.

Month Day, 202X: States with approved management programs must implement Amendment 7. States may begin implementing management programs prior to this deadline if approved by the Board.

5.3 COMPLIANCE REPORTS

Each state must submit to the Commission an annual report concerning its Atlantic striped bass fisheries and management program for the previous year, no later than June 15th. A standard compliance report format has been prepared and adopted by the ISFMP Policy Board. States should follow this format in completing the annual compliance report.

The report shall cover:

- The previous calendar year's fishery and management program including mandatory reporting programs (including frequency of reporting and data elements collected), fishery dependent data collection, fishery independent data collection, regulations in effect, harvest and catch information, and *de minimis* requests.
- The planned management program for the current calendar year summarizing regulations that will be in effect and monitoring programs that will be performed, highlighting any changes from the previous year.

5.3.1 Commercial Tagging Program Reports

States and jurisdictions with a commercial striped bass fishery must annually report any changes to the tag program such as tag type, which includes color, text (with the exception of year), and style; the biological metric used; or any other requirements as specified under Section 3.1.1 no later than 60 days prior to the start of the first fishing season in that state or jurisdiction. This information will be compiled and distributed to law enforcement officials to aid in commercial tag enforcement in the striped bass fishery.

5.4 PROCEDURES FOR DETERMINING COMPLIANCE

Detailed procedures regarding compliance determinations are contained in the ISFMP Charter, Section Seven (ASMFC 2016). In brief, all states are responsible for the full and effective implementation and enforcement of fishery management plans in areas subject to their jurisdiction. Written compliance reports as specified in the Amendment must be submitted annually by each state with a declared interest. Compliance with Amendment 7 will be reviewed at least annually; however, the Board, ISFMP Policy Board, or the Commission may request the PRT to conduct a review of state's implementation and compliance with Amendment 7 at any time.

The Board will review the written findings of the PRT within 60 days of receipt of a State's compliance report. Should the Board recommend to the Policy Board that a state be determined out of compliance, a rationale for the recommended noncompliance finding will be addressed in a report. The report will include the required measures of Amendment 7 that the state has not implemented or enforced, a statement of how failure to implement or enforce required measures jeopardizes Atlantic striped bass conservation, and the actions a state must take in order to comply with Amendment 7 requirements.

The ISFMP Policy Board will review any recommendation of noncompliance from the Board within 30 days. If it concurs with the recommendation, it shall recommend to the Commission that a state be found out of compliance.

The Commission shall consider any noncompliance recommendation from the ISFMP Policy Board within 30 days. Any state that is the subject of a recommendation for a noncompliance finding is given an opportunity to present written and/or oral testimony concerning whether it should be found out of compliance. If the Commission agrees with the recommendation of the ISFMP Policy Board, it may determine that a state is not in compliance with Amendment 7, and specify the actions the state must take to come into compliance.

Any state that has been determined to be out of compliance may request that the Commission rescind its noncompliance findings, provided the state has revised its Atlantic striped bass conservation measures.

5.5. ANALYSIS OF THE ENFORCEABILITY OF PROPOSED MEASURES

All state programs must include law enforcement capabilities adequate for successfully implementing that state's Atlantic striped bass regulations. The LEC will monitor the adequacy of a state's enforcement activity.

5.6 RECOMMENDED (NON-MANDATORY) MANAGEMENT MEASURES

The following management measures are recommended for states to fully or partially implement. These measures are not part of the compliance criteria for Amendment 7. Through the Draft Amendment 7 development process, the PDT identified additional potential recommendations for the Board's consideration:

- States are encouraged to increase APAIS sampling above the MRIP baseline to provide more extensive coverage of their state recreational fisheries;
- States should consider complimentary/uniform regulations in shared water bodies if pursuing CE.

5.6.1 Spawning Area Closures

Consideration should be given to the prohibition of fishing on the spawning grounds during the spawning season. In addition to the mandatory spawning closures in Section 4.2.2 [delete if not-selected], states are encouraged to maintain existing spawning closures and evaluate the need for additional spawning closures.

5.6.2 Survey of Inland Recreational Fishermen

The states/jurisdictions are encouraged to conduct a survey of inland fishermen to evaluate the landings, catch rate, discards, participation, and number of trips.

5.6.3. Angler Education and Outreach

NOTE: If the option to require outreach is selected in Section 4.2.2 (Option D1), this would be incorporated into that section.

Through the ASMFC, if possible, states are recommended to develop and implement an angler education program. The main tool of the education program will be a website accessible from each state fisheries agency website. When funding is available, states should develop posters and/or brochures for posting and distributing at boat launches, shore-based fishing areas, and for placement on charter and rental boats. State agencies should also coordinate outreach to anglers through influential fishing organizations.

In order to promote the use of circle hooks, states are encouraged to develop public education and outreach campaigns on the benefits of circle hooks when fishing with bait. Angler education on the benefits of using circle hooks and on the effective safe handling of fish caught and released remains a critical component to improve post release survival.

6.0 RESEARCH NEEDS

The following list of research needs have been identified in order to enhance the state of knowledge of the Atlantic striped bass resource. Research recommendations are broken down into several categories: data collection, assessment methodology, life history, habitat, and socioeconomic. Some research needs are further categorized into high and moderate priority levels.

6.1 STOCK ASSESSMENT, DATA COLLECTION, AND LIFE HISTORY RESEARCH NEEDS

The following categorized and prioritized research recommendations were developed by the 2018 Benchmark Stock Assessment Subcommittee and the 66th SARC (NEFSC 2019).

6.1.1 Fishery-Dependent Data

High

- Continue collection of paired scale and otolith samples, particularly from larger striped bass, to facilitate development of otolith-based age-length keys and scale-otolith conversion matrices.
- Develop studies to provide information on gear specific (including recreational fishery) discard morality rates and to determine the magnitude of bycatch mortality.
- Conduct study to directly estimate commercial discards in the Chesapeake Bay.
- Collect sex ratio information on the catch and improve methods for determining population sex ratio for use in estimates of female SSB and biological reference points.

Moderate

- Improve estimates of striped bass harvest removals in coastal areas during wave 1 and in inland waters of all jurisdictions year round.

6.1.2 Fishery-Independent Data

High

- Develop an index of relative abundance from the Hudson River Spawning Stock Biomass survey to better characterize the Delaware Bay/Hudson River stock.
- Improve the design of existing spawning stock surveys for Chesapeake Bay and Delaware Bay.

Moderate

- Develop a refined and cost-efficient, fisheries-independent coastal population index for striped bass stocks.
- Collect sex ratio information from fishery-independent sources to better characterize the population sex ratio.

6.1.3 Stock Assessment Modeling/Quantitative

High

- Develop better estimates of tag reporting rates; for example, through a coastwide tagging study.
- Investigate changes in tag quality and potential impacts on reporting rate.
- Explore methods for combining tag results from programs releasing fish from different areas on different dates.
- Develop field or modeling studies to aid in estimation of natural mortality and other factors affecting the tag return rate.
- Compare M and F estimates from acoustic tagging programs to conventional tagging programs.

Moderate

- Examine methods to estimate temporal variation in natural mortality.

Low

- Evaluate truncated matrices to reduce bias in years with no tag returns and covariate based tagging models to account for potential differences from size or sex or other covariates.

6.1.4 Life History and Biology

High

- Continue in-depth analysis of migrations, stock compositions, sex ratio, etc. using mark-recapture data.
- Continue evaluation of striped bass dietary needs and relation to health condition.
- Continue analysis to determine linkages between the Mycobacteriosis outbreak in Chesapeake Bay and sex ratio of Chesapeake spawning stock, Chesapeake juvenile production, and recruitment success into coastal fisheries.

Moderate

- Examine causes of different tag based survival estimates among programs estimating similar segments of the population.
- Continue to conduct research to determine limiting factors affecting recruitment and possible density implications.
- Conduct study to calculate the emigration rates from producer areas now that population levels are high and conduct multi-year study to determine inter-annual variation in emigration rates.

6.2 HABITAT RESEARCH NEEDS

- See *Section 4.4* for habitat conservation and restoration recommendations, which include reviewing striped bass habitat use and data (e.g., water quality criteria) to inform habitat conservation and restoration.

6.3 SOCIO-ECONOMIC RESEARCH NEEDS

- Conduct research on a coastwide scale to analyze striped bass anglers' preferences and behavior in response to regulatory changes and changes in fishery conditions (e.g., changes in fish availability). This research could inform an economic sub-model component of a bioeconomic model for striped bass (see *Section 1.5.2*).
    - The economic sub-model would use anglers' preferences for different trip attributes to calculate anglers' demand for recreational trips under alternative policy scenarios. In modern applications, this is often achieved by parameterizing recreational demand using survey data from choice experiments in which anglers make trip decisions based on expectations about catch, harvest, and regulatory releases or discards. Choice experiment surveys and revealed preference studies could be used to estimate the effects of changes in regulations in the absence of market data and behavioral observations.
- When the above research is available, work with stock assessment scientists to develop a bioeconomic model for striped bass, which would combine an economic sub-model and biological sub-model to assess feedbacks and long-run impacts of management decisions on anglers and the striped bass resource (see *Section 1.5.*2).
- Conduct research on angler preferences and behavior regarding targeting of substitute species (e.g., which species are targeted with striped bass and what species would anglers target if they were unable to keep striped bass) and how that behavior is influenced by regulations and how preferences differ across regions. This would inform understanding and predictions of changes in effort in response to future regulations and changes in fish availability (e.g., due to climate change).
- Improve understanding of non-consumptive value by region, including value of the catch and release fishery.

7.0 PROTECTED SPECIES

In the fall of 1995, Commission member states, NMFS, and USFWS began discussing ways to improve implementation of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) in state waters. Historically, these policies had been only minimally implemented and enforced in state waters (0-3 miles). In November 1995, the Commission, through its ISFMP Policy Board, approved an amendment to its ISFMP Charter (Section Six (b)(2)) requiring protected species/fishery interactions to be discussed in the Commission's fisheries management planning process. As a result, the Commission's fishery management plans describe impacts of state fisheries on MMPA protected and ESA-listed (endangered or threatened) species, collectively termed "protected species". The following section outlines: (1) the federal legislation which guides protection of marine mammals and sea turtles, (2) the protected species with potential fishery interactions; (3) the specific types of fishery interaction; (4) information about the affected protected species; and (5) potential impacts to Atlantic coast state and interstate fisheries.

7.1 MARINE MAMMAL PROTECTION ACT REQUIREMENTS

Since its passage in 1972, and subsequent Amendment in 1994, one of the underlying goals of the MMPA has been to reduce the incidental serious injury and mortality of marine mammals in the course of commercial fishing operations to insignificant levels approaching a zero mortality and zero serious injury rate. Pursuant to the MMPA, NMFS publishes a List of Fisheries (LOF) annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injuries and/or mortalities of marine mammals in each fishery (i.e., Category I=frequent; Category II=occasional; Category III=remote likelihood or no known interactions). The Act also requires NMFS to develop and implement a take reduction plan to assist in the recovery of, or prevent the depletion of, each strategic stock that interacts with a Category I or II fishery. A strategic stock is defined as a stock: (1) for which the level of direct human-caused mortality exceeds the potential biological removal (PBR)[32] level; (2) which is declining and is likely to be listed under the Endangered Species Act (ESA) in the foreseeable future; or (3) which is listed as a threatened or endangered species under the ESA or as a depleted species under the MMPA.

Under 1994 mandates, the MMPA also requires fishermen in Category I and II fisheries to register under the Marine Mammal Authorization Program (MMAP). The purpose of this is to provide an exception for commercial fishermen from the general taking prohibitions of the MMPA. All fishermen, regardless of the category of fishery in which they participate, must report all incidental injuries and mortalities to a marine mammal caused by commercial fishing operations within 48 hours.

Section 101(a)(5)(E) of the MMPA allows for authorization of the incidental take of ESA-listed marine mammals in the course of commercial fishing operations if it is determined that: (1) incidental mortality and serious injury will have a negligible impact on the affected species or stock; (2) a recovery plan has been developed or is being developed for such species or stock under the ESA; and (3) where required under MMPA Section 118, a monitoring program has been established, vessels engaged in such fisheries are registered, and a take reduction plan has been developed or is being developed for such species or stock. MMPA Section 101(a)(5)(E) permits are not required for Category III fisheries, but any serious injury or mortality of a marine mammal must be reported.

7.2 ENDANGERED SPECIES ACT REQUIREMENTS

The taking of endangered or threatened species including sea turtles, marine mammals, and fish, is prohibited and considered unlawful under Section 9(a)(1) of the ESA. In addition, NMFS or the USFWS may determine Section 4(d) protective regulations to be necessary and advisable

[32] PBR is the number of human-caused deaths per year each stock can withstand and still reach an optimum population level. This is calculated by multiplying the minimum population estimate by the stock's net productivity rate and a recovery factor ranging from 0.1 for endangered species to 1.0 for healthy stocks.

to provide for the conservation of threatened species. There are several mechanisms established in the ESA which allow for exceptions to the prohibited take of protected species listed under the ESA. Section 10(a)(1)(A) of the ESA authorizes NMFS to allow the taking of listed species through the issuance of research permits, which allow ESA species to be taken for scientific purposes or to enhance the propagation and survival of the species. Section 10(a)(1)(B) authorizes NMFS to permit, under prescribed terms and conditions, any taking otherwise prohibited by Section 9(a)(1)(B) of the ESA if the taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity. In recent years, some Atlantic state fisheries have obtained section 10(a)(1)(B) permits for state fisheries.

Section 7(a)(2) requires federal agencies to consult with NMFS to ensure that any action that is authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species. If, following completion of the consultation, an action is found to jeopardize the continued existence of any listed species or cause adverse modification to critical habitat of such species, reasonable and prudent alternatives need to be identified so that jeopardy or adverse modification to the species does not occur. Section (7)(o) provides the actual exemption from the take prohibitions established in Section 9(a)(1), which includes Incidental Take Statements that are provided at the end of consultation via the ESA Section 7 Biological Opinions.

7.3 PROTECTED SPECIES WITH POTENTIAL FISHERY INTERACTIONS

Commercial striped bass fisheries operate in the state waters (0-3 miles) of Massachusetts, Rhode Island, New York, Delaware, Maryland, the Potomac River Fisheries Commission, Maryland, Virginia, and North Carolina[33]. The Chesapeake Bay typically accounts for roughly 60 percent of striped bass commercial landings by weight each year. The primary gear types for the striped bass commercial fishery are gill nets (roughly 50 percent of commercial landings by weight each year), hook and line (typically 20-30 percent of commercial landings by weight each year), and pound nets/other fixed gears (typically 10-20 percent of commercial landings by weight each year). Haul seines and trawls are also used in the commercial fishery to a lesser extent (combined less than 5 percent of commercial landings by weight each year). The recreational sector operates in state waters across the entire management unit (0-3 miles from Maine through North Carolina) and uses hook and line almost exclusively.

A number of protected species occur within the striped bass management unit for Atlantic striped bass. Ten are classified as endangered or threatened under the ESA; the remainder are protected under provisions of the MMPA. The species found in coastal Northwest Atlantic waters are listed below.

[33] North Carolina has reported zero offshore commercial harvest since 2013.

Endangered	
North Atlantic Right whale	(*Eubalaena glacialis*)
Fin whale	(*Balaenoptera physalus*)
Leatherback sea turtle	(*Dermochelys coriacea*)
Kemp's Ridley sea turtle	(*Lepidochelys kempii*)
Shortnose sturgeon	(*Acipenser brevirostrum*)
Atlantic sturgeon (New York Bight, Chesapeake Bay, Carolina, and South Atlantic Distinct Population Segments (DPS))	(*Acipenser oxyrinchus oxyrinchus*)
Threatened	
Loggerhead sea turtle (NW Atlantic Ocean DPS)	*(Caretta caretta)*
Green sea turtle (North Atlantic DPS)	*(Chelonia mydas)*
Giant Manta Ray	*(Manta birostris)*
Atlantic Sturgeon (Gulf of Maine DPS)	*(Acipenser oxyrinchus oxyrinchus)*
MMPA	
Includes all marine mammals above in addition to:	
Minke whale	*(Balaenoptera acutorostrata)*
Humpback whale	*(Megaptera novaeangliae)*
Bottlenose dolphin[34]	*(Tursiops truncatus)*
Atlantic-white sided dolphin	*(Lagenorhynchus acutus)*
Short Beaked Common dolphin	*(Delphinus delphis)*
Harbor seal	*(Phoca vitulina)*
Gray seal	*(Halichoerus grypus)*
Harp seal	(*Phoca groenlandica*)
Harbor porpoise	(*Phocoena phocoena*)

In the Northwest Atlantic waters, protected species utilize marine habitats for feeding, reproduction, nursery areas, and migratory corridors. Some species occupy the area year round while others use the region only seasonally or move intermittently nearshore, inshore, and offshore. Interactions may occur whenever fishing gear and protected species overlap spatially and temporally.

As the primary concern for both MMPA protected and ESA listed species is the potential for the fishery to interact (e.g., bycatch, entanglement) with these species it is necessary to consider species occurrence in the affected environment of the fishery and how the fishery will overlap in time and space with this occurrence; and observed records of protected species interaction with particular fishing gear types, to understand the potential risk of an interaction.

[34] The following bottlenose dolphin stocks occur within the striped bass management unit: Western North Atlantic Northern Migratory Coastal; Western North Atlantic Southern Migratory Coastal; Northern North Carolina Estuarine System; Southern North Carolina Estuarine System.

7.3.1 Marine Mammals

Large whales, small cetaceans (e.g., bottlenose dolphins), and pinniped (e.g., harbor seals) species co-occur with the Atlantic striped bass fishery.

Large whales

Large whales, including Humpback, North Atlantic right, fin, and minke whales, occur in the Northwest Atlantic. Generally speaking, large whales follow an annual pattern of migration between low latitude (south of 35°N) wintering/calving grounds and high latitude spring/summer/fall foraging grounds (primarily north of 41°N). This is a simplification of whale movements, particularly as it relates to winter movements. It is unknown if all individuals of a population migrate to low latitudes in the winter, although increasing evidence suggests that for some species, some portion of the population remains in higher latitudes throughout the winter (Clapham et al. 1993; Davis et at. 2017; Davis et al. 2020; Hayes et al. 2020; Swingle et al. 1993; Vu et al. 2012). For additional information on the biology, status, and range wide distribution of humpback, North Atlantic right, fin, sei, and minke whales, refer to the marine mammal SARs provided at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.

Small Cetaceans and Pinnipeds

Small cetaceans can be found throughout the year in the Northwest Atlantic Ocean (Maine to Florida), including in harbors, bays, gulfs, and estuaries; however, within this range, there are seasonal shifts in species distribution and abundance. Pinnipeds are primarily found throughout the year or seasonally from New Jersey to Maine; however, increasing evidence indicates that some species (e.g., harbor seals) may be extending their range seasonally into waters as far south as Cape Hatteras, North Carolina (35°N).

For additional information on the biology and range wide distribution of each species of small cetacean and pinniped, as well as information on other marine mammals that occur on the Atlantic coast, refer to the marine mammal SARs provided at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

7.3.1.1 Gear Interactions with Marine Mammals

Marine mammal interactions have been documented in the primary fisheries that target striped bass, including the pound net and gillnet fisheries as well as trawl, haul seine, and hook and line. The following sections are not a comprehensive review of all fishing gear types known to interact with a given species and the bycatch reports included below do not represent a complete list. It should be noted that without an observer program for many of these fisheries, actual numbers of interactions associated with the striped bass fishery are difficult to obtain.

Gillnets

The mid-Atlantic gillnet fishery is listed as a Category I fishery in the 2021 LOF (86 FR 3028, January 14, 2021). The fishery was originally listed as a Category II fishery but in 2003, it was elevated to a Category I fishery after stranding and observer data documented the incidental mortality and serious injury of bottlenose dolphins (68 FR 41725, July 15, 2003). Other species with documented interactions include the common dolphin, harbor seal, gray seal, and hooded seal; however, since gillnet fisheries target many species, not all incidents may have occurred while harvesting striped bass. Between 1995 and 2018, observer coverage has ranged from 1% to 9%.

The Chesapeake Bay inshore gillnet and the North Carolina inshore gillnet are all listed as Category II fisheries in the 2021 LOF (86 FR 3028, January 14, 2021). The primary species reported interacting with these gears is the bottlenose dolphin. Both the Chesapeake Bay inshore gillnet and the North Carolina inshore gillnet fisheries were elevated from a Category III fishery to a Category II fishery in the 2006 and 2001 LOFs, respectively (66 FR 42780, August 15, 2001; 71 FR 48802, August 22, 2006).

The Delaware River inshore gillnet, the Long Island Sound inshore gillnet, and the Rhode Island/Southern Massachusetts/New York Bight inshore gillnet fisheries are listed as Category III fisheries in the 2021 LOF (86 FR 3028, January 14, 2021). There have been no documented interactions with marine mammals in the past five years of data.

Hook and Line

Large whales have been documented entangled with hook and line gear or monofilament line (Greater Atlantic Region Marine Animal Incident Database, unpublished data; Marine Mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). In the most recent (2008-2017) mortality and serious injury determinations for baleen whales, the majority of cases identified with confirmed hook and line or monofilament entanglement did not result in the serious injury or mortality to the whale (84.8 % observed/reported whales had a serious injury value of 0; 15.2 % had a serious injury value of 0.75; none of the cases resulted in mortality; Cole and Henry 2013; Henry et al. 2017; Henry et al. 2020). In fact, 75.8 % of the whales observed or reported with a hook/line or monofilament entanglement were resighted gear free and healthy; confirmation of the health of the other remaining whales remain unknown as no resightings had been made over the timeframe of the assessment (Cole and Henry 2013; Henry et al. 2017; Henry et al. 2020). Based on this information, while large whale interactions with hook and line gear are possible, there is a low probability that an interaction will result in serious injury or mortality to any large whale species. Therefore, relative to other gear types, such as fixed gear, hook and line gear represents a low source serious injury or mortality to any large whale (Henry et al. 2020).

Based on the most recent 10 years of data provided in the marine mammal SARs (i.e., 2008-2017) for small cetaceans and pinnipeds that occur within the striped bass management unit, only bottlenose dolphin stocks have been identified (primarily through stranding records/data) as entangled in hook and line gear (https://www.fisheries.noaa.gov/national/marine-mammal-

protection/marine-mammal-stock-assessment-reports-region). In some cases, these entanglements have resulted in the serious injury or mortality to the animal. Specifically, reviewing stranding data provided in marine mammal SARs from 2008-2017, estimated mean annual mortality for each bottlenose stock due to interactions with hook and line gear was approximately one animal (Palmer 2017; https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). Based on this, although interactions with hook and line gear are possible, relative to other gear types, such as trawl gear, hook and line gear represents a low source serious injury or mortality to any bottlenose dolphin stock. For other species of small cetaceans or pinnipeds, hook and line gear is not expected to be a source of serious injury or mortality.

Pound Nets

The Virginia pound net fishery is listed as a Category II fishery in the 2021 LOF due to documented interactions with bottlenose dolphins (86 FR 3028, January 14, 2021). During 2014–2018, there were no documented mortalities or serious injuries to bottlenose dolphins involving pound net gear in Virginia. There is no formal observer coverage for the Virginia pound net fishery but there has been sporadic monitoring by the Northeast Fishery Observer Program. All other Atlantic coast pound net fisheries are listed as a Category III fishery.

NOAA Fisheries issued a final rule in 2015 amending the Bottlenose Dolphin Take Reduction Plan and its implementing regulations under the Marine Mammal Protection Act (MMPA) requiring gear restrictions for VA pound nets in estuarine and coastal state waters of Virginia to reduce bycatch (80 FR 6925, February 9, 2015). NOAA Fisheries also amended regulations and definitions for Virginia pound nets under the Endangered Species Act (ESA) for sea turtle conservation to be consistent with this final rule. More information on this rule is available here: https://www.fisheries.noaa.gov/action/amendment-virginia-pound-net-regulations.

Fyke Net and Floating Fish Traps

The Rhode Island Floating fish trap and the Northeast/Mid-Atlantic fyke net fisheries are listed as a Category III fishery in the 2021 LOF (86 FR 3028, January 14, 2021). There are no documented interactions between marine mammals in the Northeast/Mid-Atlantic fyke net fishery nor the floating fish trap fishery.

Bottom Trawls

The Mid-Atlantic bottom trawl fishery is listed as a Category II fishery in the 2021 LOF (86 FR 3028, January 14, 2021). In 2005, Mid-Atlantic bottom trawl fishery was elevated to Category II based on mortality and injury of common dolphins and pilot whales (later removed from the list of species killed or injured by this fishery). This fishery continues to be listed as a Category II fishery due to interactions with bottlenose dolphins, common dolphins, and gray seals.

Interactions with other species include the harbor seal, Risso's dolphin, and white-sided dolphin[35]

With the exception of minke whales, there have been no observed interactions with large whales and bottom trawl gear[36]. In 2008, several minke whales were observed dead in bottom trawl gear attributed to the northeast bottom trawl fishery; estimated annual mortality attributed to this fishery in 2008 was 7.8 minke whales (Waring et al. 2015). Since 2008, serious injury and mortality records for minke whales in U.S. waters have shown zero interactions with bottom trawl (northeast or Mid-Atlantic) gear[37]. Based on this information, large whale interactions with bottom trawl gear are expected to be rare to nonexistent.

Haul/Beach Seine

The Mid-Atlantic haul/beach seine fishery is listed as a Category II fishery in the 2021 LOF due to interactions with coastal bottlenose dolphin (86 FR 3028, January 14, 2021). NMFS has recorded one observed take of a bottlenose dolphin in this fishery in 1998 (Waring and Quintal 2000). During 2014–2018, one serious injury of a common bottlenose dolphin occurred associated with the mid-Atlantic haul/beach seine fishery. During 2014, a common bottlenose dolphin was found within a haul seine net in Virginia and released alive seriously injured (Maze-Foley and Garrison 2020). Harbor porpoise was removed from the list of species killed or injured in the Mid-Atlantic haul/beach seine fishery due to no other interactions between 1999 and 2003. The fishery was observed from 1998-2001 but there has been limited observer coverage since 2001.

7.3.2 Sea Turtles

All sea turtles that occur in U.S. waters are listed as either endangered or threatened under the ESA. Four sea turtle species likely to overlap with the striped bass fishery are loggerhead

[35] For additional information on small cetacean and pinniped interactions, see: Chavez-Rosales et al. 2017; Hatch and Orphanides 2014, 2015, 2016, 2019; Josephson et al. 2017; Josephson et al. 2019; Lyssikatos 2015; Lyssikatos et al. 2020; Orphanides 2020; Read *et al*. 2006; Waring et al. 2015b; Marine Mammal SARS: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; MMPA LOF at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries.

[36] Refer to Greater Atlantic Region Marine Animal Incident Database (unpublished data); Marine Mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; NEFSC observer/sea sampling database, unpublished data ; MMPA LOF: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries; NMFS NEFSC reference documents (marine mammal serious injury and mortality reports): https://apps-nefsc.fisheries.noaa.gov/rcb/publications/center-reference-documents.html

[37] Refer to: Greater Atlantic Region Marine Animal Incident Database (unpublished data); Waring et al. 2016; Hayes et al. 2017; Hayes et al. 2018; Hayes et al. 2019; Hayes et al. 2020; Cole and Henry 2013; and, Henry et al. 2014, 2015, 2016, 2017, 2019, 2020; MMPA LOF: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries.

(*Caretta caretta*), Kemp's Ridley (*Lepidochelys kempi*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*) sea turtles.

The Atlantic seaboard provides important developmental habitat for post-pelagic juveniles, as well as foraging and nesting habitat for adult sea turtles. The distribution and abundance of sea turtles along the Atlantic coast is related to geographic location and seasonal variations in water temperatures. In U.S. Northwest Atlantic waters, hard-shelled turtles commonly occur throughout the continental shelf from Florida to Cape Cod, MA, although their presence varies with the seasons due to changes in water temperature. As coastal water temperatures warm in the spring, loggerheads begin to migrate to inshore waters of the southeast United States and also move up the Atlantic Coast (Braun-McNeill & Epperly 2004; Epperly et al. 1995a,b,c; Griffin et al. 2013; Morreale & Standora 2005), occurring in Virginia foraging areas as early as late April and on the most northern foraging grounds in the GOM in June (Shoop & Kenney 1992). The trend is reversed in the fall as water temperatures cool. The large majority leave the Gulf of Maine by September, but some remain in Mid-Atlantic and Northeast areas until late fall (i.e., November). By December, sea turtles have migrated south to waters offshore of North Carolina, particularly south of Cape Hatteras, and further south, although it should be noted that hard-shelled sea turtles can occur year-round in waters off Cape Hatteras and south (Epperly et al. 1995b; Griffin et al. 2013; Hawkes et al. 2011; Shoop & Kenney 1992).

Juvenile Kemp's ridleys sea turtles use northeastern and mid Atlantic waters of the U.S. Atlantic coastline as primary developmental habitat, with shallow coastal embayments serving as important foraging grounds during the summer months. Juvenile ridleys migrate south as water temperatures cool, and are predominantly found in shallow coastal embayments along the Gulf Coast during the fall and winter months. Kemp's ridleys can be found from New England to Florida, and are the second most abundant sea turtle in Virginia and Maryland waters (Keinath et al. 1987; Musick and Limpus, 1997). In the Chesapeake Bay, ridleys frequently forage in shallow embayments, particularly in areas supporting submerged aquatic vegetation (Lutcavage and Musick, 1985; Bellmund et al., 1987; Keinath et al,. 1987; Musick and Limpus, 1997). These turtles primarily feed on crabs, but also consume mollusks, shrimp, and fish (Bjorndal, 1997).

The leatherback is the largest living turtle and its range is farther than any other sea turtle species (NMFS, 2013). Leatherback turtles are often found in association with jellyfish, with the species primarily feeding on Cnidarians (*medusae, siphonophores*) and tunicates (*salps, pyrosomas*). While these turtles are predominantly found in the open ocean, they do occur in coastal water bodies such as Cape Cod Bay and Narragansett Bay, particularly the fall. The most significant nesting in the U.S. occurs in southeast Florida (NMFS, 2013). Leatherbacks are known to use coastal waters of the U.S. continental shelf and to have a greater tolerance for colder water than hard-shelled sea turtles (James *et al.* 2005; Eckert *et al.* 2006; Murphy *et al.* 2006; NMFS and USFWS 2013b; Dodge *et al.* 2014). Leatherback sea turtles engage in routine migrations between northern temperate and tropical waters; they are found in more northern waters (i.e., Gulf of Maine) later in the year (i.e., similar time frame as hard-shelled sea turtles), with most leaving the Northwest Atlantic shelves by mid-November (NMFS and USFWS 1992; James *et al.* 2005; James *et al*. 2006; Dodge *et al.* 2014).

More information about sea turtles can be found here: https://www.fisheries.noaa.gov/sea-turtles.

7.3.2.1 Potential Impacts of Striped Bass Fishery on Sea Turtles

The following sections are not a comprehensive review of all fishing gear types known to interact with a given species and the bycatch reports included below do not represent a complete list.

Gillnet

An observer program for protected species has not been established for the striped bass fishery. However, under the ESA Annual Determination to Implement Sea Turtle Observer Requirement (80 FR 14319, April 18, 2015), one fishery that targets striped bass is included, the Chesapeake Bay Inshore Gillnet Fishery.

Hook and Line

Interactions between ESA listed species of sea turtles and hook and line gear have been documented, particularly in nearshore waters of the Mid-Atlantic (e.g., Greater Atlantic Region Sea Turtle and Disentanglement Network, unpublished data; NMFS Sea Turtle Stranding and Salvage Network, unpublished data; Palmer 2017). Interactions with hook and line gear have resulted in sea turtle injury and mortality and therefore, poses an interaction risk to these species. However, the extent to which these interactions are impacting sea turtle populations is still under investigation, and therefore, no conclusions can currently be made on the impact of hook and line gear on the continued survival of sea turtle populations.

Pound Nets

Populations of loggerhead, Kemp's ridley, and leatherback sea turtles are at risk in areas where pound net fishing is abundant, such as the Chesapeake Bay and surrounding waters. NOAA Fisheries issued a final rule in 2015 amending the Bottlenose Dolphin Take Reduction Plan and its implementing regulations under the MMPA requiring gear restrictions for VA pound nets in estuarine and coastal state waters of Virginia to reduce bycatch (80 FR 6925, February 9, 2015). NOAA Fisheries also amended regulations and definitions for Virginia pound nets under the ESA for sea turtle conservation to be consistent with this final rule. Pound net regulations were enacted to protect both sea turtles and bottlenose dolphins. More information on this rule is available here: https://www.fisheries.noaa.gov/action/amendment-virginia-pound-net-regulations.

Bottom Trawl

Bottom trawl gear poses an injury and mortality risk to sea turtles (Sasso and Epperly 2006; NMFS Observer Program, unpublished data). Since 1989, the date of our earliest observer records for federally managed fisheries, sea turtle interactions with trawl gear have been observed in the Gulf of Maine, Georges Bank, and/or the Mid-Atlantic; however, most of the observed interactions have been observed south of the Gulf of Maine (Murray 2008; Murray 2015b; Murray 2020; NMFS Observer Program, unpublished data; Warden 2011 a, b). Murray

(2020) provided information on sea turtle interaction rates from 2014-2018 and estimated 571 loggerhead, 46 Kemp's ridley, 20 leatherback, and 16 green sea turtle interactions were estimated to have occurred in bottom trawl gear in the Mid-Atlantic region over the five-year period. On Georges Bank, 12 loggerheads, and 6 leatherback interactions. An estimated 272 loggerhead, 23 Kemp's ridley, 13 leatherback, and 8 green sea turtle interactions resulted in mortality over this period (Murray 2020).

7.3.3 Atlantic Sturgeon

Since 1998, there has been a moratorium on the harvest of Atlantic Sturgeon in both state and federal waters; however, the population has continued to decline and, in 2012, Atlantic sturgeon became listed under the ESA. The listing identifies five distinct population segments (DPS), which include the Gulf of Maine, the New York Bight, the Chesapeake Bay, Carolina, and the South Atlantic (77 FR 5914 and 77 FR 5880, February 6, 2012). All DPSs are listed as endangered except for the Gulf of Maine population, which is listed as threatened. Primary threats to the species include historic overfishing, the bycatch of sturgeon in other fisheries, habitat destruction from dredging, dams, and development, and vessel strikes (77 FR 5914; 77 FR 5880). In April 2017, NOAA Fisheries published a final rule (82 FR 39160) to designate Atlantic sturgeon critical habitat (i.e., specific areas that are considered essential to the conservation of the species) in each of the DPSs.

The marine range of U.S. Atlantic sturgeon extends from Labrador, Canada, to Cape Canaveral, Florida. Based on fishery-independent and dependent data, as well as data collected from tracking and tagging studies, in the marine environment, Atlantic sturgeon appear to primarily occur inshore of the 50 meter depth contour (Stein et al. 2004 a,b; Erickson et al. 2011; Dunton et al. 2010); however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Timoshkin 1968; Collins and Smith 1997; Stein et al. 2004a,b; Dunton et al. 2010; Erickson et al. 2011). Data from fishery-independent surveys and tagging and tracking studies also indicate that Atlantic sturgeon may undertake seasonal movements along the coast (Dunton et al. 2010; Erickson et al. 2011; Wipplehauser 2012); however, there is no evidence to date that all Atlantic sturgeon make these seasonal movements and therefore, may be present throughout the marine environment throughout the year.

For additional information on the biology, status, and range wide distribution of each distinct population segment (DPS) of Atlantic sturgeon please refer to 77 FR 5880 and 77 FR 5914, as well as the Atlantic Sturgeon Status Review Team's (ASSRT) 2007 status review of Atlantic sturgeon (ASSRT 2007) and the Atlantic States Marine Fisheries Commission 2017 Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Report (ASMFC 2017).

7.3.3.1 Potential Impacts of Striped Bass Fishery on Atlantic Sturgeon

The following sections are not a comprehensive review of all fishing gear types known to interact with a given species and the bycatch reports included below do not represent a complete list.

Bottom Trawl and Gillnet

Since 1989, Atlantic sturgeon interactions (i.e., bycatch) with sink gillnet and bottom trawl gear have frequently been observed in the Greater Atlantic Region, with most sturgeon observed captured falling within the 100 to 200cm total length range; however, both larger and small individuals have been observed (ASMFC 2007; ASMFC 2017; Miller and Shepard 2011; NEFSC observer/sea sampling database, unpublished data; Stein et al. 2004). For sink gillnets, higher levels of Atlantic sturgeon bycatch have been associated with depths of less than 40 meters, mesh sizes of greater than 10 inches, and the months of April and May (ASMFC 2007). Hager et al. (2021) found that subadult Atlantic sturgeon are particularly susceptible to interactions with striped bass sink gillnet gear in the James River, VA.

For otter trawl fisheries, the highest incidence of Atlantic sturgeon bycatch have been associated with depths less than 30 meters (ASMFC 2007). More recently, over all gears and observer programs that have encountered Atlantic sturgeon, the distribution of haul depths on observed hauls that caught Atlantic sturgeon was significantly different from those that did not encounter Atlantic surgeon, with Atlantic sturgeon encountered primarily at depths less than 20 meters (ASMFC 2017).

The ASMFC (2017) Atlantic sturgeon benchmark stock assessment represents the most accurate predictor of annual Atlantic sturgeon interactions in fishing gear (e.g., otter trawl, gillnet). The stock assessment analyzes fishery observer and VTR data to estimate Atlantic sturgeon interactions in fishing gear in the Mid-Atlantic and New England regions from 2000-2015, the timeframe which included the most recent, complete data at the time of the report. The total bycatch of Atlantic sturgeon from bottom otter trawls ranged between 624-1,518 fish over the 2000-2015 time series, while the total bycatch of Atlantic sturgeon from gillnets ranged from 253-2,715 fish. Focusing on the most recent five-year period of data provided in the stock assessment report[38], the estimated average annual bycatch during 2011-2015 of Atlantic sturgeon in bottom otter trawl gear is 777.4 individuals and in gillnet gear is 627.6 individuals.

Hook and Line

Interactions between ESA-listed species of Atlantic sturgeon and hook and line gear have been documented, particularly in nearshore waters (ASMFC 2017). Interactions with hook and line gear have resulted in Atlantic sturgeon injury and mortality and therefore, poses an interaction risk to these species. However, the extent to which these interactions are impacting Atlantic sturgeon DPSs is still under investigation and therefore, no conclusions can currently be made on the impact of hook and line gear on the continued survival of Atlantic sturgeon DPSs (NMFS 2011b; ASMFC 2017).

[38] The period of 2011-2015 was chosen as it is the period within the stock assessment that most accurately resembles the current trawl fisheries in the region.

7.3.4 Shortnose Sturgeon

Shortnose sturgeon occur in estuaries large coastal rivers on the Atlantic coast from Canada to Florida, including the Chesapeake Bay and its tributaries. Shortnose sturgeon spend most of their life in their natal river system and estuaries and tend to spend little time in ocean waters (NMFS 1998). Adults generally migrate upriver in spring to spawn and move back downstream after spawning to higher salinity habitats for foraging (SSSRT 2010). Shortnose sturgeon have been listed as endangered under the ESA since 1967 and the 1998 recovery plan identified 19 DPSs across 25 river systems.

7.3.4.1 Potential Impacts of Striped Bass Fisheries on Shortnose Sturgeon

Bycatch of shortnose sturgeon in fisheries targeting other species has been documented throughout its range (SSSRT 2010). Bycatch of shortnose sturgeon primarily occurs in gillnet fisheries, but has also occurred in other gear types including pound nets, fyke nets, and hook and lines. Adult shortnose sturgeon are thought to be especially vulnerable to fishing gears targeting anadromous species (such as shad, striped bass, alewives and herring) during times of extensive migration, particularly their spawning migration (SSSRT 2010; Litwiler 2001).

7.3.5 Giant Manta Ray

While there is considerable uncertainty regarding the species' current abundance throughout its range, the best available information indicates that the species has experienced population declines of potentially significant magnitude within areas of the Indo-Pacific and eastern Pacific portions of its range (Miller and Klimovich 2017). While it's assume that declining populations within the Indo-Pacific and eastern Pacific will likely translate to overall declines in the species throughout its entire range, there is very little information on the abundance, and thus, population trends in the Atlantic portion of its range (Miller and Klimovich 2017).

Based on the giant manta ray's distribution, the species may occur in coastal, nearshore, and pelagic waters off the U.S. east coast (Miller and Klimovich 2017). Along the U.S. East Coast, giant manta rays are usually found in water temperatures between 19 and 22 degrees Celsius (Miller and Klimovich 2017) and have been observed as far north as New Jersey. Given that the species is rarely identified in the fisheries data in the Atlantic, it may be assumed that populations within the Atlantic are small and sparsely distributed (Miller and Klimovich 2017).

7.3.5.1 Potential Impacts of Striped Bass Fishery on Giant Manta Rays

The following sections are not a comprehensive review of all fishing gear types known to interact with a given species and the bycatch reports included below do not represent a complete list.

<u>Bottom Trawl and Gillnet Gear</u>

Giant manta rays are potentially susceptible to capture by gillnet and bottom trawl gear based on records of their capture in fisheries using this gear types (NEFSC observer/sea sampling database, unpublished data). Review of the most recent 10 years of NEFOP data showed that

between 2010-2019, two (unidentified) Giant Manta Rays were observed in bottom trawl gear and two were observed in gillnet gear (NMFS NEFSC observer/sea sampling database, unpublished data). Additionally, all of the giant manta ray interactions in gillnet or trawl gear recorded in the NEFOP database (13 between 2001 and 2019) indicate the animals were encountered alive and released alive. However, details about specific conditions such as injuries, damage, time out of water, how the animal was moved or released, or behavior on release is not always recorded. While there is currently no information on post-release survival, NMFS Southeast Gillnet Observer Program observed a range of 0 to 16 giant manta rays captured per year between 1998 and 2015 and estimated that approximately 89% survived the interaction and release (see NMFS reports available at: http://www.sefsc.noaa.gov/labs/panama/ob/gillnet.htm).

Hook and Line

The most recent 10 years of data on observed or documented interactions between giant manta rays and fishing gear, there have been no observed/documented interactions between giant manta rays and hook and line gear (NEFSC observer/sea sampling database, unpublished data). Based on this information, hook and line gear is not expected to pose an interaction risk to giant manta rays and therefore, is not expected to be source of injury or mortality to this species

7.3.6 Seabirds

Like marine mammals, seabirds are vulnerable to entanglement in commercial fishing gear. Under the Migratory Bird Treaty Act, it is unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory birds except as permitted by regulation (16 U.S.C. 703). Given that an interaction has not been quantified in the Atlantic striped bass fishery, impacts to seabirds are not considered to be significant. Endangered and threatened bird species, such as the piping plover, are unlikely to be impacted by the gear types employed in the striped bass fishery. Other human activities such as coastal development, habitat degradation and destruction, and the presence of organochlorine contaminants are considered to be the major threats to some seabird populations.

7.4 POTENTIAL IMPACTS TO ATLANTIC COASTAL STATE AND INTERSTATE FISHERIES

There are several take reduction teams, whose management actions have potential impacts to coastal striped bass fisheries.

The Mid-Atlantic coastal gillnet fishery is one of two fisheries regulated by the Harbor Porpoise Take Reduction Plan (50 CFR 229.33 and 229.34). Amongst other measures, the plan uses time area closures in combination with pingers in Northeast waters, and time area closures along with gear modifications for both small and large mesh gillnets in mid-Atlantic waters. Although the plan predominately impacts the dogfish and monkfish fisheries due to higher porpoise bycatch rates, other gillnet fisheries are also affected.

The Atlantic Large Whale Take Reduction Plan (50 CFR 229.32) (ALWTRP) addresses the incidental bycatch of large baleen whales, primarily the North Atlantic right whale and the humpback whale, in several fisheries including Mid-Atlantic coastal gillnet fishery. Amongst other measures, the plan closes right whale critical habitat areas to specific types of fishing gear during specific seasons, and modifies fishing gear and practices. The Atlantic Large Whale Take Reduction Team continues to identify ways to reduce possible interactions between large whales and commercial gear. In 2014 and 2015, the ALWTRP was modified to reduce the number of vertical lines associated with trap/pot fisheries and required expanded gear markings for gillnets and traps in Jeffrey's Ledge and Jordan Basin (79 FR 35686, June 27, 2014; 80 FR 30367, May 28, 2015).

The Bottlenose Dolphin Take Reduction Team first convened in 2001 to discuss incidental catch of coastal bottlenose dolphins in Category I and II fisheries. In 2006, a Bottlenose Dolphin Take Reduction Plan was established, which created gear regulations for the mid-Atlantic coastal gillnet fishery, the Virginia pound net fishery, the mid-Atlantic beach seine fishery, and the North Carolina inshore gillnet fishery, among others. Specifically, the plan established mesh sizes for the gill net fisheries and prohibited night fishing for some regions and gear types (71 FR 24776, April 26, 2006).

Based on a consensus recommendation from the Bottlenose Dolphin Take Reduction Team, NOAA Fisheries issued a final rule in 2015 amending the Bottlenose Dolphin Take Reduction Plan and its implementing regulations under the Marine Mammal Protection Act (MMPA) to require the year-round use of modified pound net leaders for offshore Virginia pound nets in specified waters of the lower mainstem Chesapeake Bay and coastal state waters (80 FR 6925, February 9, 2015). The rule also finalized Virginia pound net-related definitions, gear prohibitions, and non-regulatory measures. NOAA Fisheries also amended regulations and definitions for Virginia pound nets under the Endangered Species Act (ESA) for sea turtle conservation to be consistent with this final rule. Pound net regulations were enacted to protect both sea turtles and bottlenose dolphins. More information on this rule is available here: https://www.fisheries.noaa.gov/action/amendment-virginia-pound-net-regulations.

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9.0 TABLES

Note: Tables 1-12 are in-text.

Table 13. Summary of Atlantic striped bass commercial regulations in 2020. Source: 2021 State Compliance Reports. Minimum sizes and slot size limits are in total length (TL). *Commercial quota reallocated to recreational bonus fish program.

STATE	SIZE LIMITS (TL) and TRIP LIMITS	SEASONAL QUOTA	OPEN SEASON
ME	Commercial fishing prohibited		
NH	Commercial fishing prohibited		
MA	≥35" minimum size; no gaffing undersized fish. 15 fish/day with commercial boat permit; 2 fish/day with rod and reel permit.	735,240 lbs. Hook & Line only.	6.24 until quota reached, Mondays and Wednesdays only. (In-season adjustment added Tuesdays effective Sept 1.) July 3rd, July 4th and Labor Day closed. Cape Cod Canal closed to commercial striped bass fishing.
RI	Floating fish trap: 26" minimum size unlimited possession limit until 70% of quota reached, then 500 lbs. per licensee per day	Total: 148,889 lbs., split 39:61 between the trap and general category. Gill netting prohibited.	4.1 – 12.31
	General category (mostly rod & reel): 34" min. 5 fish/vessel/day limit.		5.20-6.30, 7.1-12.31, or until quota reached. Closed Fridays, Saturdays, and Sundays during both seasons.
CT	Commercial fishing prohibited; bonus program in CT suspended indefinitely in 2020.		
NY	26"-38" size; (Hudson River closed to commercial harvest)	640,718 lbs. Pound Nets, Gill Nets (6-8"stretched mesh), Hook & Line.	6.1 – 12.15, or until quota reached. Limited entry permit only.
NJ*	Commercial fishing prohibited; bonus program: 1 fish at 24" to <28" slot size	215,912 lbs.	5.15 – 12.31 (permit required)
PA	Commercial fishing prohibited		

(Table 13 continued – Summary of commercial regulations in 2020).

STATE	SIZE LIMITS (TL) and TRIP LIMITS	SEASONAL QUOTA	OPEN SEASON
DE	Gill Net: 20" min in DE Bay/River during spring season. 28" in all other waters/seasons.	Gillnet: 135,350 lbs. No fixed nets in DE River.	Gillnet: 2.15-5.31 (2.15-3.30 for Nanticoke River) & 11.15-12.31; drift nets only 2.15-28 & 5.1-31; no trip limit.
	Hook and Line: 28" min	Hook and line: 7,124 lbs.	Hook and Line: 4.1–12.31, 200 lbs./day trip limit
MD	Chesapeake Bay and Rivers: 18–36" Common pool trip limits: Hook and Line - 250 lbs./license/week Gill Net - 300 lbs./license/week	1,445,394 lbs. (part of Bay-wide quota) – Initial quota 1,442,120 lbs. – Adjusted quota due to 2019 overage	Bay Pound Net: 6.1-12.31 Bay Haul Seine: 6.1-12.31 Bay Hook & Line: 6.4-12.31 Bay Drift Gill Net: 1.1-2.28, 12.1-12.31
	Ocean: 24" minimum	Ocean: 89,094 lbs.	1.1-5.31, 10.1-12.31
PRFC	18" min all year; 36" max 2.15–3.25	572,861 lbs. (part of Bay-wide quota)	Hook & Line: 1.1-3.25, 6.1-12.31 Pound Net & Other: 2.15-3.25, 6.1-12.15 Gill Net: 1.1-3.25, 11.9-12.31 Misc. Gear: 2.15-3.25, 6.1-12.15
VA	Bay and Rivers: 18" min; 28" max size limit 3.15–6.15	983,393 lbs. (part of Bay-wide quota)	1.16-12.31
	Ocean: 28" min	125,034 lbs.	
NC	Ocean: 28" min	295,495 lbs. (split between gear types).	Seine fishery was not opened Gill net fishery was not opened Trawl fishery was not opened

Table 14. Summary of Atlantic striped bass recreational regulations in 2020. Source: 2021 State Compliance Reports. Minimum sizes and slot size limits are in total length (TL).

STATE	SIZE LIMITS (TL)/REGION	BAG LIMIT	GEAR/FISHING RESTRICTIONS	OPEN SEASON
ME	28” to <35"	1 fish/day	Hook & line only; circle hooks only when using live bait	All year, except spawning areas are closed 12.1-4.30 and C&R only 5.1-6.30
NH	28” to <35"	1 fish/day	Gaffing and culling prohibited; Use of corrodible non-offset circle hooks required if angling with bait	All year
MA	28” to <35"	1 fish/day	Hook & line only; no high-grading; gaffs and other injurious removal devices prohibited. Private angler circle hook requirement when fishing with natural bait (exception for artificial lures).	All year
RI	28” to <35"	1 fish/day	The use of circle hooks is required by any vessel or person while fishing recreationally with bait for striped bass	All year
CT	28” to <35"	1 fish/day	Inline circle hooks only when using whole, cut or live natural bait (Dec 1st, 2020). Spearing and gaffing prohibited	All year
NY	Ocean and DE River: Slot Size: 28 -35	1 fish/day	Angling only. Spearing permitted in ocean waters. C&R only during closed season.	Ocean: 4.15-12.15 Delaware River: All year
	HR: Slot Size: 18 -28	1 fish/day	Angling only.	Hudson River: 4.1-11.30
NJ	1 fish at 28” to < 38” (effective 4/1/2020)	1 fish/day	Non-offset circle hooks must be used when using bait with a #2 sized hook or larger in Delaware River & tributaries from 4.1-5.31.	Closed 1.1 – Feb 28 in all waters except in the Atlantic Ocean, and closed 4.1-5.31 in the lower DE River and tributaries
PA	Upstream from Calhoun St Bridge: 1 fish at 28” to <35"			
	Downstream from Calhoun St Bridge: 1 fish at 28” to <35”, and 2 fish at 21-24” slot size limit from 4.1 – 5.31			

(Table 14 continued – Summary of recreational regulations in 2020).

STATE	SIZE LIMITS/REGION	BAG LIMIT	GEAR/FISHING RESTRICTIONS	OPEN SEASON
DE	28” to <35"	1 fish/day	Hook & line, spear (for divers) only. Circle hooks required in spawning season.	All year. C&R only 4.1-5.31 in spawning grounds. 20”-25”slot from 7.1-8.31 in DE River, Bay & tributaries
MD	Ocean: 28” to <35"	1 fish/day		All year
	Chesapeake Bay and tribs^	C&R only	no eels; no stinger hooks; barbless hooks when trolling; circle or J-hooks when using live bait; max 6 lines when trolling	1.1-2.28, 3.1-3.31, 12.11-12.31
	Chesapeake Bay: 35" min	1 fish/day	Geographic restrictions apply.	5.1-5.15
	Chesapeake Bay: 1 fish/day, 19" minimum size; 2/fish/day for charter with only 1 fish >28"		Geographic restrictions apply; circle hooks if chumming or live-lining; no treble hooks when bait fishing.	5.16-5.31
	Chesapeake Bay and tribs: 1 fish/day, 19" minimum size; 2/fish/day for charter with only 1 fish >28"		All Bay and tribs open; circle hooks if chumming or live-lining; no treble hooks when bait fishing.	6.1-8.15 (no targeting 8.16-8/31)*, 9.1-12.10
PRFC	Spring Trophy: 1 fish/day, 35” minimum size		No more than two hooks or sets of hooks for each rod or line; no live eel; no high-grading	5.1-5.15
	Summer and Fall: 2 fish/day, 20” min		No more than two hooks or sets of hooks for each rod or line.	5.16-7.6 and 8.21-12.31; closed 7.7-8.20 (No Direct Targeting)

^ Susquehanna Flats: C&R only Jan 1 – March 31 (no treble hooks when bait fishing); 1 fish at 19”-26” slot May 16 – May 31.
*Open season in 2021 changed to 6.1-7.15 (no targeting 7.16-7.31), 8.1-12.10.

(Table 14 continued – Summary of recreational regulations in 2020).

STATE	SIZE LIMITS/REGION	BAG LIMIT	GEAR/FISHING RESTRICTIONS	OPEN SEASON
DC	18” minimum size	1 fish/day	Hook and line only	5.16-12.31
VA	Ocean: 28”-36” slot limit	1 fish/day	Hook & line, rod & reel, hand line only. No gaffing. Circle hooks required if/when fishing with live bait (as of July 2020).	1.1-3.31, 5.16-12.31
	Ocean Spring Trophy: NO SPRING TROPHY SEASON			
	Chesapeake Bay Spring Trophy: NO SPRING TROPHY SEASON			
	Bay Spring: 20”-28” slot limit	1 fish/day	Hook & line, rod & reel, hand line only. No gaffing. Circle hooks required if/when fishing with live bait (as of July 2020).	5.16-6.15
	Bay Fall: 20 - 36” slot limit	1 fish/day	Hook & line, rod & reel, hand line only. No gaffing. Circle hooks required if/when fishing with live bait (as of July 2020).	10.4-12.31
NC	28” to <35"	1 fish/day	No gaffing allowed. Circle hooks required when fishing with natural bait.	All year

Table 15. Total removals (harvest plus discards/release mortality) of Atlantic striped bass by sector in numbers of fish, 1990-2020. Note: Harvest is from state compliance reports/MRIP (July 8, 2021), discards/release mortality is from ASMFC. Estimates exclude inshore harvest from North Carolina.

Year	Commercial		Recreational		Total Removals
	Harvest	Discards*	Harvest	Release Mortality	
1990	93,888	47,859	578,897	442,811	1,163,455
1991	158,491	92,480	798,260	715,478	1,764,709
1992	256,476	193,281	869,779	937,611	2,257,147
1993	314,526	115,859	789,037	812,404	2,031,826
1994	325,401	166,105	1,055,523	1,360,872	2,907,900
1995	537,412	188,507	2,287,578	2,010,689	5,024,186
1996	854,102	257,749	2,487,422	2,600,526	6,199,800
1997	1,076,591	325,998	2,774,981	2,969,781	7,147,351
1998	1,215,219	347,343	2,915,390	3,259,133	7,737,085
1999	1,223,572	337,036	3,123,496	3,140,905	7,825,008
2000	1,216,812	209,329	3,802,477	3,044,203	8,272,820
2001	931,412	182,606	4,052,474	2,449,599	7,616,091
2002	928,085	199,770	4,005,084	2,792,200	7,925,139
2003	854,326	131,319	4,781,402	2,848,445	8,615,492
2004	879,768	157,724	4,553,027	3,665,234	9,255,753
2005	970,403	146,126	4,480,802	3,441,928	9,039,259
2006	1,047,648	158,808	4,883,961	4,812,332	10,902,750
2007	1,015,114	160,728	3,944,679	2,944,253	8,064,774
2008	1,027,837	106,791	4,381,186	2,391,200	7,907,013
2009	1,049,838	130,200	4,700,222	1,942,061	7,822,321
2010	1,031,430	134,817	5,388,440	1,760,759	8,315,446
2011	944,777	85,503	5,006,358	1,482,029	7,518,667
2012	870,684	198,911	4,046,299	1,847,880	6,963,774
2013	784,379	114,009	5,157,760	2,393,425	8,449,573
2014	750,263	111,753	4,033,746	2,172,342	7,068,103
2015	621,952	84,463	3,085,725	2,307,133	6,099,273
2016	609,028	88,171	3,500,434	2,981,430	7,179,063
2017	592,670	98,343	2,937,911	3,421,110	7,050,035
2018	621,123	100,646	2,244,765	2,826,667	5,793,201
2019	653,807	84,013	2,150,936	2,589,045	5,477,801
2020	577,363	65,319	1,709,973	2,760,231	5,112,886

* Commercial dead discard estimates are derived via a generalized additive model (GAM), and are therefore re-estimated for the entire time series when a new year of data is added.

Table 16. Proportion of total removals (harvest plus discards/release mortality) of Atlantic striped bass by sector in numbers of fish, 1990-2020. Note: Harvest is from state compliance reports/MRIP (July 8, 2021), discards/release mortality is from ASMFC. Estimates exclude inshore harvest from North Carolina.

Year	Commercial		Recreational	
	Harvest	Discards*	Harvest	Release Mortality
1990	8%	4%	50%	38%
1991	9%	5%	45%	41%
1992	11%	9%	39%	42%
1993	15%	6%	39%	40%
1994	11%	6%	36%	47%
1995	11%	4%	46%	40%
1996	14%	4%	40%	42%
1997	15%	5%	39%	42%
1998	16%	4%	38%	42%
1999	16%	4%	40%	40%
2000	15%	3%	46%	37%
2001	12%	2%	53%	32%
2002	12%	3%	51%	35%
2003	10%	2%	55%	33%
2004	10%	2%	49%	40%
2005	11%	2%	50%	38%
2006	10%	1%	45%	44%
2007	13%	2%	49%	37%
2008	13%	1%	55%	30%
2009	13%	2%	60%	25%
2010	12%	2%	65%	21%
2011	13%	1%	67%	20%
2012	13%	3%	58%	27%
2013	9%	1%	61%	28%
2014	11%	2%	57%	31%
2015	10%	1%	51%	38%
2016	8%	1%	49%	42%
2017	8%	1%	42%	49%
2018	11%	2%	39%	49%
2019	11.94%	2%	39%	47%
2020	11%	1%	33%	54%

* Commercial dead discard estimates are derived via a generalized additive model (GAM), and are therefore re-estimated for the entire time series when a new year of data is added. Note: Percent may not sum to 100 due to rounding.

Table 17. Total harvest of Atlantic striped bass by sector, 1990-2020. Note: Harvest is from state compliance reports/MRIP (Query July 8, 2021). Estimates exclude inshore harvest from North Carolina.

Year	Numbers of Fish			Pounds		
	Commercial	Recreational	Total	Commercial	Recreational	Total
1990	93,888	578,897	672,785	715,902	8,207,515	8,923,417
1991	158,491	798,260	956,751	966,096	10,640,601	11,606,697
1992	256,476	869,779	1,126,255	1,508,064	11,921,967	13,430,031
1993	314,526	789,037	1,103,563	1,800,176	10,163,767	11,963,943
1994	325,401	1,055,523	1,380,924	1,877,197	14,737,911	16,615,108
1995	537,412	2,287,578	2,824,990	3,775,586	27,072,321	30,847,907
1996	854,102	2,487,422	3,341,524	4,822,874	28,625,685	33,448,559
1997	1,076,591	2,774,981	3,851,572	6,078,566	30,616,093	36,694,659
1998	1,215,219	2,915,390	4,130,609	6,552,111	29,603,199	36,155,310
1999	1,223,572	3,123,496	4,347,068	6,474,290	33,564,988	40,039,278
2000	1,216,812	3,802,477	5,019,289	6,719,521	34,050,817	40,770,338
2001	931,412	4,052,474	4,983,886	6,266,769	39,263,154	45,529,923
2002	928,085	4,005,084	4,933,169	6,138,180	41,840,025	47,978,205
2003	854,326	4,781,402	5,635,728	6,750,491	54,091,836	60,842,327
2004	879,768	4,553,027	5,432,795	7,317,897	53,031,074	60,348,971
2005	970,403	4,480,802	5,451,205	7,121,492	57,421,174	64,542,666
2006	1,047,648	4,883,961	5,931,609	6,568,970	50,674,431	57,243,401
2007	1,015,114	3,944,679	4,959,793	7,047,179	42,823,614	49,870,793
2008	1,027,837	4,381,186	5,409,023	7,190,701	56,665,318	63,856,019
2009	1,049,838	4,700,222	5,750,060	7,217,380	54,411,389	61,628,769
2010	1,031,430	5,388,440	6,419,870	6,996,713	61,431,360	68,428,073
2011	944,777	5,006,358	5,951,135	6,789,792	59,592,092	66,381,884
2012	870,684	4,046,299	4,916,983	6,516,761	53,256,619	59,773,380
2013	784,379	5,157,760	5,942,139	5,819,678	65,057,289	70,876,967
2014	750,263	4,033,746	4,784,009	5,937,949	47,948,610	53,886,559
2015	621,952	3,085,725	3,707,677	4,829,997	39,898,799	44,728,796
2016	609,028	3,500,434	4,109,462	4,848,772	43,671,532	48,520,304
2017	592,670	2,937,911	3,530,581	4,816,395	37,952,581	42,768,976
2018	621,123	2,244,765	2,865,888	4,741,342	23,069,028	27,810,370
2019	653,807	2,150,936	2,804,743	4,284,831	23,556,287	27,841,118
2020	577,363	1,709,973	2,287,336	3,560,917	14,858,984	18,419,901

Table 18. Commercial harvest by region in pounds (x1000), 1995-2020. Source: state compliance reports. ^Estimates exclude inshore harvest.

Year	Ocean								Chesapeake Bay				Grand Total
	MA	RI	NY	DE	MD	VA	NC^	Total	MD	PRFC	VA	Total	
1995	751.5	113.5	500.8	38.5	79.3	46.2	344.6	1,874.3	1,185.0	198.5	517.8	1,901.3	3,775.6
1996	695.9	122.6	504.4	120.5	75.7	165.9	58.2	1,743.2	1,487.7	346.8	1,245.2	3,079.7	4,822.9
1997	784.9	96.5	460.8	166.0	94.0	179.1	463.1	2,244.4	2,119.2	731.9	983.0	3,834.2	6,078.6
1998	810.1	94.7	485.9	163.7	84.6	375.0	273.0	2,287.0	2,426.7	726.2	1,112.2	4,265.1	6,552.1
1999	766.2	119.7	491.8	176.3	62.6	614.8	391.5	2,622.9	2,274.8	653.3	923.4	3,851.4	6,474.3
2000	796.2	111.8	542.7	145.1	149.7	932.7	162.4	2,840.5	2,261.8	666.0	951.2	3,879.0	6,719.5
2001	815.4	129.7	633.1	198.6	113.9	782.4	381.1	3,054.1	1,660.9	658.7	893.1	3,212.6	6,266.8
2002	924.9	129.2	518.6	146.2	93.2	710.2	441.0	2,963.2	1,759.4	521.0	894.4	3,174.9	6,138.2
2003	1,055.5	190.2	753.3	191.2	103.9	166.4	201.2	2,661.7	1,721.8	676.6	1,690.4	4,088.7	6,750.5
2004	1,214.2	215.1	741.7	176.5	134.2	161.3	605.4	3,248.3	1,790.3	772.3	1,507.0	4,069.6	7,317.9
2005	1,102.2	215.6	689.8	174.0	46.9	185.2	604.5	3,018.2	2,008.7	533.6	1,561.0	4,103.3	7,121.5
2006	1,322.3	5.1	688.4	184.2	91.1	195.0	74.2	2,560.2	2,116.3	673.5	1,219.0	4,008.7	6,569.0
2007	1,039.3	240.6	731.5	188.7	96.3	162.3	379.5	2,838.1	2,240.6	599.3	1,369.2	4,209.1	7,047.2
2008	1,160.3	245.9	653.1	188.7	118.0	163.1	288.4	2,817.6	2,208.0	613.8	1,551.3	4,373.1	7,190.7
2009	1,134.3	234.8	789.9	192.3	127.3	140.4	190.0	2,809.0	2,267.3	727.8	1,413.3	4,408.4	7,217.4
2010	1,224.5	248.9	786.8	185.4	44.8	127.8	276.4	2,894.7	2,105.8	683.2	1,313.0	4,102.0	6,996.7
2011	1,163.9	228.2	855.3	188.6	21.4	158.8	246.4	2,862.5	1,955.1	694.2	1,278.1	3,927.3	6,789.8
2012	1,218.5	239.9	683.8	194.3	77.6	170.8	7.3	2,592.0	1,851.4	733.7	1,339.6	3,924.7	6,516.8
2013	1,004.5	231.3	823.8	191.4	93.5	182.4	0.0	2,526.9	1,662.2	623.8	1,006.8	3,292.8	5,819.7
2014	1,138.5	216.9	531.5	167.9	120.9	183.7	0.0	2,359.4	1,805.7	603.4	1,169.4	3,578.5	5,937.9
2015	866.0	188.3	516.3	144.1	34.6	138.1	0.0	1,887.5	1,436.9	538.0	967.6	2,942.5	4,830.0
2016	938.7	174.7	575.0	136.5	19.7	139.2	0.0	1,983.9	1,425.5	537.1	902.3	2,864.9	4,848.8
2017	823.4	175.3	701.2	141.8	80.5	133.9	0.0	2,056.1	1,439.8	492.7	827.8	2,760.3	4,816.4
2018	753.7	176.6	617.2	155.0	79.8	134.2	0.0	1,916.6	1,424.3	449.4	951.0	2,824.7	4,741.3
2019	584.7	144.2	358.9	132.6	82.8	138.0	0.0	1,441.2	1,475.2	417.3	951.1	2,843.6	4,284.8
2020	386.9	115.9	473.5	138.0	83.6	77.2	0.0	1,275.1	1,273.8	400.3	611.7	2,285.8	3,560.9

Table 19. Commercial harvest and discards by region in numbers of fish (x1000), 1995-2020. Source: harvest is from state compliance reports, discards is from ASMFC. ^Estimates exclude inshore harvest.

Year	Ocean								Chesapeake Bay				Discards*			Grand Total Removals
	MA	RI	NY	DE	MD	VA	NC^	Total	MD	PRFC	VA	Total	Ocean	Bay	Total	
1995	39.9	19.7	43.7	5.6	4.0	9.9	23.4	146.1	267.0	29.3	95.0	391.3	141.7	46.8	188.5	725.9
1996	37.3	18.6	40.5	20.7	9.0	14.1	3.3	143.5	486.2	46.2	178.2	710.6	168.8	89.0	257.7	1,111.9
1997	44.0	7.1	37.6	33.2	8.4	17.3	25.8	173.4	620.3	87.8	195.2	903.2	249.7	76.3	326.0	1,402.6
1998	44.3	8.8	45.1	31.4	10.3	41.1	14.2	195.2	729.6	93.3	197.1	1,020.1	313.9	33.5	347.3	1,562.6
1999	40.9	11.6	49.9	34.8	10.2	48.7	21.1	217.2	776.0	90.6	139.8	1,006.3	305.2	31.9	337.0	1,560.6
2000	42.1	9.4	54.9	25.2	13.3	54.5	6.5	205.8	787.6	91.5	132.0	1,011.0	176.9	32.5	209.3	1,426.1
2001	45.8	10.9	58.3	34.4	11.1	42.3	25.0	227.7	538.8	87.8	77.1	703.7	140.5	42.2	182.6	1,114.0
2002	49.8	11.7	47.1	30.4	10.2	38.8	23.2	211.3	571.7	80.3	64.7	716.8	151.2	48.6	199.8	1,127.9
2003	56.4	15.5	68.4	31.5	11.6	10.5	5.8	199.6	427.9	83.1	143.7	654.7	98.8	32.5	131.3	985.6
2004	63.6	16.0	70.4	28.4	14.1	10.4	31.0	233.9	447.0	92.6	106.3	645.9	111.4	46.3	157.7	1,037.5
2005	60.5	14.9	70.6	26.3	6.1	11.3	27.3	217.1	563.9	80.6	108.9	753.3	87.2	58.9	146.1	1,116.5
2006	70.5	15.4	73.6	30.2	10.9	11.5	2.7	214.9	645.1	92.3	95.4	832.7	99.0	59.8	158.8	1,206.5
2007	54.2	13.9	78.5	31.1	11.6	10.6	16.8	216.7	587.6	86.5	124.3	798.4	94.3	66.4	160.7	1,175.8
2008	61.1	16.6	73.3	31.9	14.0	10.8	13.4	221.0	580.7	82.0	144.1	806.8	63.6	43.1	106.8	1,134.6
2009	59.4	16.8	82.6	21.6	12.5	8.9	9.0	210.9	605.6	89.6	143.8	839.0	60.5	69.7	130.2	1,180.0
2010	60.4	15.7	82.4	19.8	5.4	9.4	13.7	206.7	579.2	90.6	154.9	824.7	40.4	94.5	134.8	1,166.2
2011	58.7	14.3	87.4	20.5	2.1	12.2	10.9	206.0	488.9	96.1	153.7	738.7	35.0	50.5	85.5	1,030.3
2012	61.5	15.0	67.1	15.7	6.9	10.8	0.3	177.3	465.6	90.7	137.0	693.4	25.5	173.4	198.9	1,069.6
2013	58.6	13.8	76.2	17.7	7.6	10.0	0.0	183.8	391.5	78.0	131.0	600.5	36.5	77.5	114.0	898.4
2014	58.0	10.5	52.9	14.9	8.5	10.0	0.0	154.8	362.2	81.5	151.8	595.5	46.3	65.5	111.8	862.0
2015	42.3	11.3	45.6	11.0	2.6	7.7	0.0	120.4	298.3	71.0	132.2	501.5	33.8	50.7	84.5	706.4
2016	48.0	11.7	51.0	8.8	1.2	7.6	0.0	128.3	284.9	73.7	122.2	480.8	41.3	46.8	88.2	697.2
2017	41.2	10.1	61.6	9.5	3.5	7.6	0.0	133.5	263.6	67.5	128.0	459.2	78.1	20.2	98.3	691.0
2018	37.8	10.1	52.2	11.4	3.5	6.9	0.0	121.9	286.4	64.4	148.4	499.3	61.4	39.3	100.6	721.8
2019	29.6	7.3	29.6	8.2	3.3	6.9	0.0	84.9	356.7	62.6	149.6	568.9	19.4	64.6	84.0	737.8
2020	19.6	5.0	44.1	8.4	3.4	4.4	0.0	84.9	299.9	66.6	125.9	391.3	18.6	46.7	65.3	642.7

* Commercial dead discard estimates are derived via a generalized additive model (GAM), and are therefore re-estimated for the entire time series when a new year of data is added.

Table 20. Total recreational catch, releases, and release mortality in numbers of fish by region (x1000), 1995-2020. Source: MRIP (Query July 8, 2021). Estimates exclude inshore harvest from North Carolina.

Year	Harvest (A+B1)			Releases (B2)			Total Catch (A+B1+B2)			Release Mortality (9% of B2)		
	Ocean	Bay	Total	Ocean	Bay	Total	Ocean	Bay	Total	Ocean	Bay	Total
1995	1,260	1,028	2,288	16,587	5,754	22,341	17,847	6,782	24,629	1,493	518	2,011
1996	1,362	1,125	2,487	22,384	6,511	28,895	23,746	7,636	31,382	2,015	586	2,601
1997	1,514	1,261	2,775	22,819	10,178	32,998	24,333	11,439	35,773	2,054	916	2,970
1998	1,647	1,268	2,915	29,294	6,918	36,213	30,941	8,187	39,128	2,637	623	3,259
1999	1,758	1,366	3,123	26,139	8,760	34,899	27,897	10,125	38,022	2,353	788	3,141
2000	2,198	1,604	3,802	25,090	8,734	33,824	27,289	10,338	37,627	2,258	786	3,044
2001	2,758	1,294	4,052	21,073	6,145	27,218	23,831	7,440	31,270	1,897	553	2,450
2002	2,756	1,249	4,005	23,653	7,371	31,024	26,409	8,620	35,030	2,129	663	2,792
2003	3,124	1,658	4,781	20,678	10,971	31,649	23,802	12,628	36,431	1,861	987	2,848
2004	3,078	1,475	4,553	27,868	12,857	40,725	30,946	14,332	45,278	2,508	1,157	3,665
2005	3,182	1,299	4,481	28,663	9,580	38,244	31,845	10,879	42,724	2,580	862	3,442
2006	2,789	2,095	4,884	41,239	12,232	53,470	44,028	14,327	58,354	3,711	1,101	4,812
2007	2,327	1,618	3,945	25,135	7,579	32,714	27,462	9,196	36,659	2,262	682	2,944
2008	3,025	1,356	4,381	21,878	4,691	26,569	24,904	6,046	30,950	1,969	422	2,391
2009	2,898	1,803	4,700	16,740	4,838	21,578	19,638	6,641	26,279	1,507	435	1,942
2010	3,906	1,483	5,388	13,606	5,957	19,564	17,512	7,440	24,952	1,225	536	1,761
2011	3,617	1,389	5,006	12,644	3,823	16,467	16,261	5,212	21,473	1,138	344	1,482
2012	3,071	975	4,046	11,242	9,290	20,532	14,314	10,265	24,578	1,012	836	1,848
2013	3,723	1,435	5,158	19,463	7,131	26,594	23,186	8,565	31,751	1,752	642	2,393
2014	2,276	1,758	4,034	15,107	9,031	24,137	17,382	10,789	28,171	1,360	813	2,172
2015	1,770	1,316	3,086	15,419	10,216	25,635	17,189	11,532	28,721	1,388	919	2,307
2016	1,817	1,683	3,500	17,794	15,333	33,127	19,611	17,016	36,627	1,601	1,380	2,981
2017	1,738	1,200	2,938	28,963	9,050	38,012	30,701	10,249	40,950	2,607	814	3,421
2018	1,195	1,050	2,245	22,739	8,669	31,407	23,933	9,719	33,652	2,046	780	2,827
2019	1,342	809	2,151	21,131	7,636	28,767	22,473	8,445	30,918	1,902	687	2,589
2020	923	787	1,710	22,710	7,959	30,669	23,633	8,746	32,379	2,044	716	2,760

Table 21. Recreational harvest by region in pounds (x1000), 1995-2020. Source: MRIP (Query July 8, 2021). ^Estimates exclude inshore harvest.

Year	Ocean												Chesapeake Bay			Grand Total
	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC^	Total	MD	VA	Total	
1995	83	127	2,739	1,049	1,331	5,594	8,587	301	0.0	141	232	20,184	3,115	3,773	6,889	27,072
1996	95	183	2,983	1,626	1,405	10,739	3,959	795	0.0	812	392	22,990	2,789	2,847	5,636	28,626
1997	223	538	5,133	1,997	2,263	8,543	2,179	374	0.0	1,096	865	23,211	3,203	4,203	7,405	30,616
1998	305	262	7,359	1,544	1,807	4,889	4,182	645	579	545	636	22,754	3,023	3,826	6,849	29,603
1999	196	181	4,995	1,904	1,327	7,414	9,473	312	3.8	110	339	26,256	2,323	4,986	7,309	33,565
2000	347	109	4,863	2,008	890	7,053	9,768	925	0.0	416	277	26,656	3,503	3,892	7,395	34,051
2001	446	334	7,188	2,044	1,101	5,058	12,314	695	314	382	1,082	30,959	2,928	5,376	8,304	39,263
2002	775	322	10,261	2,708	1,251	5,975	9,621	589	0.0	1,135	998	33,634	2,643	5,563	8,206	41,840
2003	458	466	10,252	4,052	2,666	10,788	12,066	763	14	392	966	42,882	5,246	5,964	11,210	54,092
2004	554	268	9,329	2,460	2,229	6,437	13,303	870	57	1,067	6,656	43,230	4,860	4,941	9,801	53,031
2005	546	384	7,541	3,155	3,133	11,637	14,289	680	7.7	487	3,947	45,808	7,753	3,860	11,614	57,421
2006	610	244	6,787	1,569	2,854	9,845	12,716	586	2.8	921	2,975	39,109	6,494	5,071	11,565	50,674
2007	422	93	7,010	2,077	2,786	10,081	8,390	207	0.0	516	1,965	33,547	5,249	4,027	9,277	42,824
2008	607	182	8,424	970	2,273	18,000	12,407	847	0.0	1,690	750	46,150	5,639	4,877	10,515	56,665
2009	781	222	9,410	2,185	1,458	7,991	17,040	940	138	48	187	40,399	8,672	5,340	14,012	54,411
2010	218	238	9,959	2,102	2,323	18,190	17,454	895	107	206	1,198	52,891	6,482	2,059	8,541	61,431
2011	245	659	11,953	3,066	981	13,151	15,715	605	8.6	308	4,467	51,157	6,220	2,214	8,435	59,592
2012	152	432	14,941	2,096	1,835	13,096	11,551	644	21	1.7	0.0	44,768	3,819	4,670	8,488	53,257
2013	331	831	9,025	4,428	4,236	16,819	19,451	1,073	1,051	67	0.0	57,313	5,137	2,607	7,744	65,057
2014	423	203	7,965	3,402	2,665	13,998	8,886	381	159	0.0	0.0	38,083	8,877	989	9,866	47,949
2015	132	202	7,799	1,394	2,585	8,695	9,982	340	28	0.0	0.0	31,156	7,786	957	8,743	39,899
2016	189	191	3,731	1,776	912	12,053	12,790	86	7.2	0.0	0.0	31,735	10,912	1,024	11,936	43,672
2017	318	394	5,664	1,655	1,560	8,885	10,886	666	0.0	1.8	0.0	30,030	7,309	613	7,922	37,953
2018	142	130	4,925	1,121	1,165	3,453	7,012	33	0.0	0.0	0.0	17,982	4,683	404	5,087	23,069
2019	415	291	2,698	2,300	685	7,072	6,674	44	7.3	0.0	0.0	20,187	3,145	224	3,370	23,556
2020	180	29	776	483	830	2,202	6,584	16	0.0	0.0	0.0	11,100	3,480	280	3,759	14,859

Table 22. Recreational harvest by region in numbers of fish (x1000), 1995-2020. Source: MRIP (Query July 8, 2021). ^Estimates exclude inshore harvest.

Year	Ocean												Chesapeake Bay			Grand Total
	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC^	Total	MD	VA	Total	
1995	4.0	7.4	124.3	70.9	75.8	250.3	671.4	25.8	0.1	13.4	16.5	1,259.8	491.1	536.7	1,027.7	2,287.6
1996	4.1	11.0	156.6	100.6	95.9	511.6	301.2	59.7	0.0	89.6	31.7	1,362.0	564.2	561.3	1,125.5	2,487.4
1997	43.0	29.9	365.6	124.7	149.0	450.5	171.2	29.1	0.0	91.1	60.1	1,514.1	552.4	708.4	1,260.8	2,775.0
1998	65.3	14.8	500.9	91.1	114.1	383.8	289.2	51.0	24.3	71.3	41.2	1,647.0	596.2	672.2	1,268.4	2,915.4
1999	37.5	9.9	327.1	116.6	88.2	450.9	657.1	28.3	1.6	14.1	26.4	1,757.8	530.9	834.8	1,365.7	3,123.5
2000	77.3	6.0	306.2	156.8	84.0	494.6	939.8	88.3	0.0	27.2	18.1	2,198.3	810.9	793.3	1,604.2	3,802.5
2001	91.9	23.5	551.0	149.8	78.2	364.2	1,267.5	70.6	64.1	36.7	60.7	2,758.1	513.3	781.1	1,294.4	4,052.5
2002	135.2	28.1	723.5	181.5	92.5	439.3	957.6	65.7	0.0	76.4	56.3	2,756.1	464.4	784.6	1,249.0	4,005.1
2003	99.7	41.3	797.2	226.4	181.7	678.4	942.8	75.7	0.9	29.3	50.4	3,123.8	816.0	841.6	1,657.6	4,781.4
2004	118.3	22.1	666.7	159.6	134.5	458.1	1,042.1	66.6	11.0	75.9	323.2	3,078.1	657.5	817.4	1,474.9	4,553.0
2005	118.3	35.5	536.1	195.6	202.6	854.6	958.1	48.8	3.6	34.2	194.9	3,182.2	815.5	483.1	1,298.6	4,480.8
2006	140.9	20.9	483.2	129.3	168.3	614.8	972.2	44.5	0.4	80.6	134.2	2,789.0	1,342.0	753.0	2,094.9	4,884.0
2007	95.5	8.1	471.9	135.8	163.9	602.8	722.2	17.2	0.0	28.0	81.8	2,327.1	1,127.3	490.3	1,617.6	3,944.7
2008	133.4	11.9	514.1	73.4	132.8	1,169.9	791.0	67.7	0.0	94.4	36.9	3,025.4	779.7	576.1	1,355.8	4,381.2
2009	146.5	17.3	695.0	138.4	100.3	574.2	1,141.5	64.8	10.2	3.0	6.5	2,897.7	1,094.4	708.1	1,802.5	4,700.2
2010	37.3	21.4	808.2	162.0	170.2	1,449.0	1,091.4	61.4	12.5	25.3	67.1	3,905.9	1,139.3	343.2	1,482.6	5,388.4
2011	48.5	54.2	873.5	202.2	91.1	1,005.3	1,038.9	43.7	0.8	51.2	207.6	3,617.1	1,112.1	277.2	1,389.3	5,006.4
2012	31.4	37.3	1,010.6	130.7	137.1	927.5	742.4	51.3	2.9	0.3	0.0	3,071.5	716.7	258.1	974.8	4,046.3
2013	73.3	63.2	658.7	308.3	269.6	902.5	1,324.2	70.6	48.4	4.4	0.0	3,723.2	1,136.7	297.9	1,434.5	5,157.8
2014	86.4	16.5	523.5	172.0	131.8	804.5	501.9	26.2	12.6	0.0	0.0	2,275.5	1,627.0	131.2	1,758.2	4,033.7
2015	14.4	10.0	485.3	67.0	140.8	406.8	600.3	41.9	3.5	0.0	0.0	1,770.1	1,108.0	207.7	1,315.7	3,085.7
2016	14.2	17.6	230.1	128.4	63.3	697.7	659.6	5.9	0.5	0.0	0.0	1,817.2	1,545.1	138.1	1,683.2	3,500.4
2017	22.0	37.7	392.3	59.8	94.9	477.3	626.4	27.8	0.0	0.1	0.0	1,738.3	1,091.6	108.0	1,199.6	2,937.9
2018	16.0	13.4	389.5	39.2	85.5	181.7	465.3	4.2	0.0	0.0	0.0	1,194.6	993.3	56.8	1,050.1	2,244.8
2019	38.0	14.7	195.6	104.1	67.1	498.0	412.9	10.9	1.0	0.0	0.0	1,342.2	764.1	44.6	808.7	2,150.9
2020	19.0	3.2	67.2	36.9	71.2	203.7	520.1	1.6	0.0	0.0	0.0	922.9	734.8	52.2	787.0	1,710.0

Table 23. Results of 2020 commercial quota accounting in pounds. Source: 2021 state compliance reports. 2020 quota was based on Addendum VI and approved conservation equivalency programs.

State	Add VI (base)	2020 Quota^	2020 Harvest	Overage
Ocean				
Maine*	154	154	-	-
New Hampshire*	3,537	3,537	-	-
Massachusetts	713,247	735,240	386,924	0
Rhode Island	148,889	148,889	115,891	0
Connecticut*	14,607	14,607	-	-
New York	652,552	640,718	473,461	0
New Jersey**	197,877	215,912	-	-
Delaware	118,970	142,474	137,986	0
Maryland	74,396	89,094	83,594	0
Virginia	113,685	125,034	77,239	0
North Carolina	295,495	295,495	0	0
Ocean Total	**2,333,409**	**2,411,154**	**1,275,095**	**0**
Chesapeake Bay				
Maryland	**2,588,603**	1,442,120	1,273,757	0
Virginia		983,393	611,745	0
PRFC		572,861	400,319	0
Bay Total		**2,998,374**	**2,285,821**	**0**

* Commercial harvest/sale prohibited, with no re-allocation of quota.

** Commercial harvest/sale prohibited, with re-allocation of quota to the recreational fishery.

^ 2020 quota changed through conservation equivalency for MA (735,240 lbs), NY (640,718 lbs), NJ (215,912 lbs), DE (142,474 lbs), MD (ocean: 89,094 lbs; bay: 1,445,394 lbs), PRFC (572,861 lbs), VA (ocean: 125,034 lbs; bay: 983,393 lbs).

Note: Maryland's Chesapeake Bay quota for 2020 was adjusted to account for the overage in 2019.

10.0 FIGURES

Note: Figures 1-3 are in-text.

Figure 4. Atlantic striped bass female spawning stock biomass and recruitment, 1982-2017. Source: 2018 Benchmark Stock Assessment.

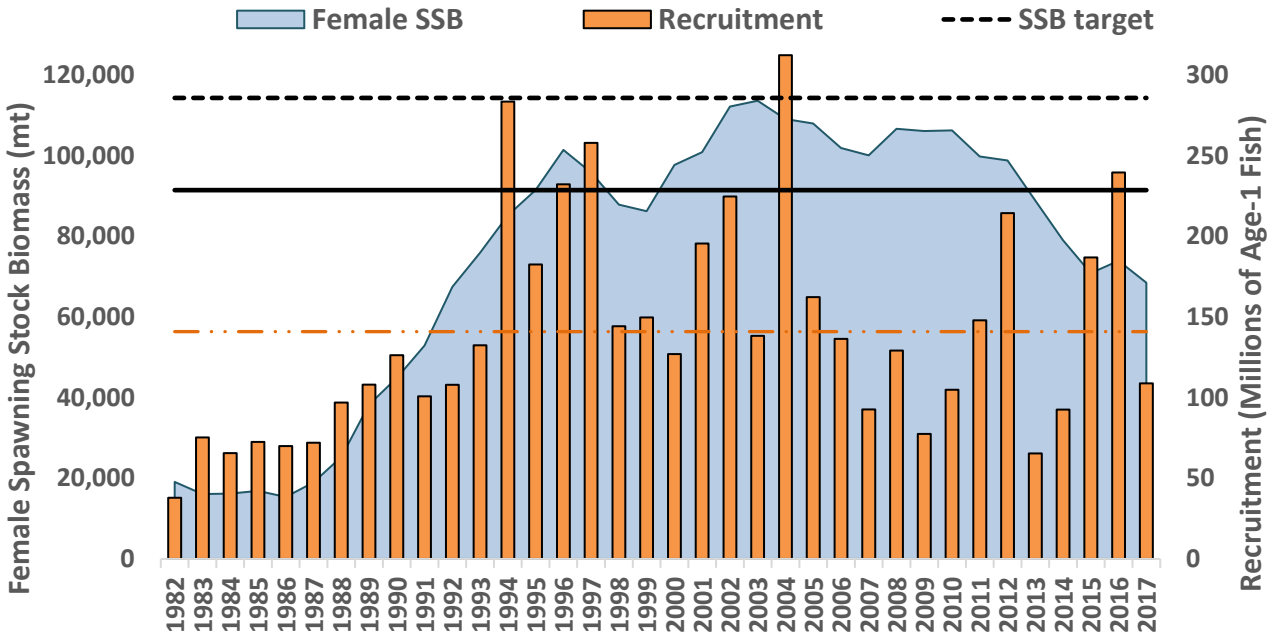


Figure 5. Atlantic striped bass fishing mortality, 1982-2017. Source: 2018 Benchmark Stock Assessment.

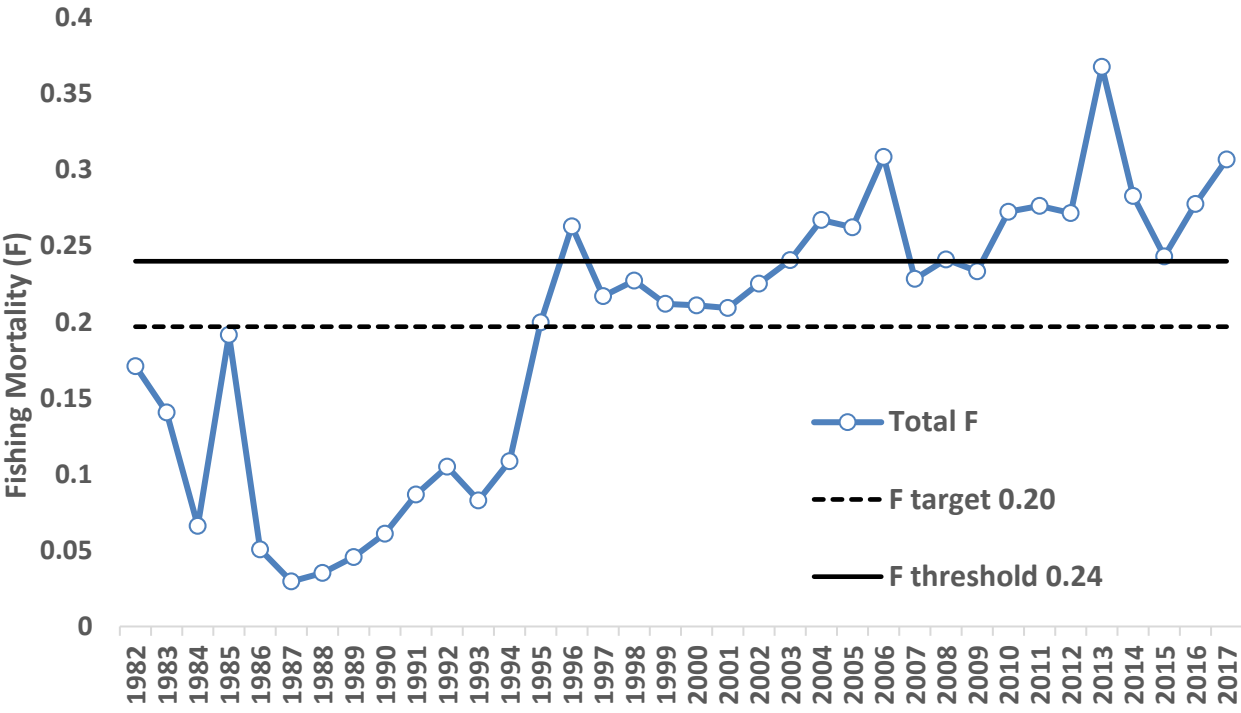


Figure 6. Albemarle Sound-Roanoke River striped bass female spawning stock biomass and recruitment (abundance of age-1), and biological reference points, 1991-2017. Source: 2020 A-R Stock Assessment (Lee et al. 2020).

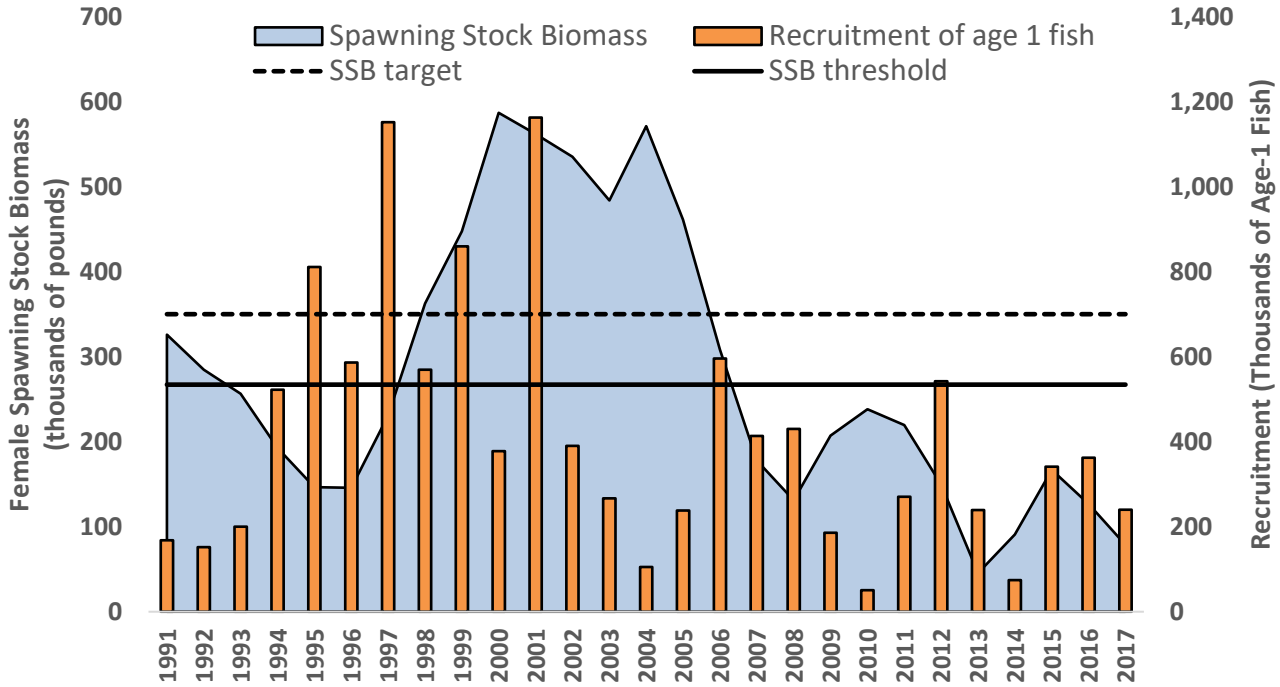


Figure 7. Albemarle Sounds-Roanoke River striped bass fishing mortality (F) estimates, and biological reference points, 1991-2017. Source: 2020 A-R Stock Assessment (Lee et al. 2020).

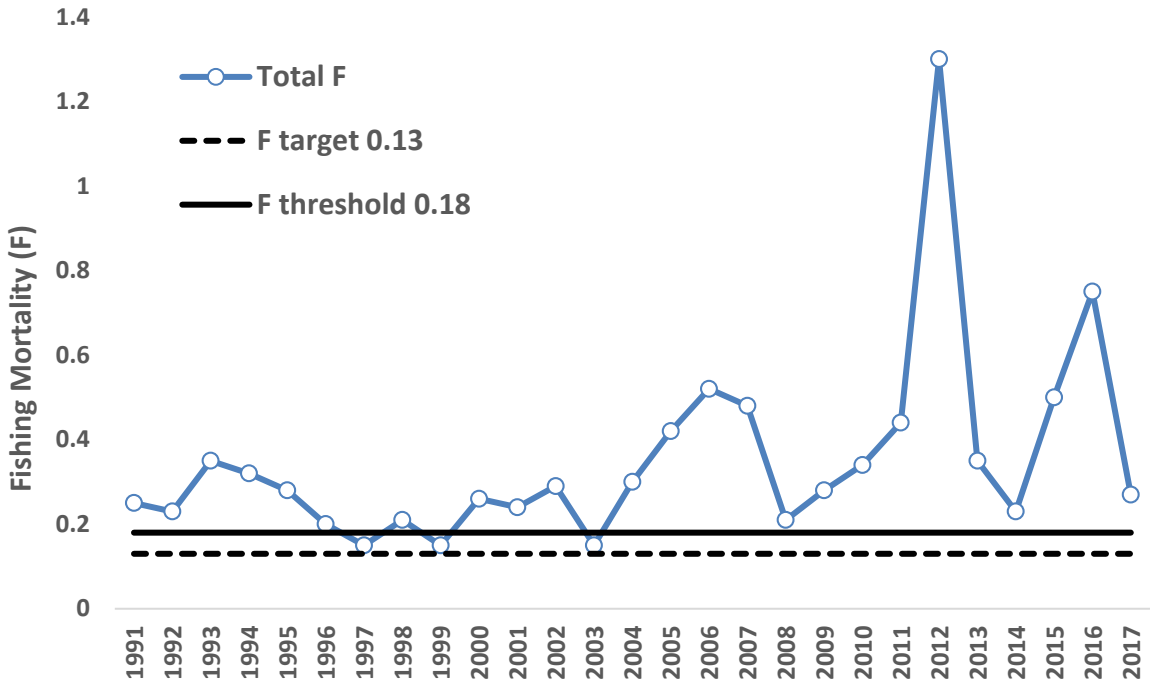


Figure 8. Total Atlantic striped bass removals by sector in numbers of fish, 1982-2020. Note: Harvest is from state compliance reports/MRIP, discards/release mortality is from ASMFC. Estimates exclude inshore harvest from A-R.

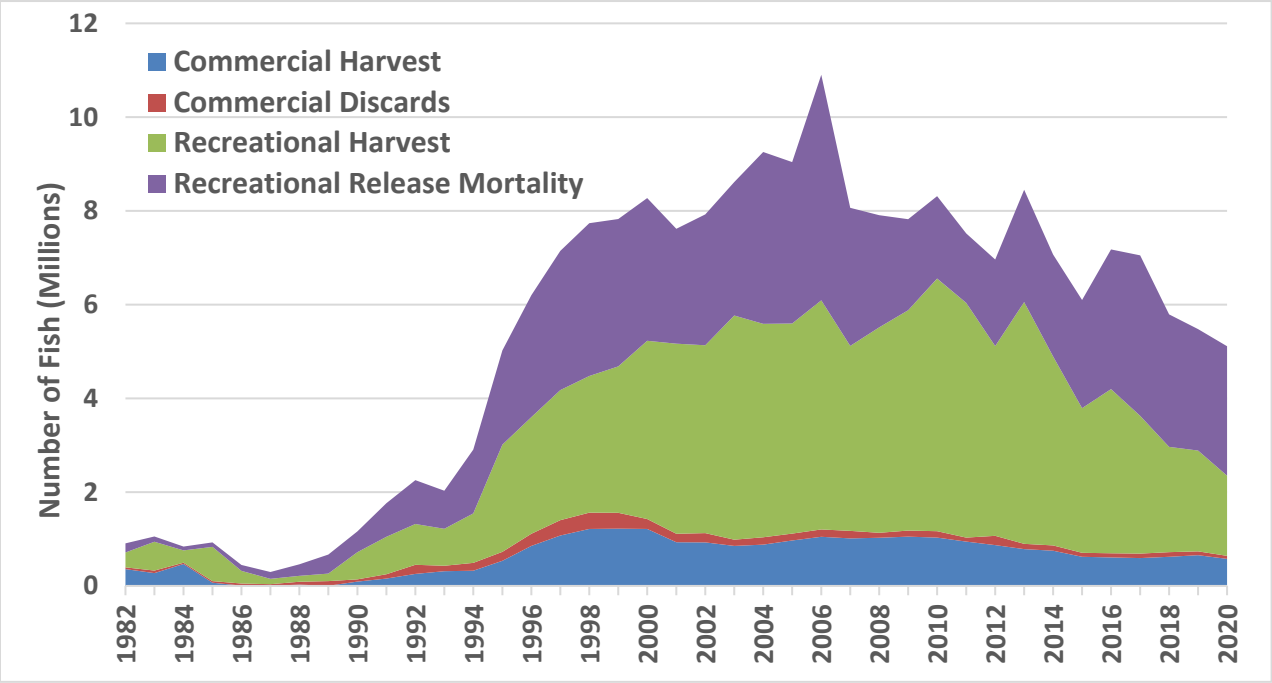


Figure 9. Commercial Atlantic striped bass landings by state in pounds, 1990-2020. Source: State compliance reports. Commercial harvest and sale prohibited in ME, NH, CT, and NJ. NC is ocean only.

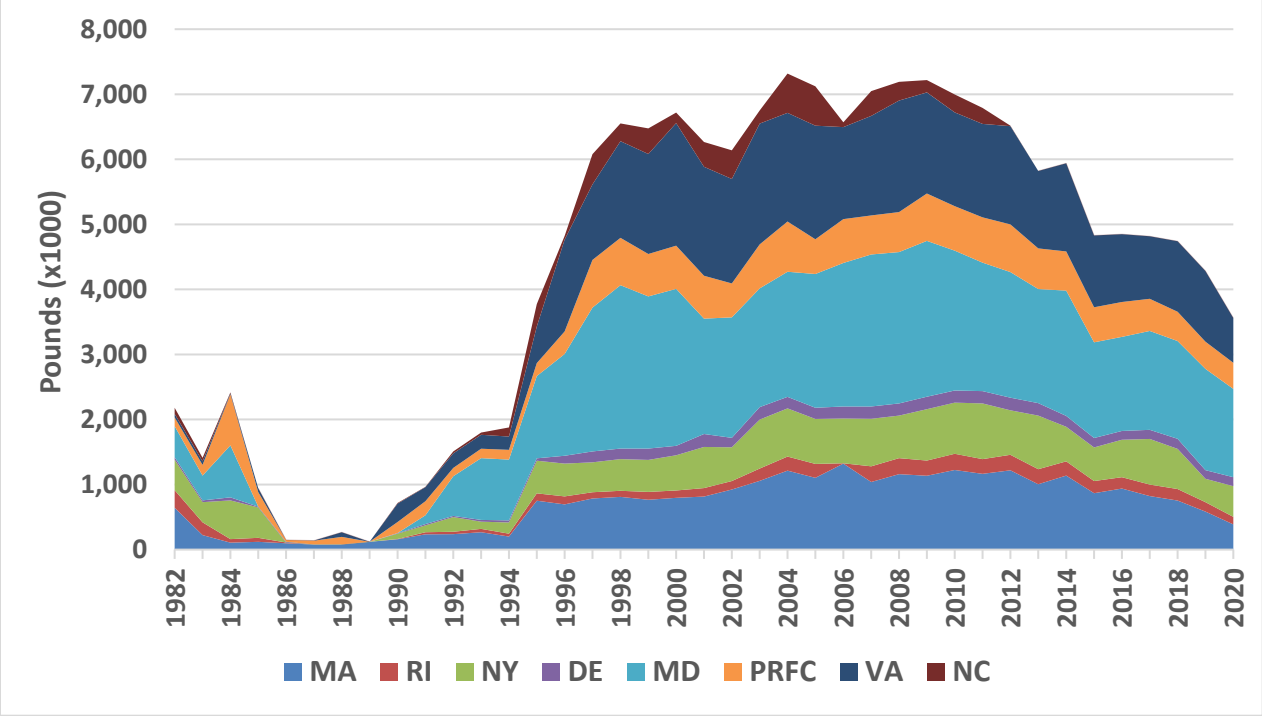
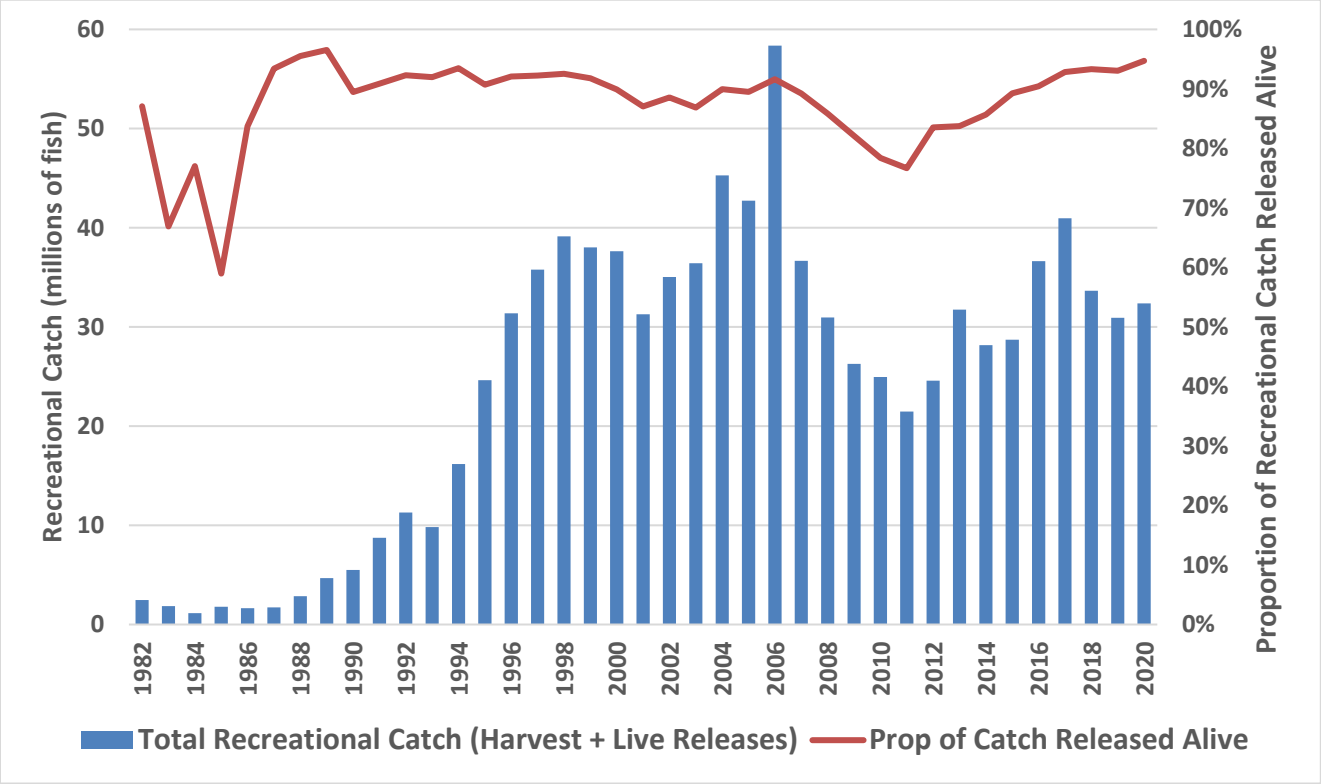


Figure 10. Total recreational catch and the proportion of fish released alive, 1982-2020. Source: MRIP/ASMFC. Estimates exclude inshore harvest from A-R.



Emilie Franke

From: Zach <zachsabri@gmail.com>
Sent: Tuesday, September 28, 2021 1:24 PM
To: Emilie Franke
Subject: [External] Striped Bass

Hi, please keep the strict slot limits for striped bass in place indefinitely. Dan Mckiernan the head of the Department of marine wildlife in Massachusetts allowed commercial fisherman to slaughter 735,000 pounds of any sized fish this year due to Covid financial burdens and that is unacceptable as those commercial fisherman were getting Covid unemployment check for a year. Please harden your stance on he slot limit, circle hooks and continue to heavily manage the primary food sources of striped bass. These fish need help and they need it bad. Please do not allow them to ever reach the 1985 population levels again. I think they should have the same protection as blue marlin if not more since they are far more vulnerable but I understand politics makes it hard to give them this protection but all we ask is you do your best in fighting for them to thrive in population.
Please also keep in mind poaching is far more prevalent than people in management positions understand, you have to be out there fishing 6 nights a week to see the extreme levels of poaching going on and you guys should consider that in data analysis and policy suggestions.

Thank you for your time.

Sent from my iPhone

Atlantic States Marine Fisheries Commission

Horseshoe Crab Management Board

October 21, 2021
8:30 – 10:00 a.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1.	Welcome/Call to Order *(J. Cimino)*	8:30 a.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from October 2020	8:30 a.m.
3.	Public Comment	8:35 a.m.
4.	Set 2022 Harvest Specifications **Final Action** • Review Horseshoe Crab and Red Knot Abundance Estimates and 2021 Adaptive Resource Management Model Results *(J. Sweka)* • Set 2022 Specifications *(C. Starks)*	8:45 a.m.
5.	Progress Update on Revision to the ARM Framework *(J. Sweka)*	9:15 a.m.
6.	Consider Fishery Management Plan Review and State Compliance for the 2020 Fishing Year *(C. Starks)* **Action**	9:45 a.m.
7.	Election of Vice Chair *(J. Cimino)* **Action**	9:55 a.m.
8.	Other Business/Adjourn	10:00 a.m.

The meeting will be held via webinar, click here for details
Sustainable and Cooperative Management of Atlantic Coastal Fisheries

MEETING OVERVIEW

Horseshoe Crab Management Board Meeting
Wednesday, October 21, 2020
8:30 – 10:00 a.m.
Webinar

Chair: Joe Cimino (NJ) Assumed Chairmanship: 10/19	Horseshoe Crab Technical Committee Chair: Jeff Brunson (SC)	
Vice Chair: VACANT	Horseshoe Crab Advisory Panel Chair: Allen Burgenson (MD)	Law Enforcement Committee Representative: Doug Messeck (DE)
Delaware Bay Ecosystem Technical Committee Chair: Wendy Walsh (FWS)	Adaptive Resource Management Subcommittee Chair: Dr. John Sweka (FWS)	Previous Board Meeting: October 21, 2020
Voting Members: MA, RI, CT, NY, NJ, DE, MD, DC, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (16 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from October 21, 2020

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Set 2022 Harvest Specifications (8:45-9:15 a.m.) Final Action

Background

- In September 2021, the DBE TC and Adaptive Resource Management (ARM) Subcommittee met to review results of 2020-2021 horseshoe crab and red knot population abundance surveys in the Delaware Bay region (**Supplemental Materials**).
- The Virginia Tech Trawl Survey was conducted in 2020, so the ARM Subcommittee used population estimates from this survey to estimate horseshoe crab abundance in the Delaware Bay region. A report was also provided on the red knot stopover population estimate for 2021 (**Briefing Materials**).
- The ARM model was run using estimated abundances of horseshoe crabs in fall of 2020 and red knots in spring of 2021 to provide a recommendation for harvest specifications for Delaware Bay states in 2022 (**Briefing Materials**).

Presentations

- Horseshoe Crab and Red Knot Abundance Estimates and 2021 ARM Model Results by J. Sweka

Board actions for consideration at this meeting

- Consider ARM harvest recommendations and set specifications for states in the Delaware Bay region in 2022.

5. Progress Update on Revision to the ARM Framework (9:15-9:45 a.m.)

Background

- In October 2019, the Board directed the ARM Subcommittee to begin working on updates to the Adaptive Resource Management (ARM) Framework to revisit several aspects of the ARM model to incorporate horseshoe crab population estimates from the Catch Multiple Survey Analysis (CMSA) model used in the 2019 Benchmark Stock Assessment and the most current scientific information available for horseshoe crabs and red knots.
- In the last year, the ARM Subcommittee has been working on incorporating the CMSA model into the ARM, moving the model to a new software platform, improving model structure, and updating the red knot population model.
- The ARM model revision is tentatively scheduled to go to peer review in late 2021 and be brought to the Board at the Winter 2022 meeting.

Presentations

- Progress Update on ARM Revisions by J. Sweka

6. Consider Fishery Management Plan Review and State Compliance for the 2020 Fishing Year (9:45-9:55 a.m.) Action

Background

- State Compliance Reports were due July 1, 2020.
- The Plan Review Team reviewed each state report and compiled the annual FMP Review (**Supplemental Materials**).
- South Carolina, Georgia, and Florida have requested and meet the requirements of *de minimis* status.

Presentations

- FMP Review of the 2020 Fishing Year by C. Starks

Board actions for consideration at this meeting

- Accept FMP Review and State Compliance Reports for the 2020 Fishing Year.
- Approve *de minimis* requests.

8. Other Business/Adjourn

Horseshoe Crab

Activity level: Medium

Committee Overlap Score: Low (SAS overlaps with BERP)

Committee Task List

- ARM & DBETC – Incorporate Catch Multiple Survey Analysis horseshoe crab population estimates into the ARM model
- TC – Communicate with Kepley Biosystems' to determine whether trials should be conducted for OrganoBait
- TC – July 1st: Annual compliance reports due
- ARM & DBETC – Fall: Annual ARM model to set Delaware Bay specifications, review red knot and VT trawl survey results

TC Members: Jeff Brunson (SC, TC Chair), Derek Perry (MA), Natalie Ameral (RI, Vice Chair), Deb Pacileo (CT), Catherine Ziegler (NY), Samantha Macquesten (NJ), Jordan Zimmerman (DE), Steve Doctor (MD), Ellen Cosby (PRFC), Adam Kenyon (VA), Jeffrey Dobbs (NC), Eddie Leonard (GA), Claire Crowley (FL), Chris Wright (NMFS), Joanna Burger (Rutgers), Mike Millard (USFWS), Kristen Anstead (ASMFC), Caitlin Starks (ASMFC)

Delaware Bay Ecosystem TC Members: Wendy Walsh (USFWS, Chair), Amanda Dey (NJ), Samantha Macquesten (NJ), Henrietta Bellman (DE, Vice Chair), Jordan Zimmerman (DE), Steve Doctor (MD), Adam Kenyon (VA), Jim Fraser (VA Tech), Eric Hallerman (VA Tech), Mike Millard (USFWS), Kristen Anstead (ASMFC), Caitlin Starks (ASMFC)

ARM Subcommittee Members: John Sweka (USFWS, Chair), Larry Niles (NJ), Linda Barry (NJ), Henrietta Bellman (DE), Jason Boucher (DE), Steve Doctor (MD), Wendy Walsh (USFWS), Conor McGowan (USGS/Auburn), David Smith (USGS), Jim Lyons (USGS, ARM Vice Chair), Jim Nichols (USGS), Kristen Anstead (ASMFC), Caitlin Starks (ASMFC)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

HORSESHOE CRAB MANAGEMENT BOARD

Webinar
October 21, 2020

These minutes are draft and subject to approval by the Horseshoe Crab Management Board.
The Board will review the minutes during its next meeting.

TABLE OF CONTENTS

INDEX OF MOTIONS

ATTENDANCE

Board Members

Dan McKiernan, MA (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Conor McManus, RI, proxy for J. McNamee (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Bill Hyatt, CT, proxy for J. Davis (AA)
John McMurray, NY, proxy for Sen. Kaminsky (LA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Sen. Houghtaling (LA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Mike Luisi, MD, proxy for Bill Anderson (AA)
Russell Dize, MD (GA)
Phil Langley, MD, proxy for Del. Stein (LA)
Pat Geer, VA, proxy for S. Bowman (LA)
Chris Batsavage, NC, proxy for S. Murphey (AA)
Jerry Mannen, NC (GA)
Mel Bell, SC, proxy for R. Boyles (AA)
Malcolm Rhodes, SC (GA)
Sen. Ronnie Cromer, SC (LA)
Carolyn Belcher, GA, proxy for D. Haymans (AA)
Spud Woodward, GA (GA)
Jim Estes, FL, proxy for J. McCawley (AA)
Chris Wright, NMFS
Mike Millard, USFWS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Allen Burgenson, Advisory Panel Chair
John Sweka, ARM Subcommittee Chair

Staff

Robert Beal
Toni Kerns
Maya Drzewicki
Max Appelman
Kristen Anstead
Pat Campfield
Chris Jacobs
Jeff Kipp
Laura Leach
Savannah Lewis
Sarah Murray
Caitlin Starks
Deke Tompkins

Guests

Bill Anderson, MD (AA)
Mike Armstrong, MA DMF
Pat Augustine, Coram, NY
Linda Barry, NJ DEP
Henrietta Bellman, DE DFW
Sharon Benjamin, NOAA
Alan Bianchi, NC DENR
Nora Blair, Charleston, SC
Jason Boucher, DE DFW
Jeff Brust, NJ DEP
Kristin Butler, US Senate Fellow
Mike Celestino, NJ DEP
Heather Corbett, NJ DEP
Jessica Daher, NJ DEP
Jason Didden, MAFMC
Lynn Fegley, MD DNR
Cynthia Ferrio, NOAA
Lewis Gillingham, VMRC
Angela Giuliano, MD DNR
Walker Golder, Audubon Society
Pam Lyons Gromen, Wild Oceans
Doug Haymans, GA (AA)
Brett Hoffmeister, Assoc. of Cape Cod
Adam Kenyon, VMRC
Kris Kuhn, PA FBC
Rob LaFrance, Quinnipiac Univ.

Guests (continued)

Christina Lecker, FujiFilm
Shanna Madsen, VMRC
John Maniscalco, NYS DEC
Kim McKown, NYS DEC
Jason McNamee, RI (AA)
Nichola Meserve, MA DMF
Steve Minkkinen, FL FWS
Brandon Muffley, MAFMC
Allison Murphy, NOAA
Eileen Murphy, NJ Audubon Soc.
Brian Neilan, NJ DEP
Ken Neil
Derek Orner, NOAA
Cheri Patterson, NH (AA)
Derek Perry, MA DMF
Michael Pierdinock
Tim Prudente, *Baltimore Sun*
Samantha Robinson, DE DFW
Tim Sartwell, NOAA
Bill Semrau, NOAA
McLean Seward, NC DENR
Alexei Sharov, MD DNR
Benjie Swan, Limuli Labs
Stephanie Sykes, Cape Cod Fishermen
Helen Takade-Heumacher, FL FWS
Beth Versak, MD DNR
Megan Ware, ME DMR
Anna Weinstein, Audubon Society
John Whiteside
Angel Willey, MD DNR
Jordan Zimmerman, DE DNR

The Horseshoe Crab Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Wednesday, October 21, 2020, and was called to order at 10:30 a.m. by Chair Joe Cimino.

CALL TO ORDER

CHAIR JOE CIMINO: Good morning everybody. Caitlin, do we have my slide?

MS. CAITLIN STARKS: Oh, you want to put that up now, okay. Maya, could you please pull up the last slide I sent you?

CHAIR CIMINO: Everybody, my name is Joe Cimino. I'm the New Jersey Administrative Commissioner. I'm Chair of the Horseshoe Crab Management Board. I was working on designing a 2020 logo with the ASMFC staff, because New Jersey was going to be hosting. The good news there is that we think we will be able to be hosting in person in 2021, which is the 80th year of the ASMFC Annual Meeting. A little bit of disappointment, but also going to be pretty exciting.

One other thing that bums me about this in particular, is that I'm not going to get a chance to spend some time with Dr. John Sweka, at the Fish and Wildlife Service, who hopefully is joining us virtually. John will walk us through some agenda items. I don't know if we can advance some of the slides here. But I did design a new 79th Annual Meeting logo for us all, for our socially distanced and new virtual reality that we're all living with here.

I just wanted to start out, hopefully get a few smiles from folks again. The best out of this for us in New Jersey, is that hopefully we'll get another crack at this next year.

APPROVAL OF AGENDA

CHAIR CIMINO: We'll move on to the agenda. Now we'll attempt to look at our most up to date version of this. First is Approval of the Agenda. Does anyone have any additions or corrections they feel need to be made to the agenda? Anyone on the Board?

MS. TONI KERNS: I see no hands, Joe.

CHAIR CIMINO: Thanks Toni, we'll consider that approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR CIMINO: Next is the approval of proceedings from the last time this Board met, which was last October. Does anyone have any corrections to the minutes or modifications they would like to see made?

MS. KERNS: I see no hands.

PUBLIC COMMENT

CHAIR CIMINO: Very good, thank you. Next up we'll take public comment. Folks, this is public comment for any items not on the agenda. We have a couple items that are action items. We will be setting the 2021 harvest specifications, and as I mentioned, Dr. Sweka will walk us through the ARM model results. I know in the past there have been some public comments there, so I will, before we vote on a final motion for those items, also take public comment on those agenda items. Is there anything not on the agenda that the public would like to comment on?

MS. KERNS: I don't see any hands, Joe.

CHAIR CIMINO: Okay, Toni.

MS. KERNS: Anna Weinstein has now raised her hand.

CHAIR CIMINO: We'll open the floor, thank you.

MS. ANNA WEINSTEIN: Good morning Chair Cimino, members of the Horseshoe Crab Management Board, can you hear me?

CHAIR CIMINO: Yes, we can.

MS. WEINSTEIN: I'm Anna Weinstein. I am the Director of Marine Conservation for Audubon. I'm representing Audubon today. We're also part of the

Horseshoe Crab Recovery Coalition, which is a collaboration of scientists, NGOs and others dedicated to recovering horseshoe crabs on the Atlantic coast by 2030.

We submitted a brief letter this morning, and the letter describes that we are dismayed to see a continued lack of recovery of horseshoe crabs in the Delaware Bay survey region since the 1990s, as the supplemental materials show, and the decreased relative abundance of horseshoe crabs in 2019, relative to the last five years.

Plus reduced red knot numbers show the adaptive resource management framework is not working to recover horseshoe crab in the Delaware Bay area. The supplemental materials also described a nearly 50 percent increase relative to 2018 of estimated coastwide biomedical harvest. As you know, the rufa red knot was listed as threatened under the ESA recently.

We in our short letter, we list some concrete steps this Board must take in order to not just support, but actually allow recovery of the red knot, toward delisting criteria that are being established by the Fish and Wildlife Service, and also support the entire marine ecosystem that depends on horseshoe crabs. I won't run through all those, but we hope that you take a look at the letter, and we look forward to engaging with the Board toward recovery of horseshoe crabs by 2030. Thank you so much.

CHAIR CIMINO: Thank you, Anna. Yes, the Board will take a look at those materials. We will be getting an update on the ARM model. I would open it up if Dr. Sweka has any comments on the public comment here. From what I've read, I did see that some of the survey trends look better than the idea that it's all declining. Caitlin, we will turn it over to you now.

CONSIDER SETTING THE 2021 HARVEST SPECIFICATIONS

MS. STARKS: The first item on the agenda is actually going to be presented by John Sweka, and that is to consider setting the 2021 harvest specifications. I will go ahead and let him present on that.

DR. JOHN A. SWEKA: Okay, thank you Mr. Chair, thank you, Caitlin. I'll be speaking about the Adaptive Resource Management recommendations for harvest of Delaware Bay horseshoe crabs for 2021**.** Under our Adaptive Resource Management Framework, our objective statement is to manage the harvest of horseshoe crabs in the Delaware Bay to maximize harvest, but also maintain ecosystem integrity, and provide adequate stopover habitat for migrating shore birds.

REVIEW HORSESHOE CRAB AND RED KNOT ABUNDANCE ESTIMATES AND 2020 ADAPTIVE RESOURCE MANAGEMENT MODEL RESULTS

DR. SWEKA: In particular, red knots is our surrogate species for all shore birds, and the one that we're most concerned with. The red knot, so the Adaptive Resource Management model takes into account red knots and horseshoe crab population threshold, and the inputs of those annual harvest recommendations are the abundance of both red knots and horseshoe crabs.

Within the framework there are five possible harvest packages that we can select from, and annually we make harvest recommendations at this meeting, which will be implemented the following year. This table shows the five possible harvest packages to be implemented, and these were adopted back in 2012, when the ARM was accepted for management.

The harvest policies or packages range from a complete moratorium of no male and no female harvest up to a maximum of 420,000 males and 210,000 females within a year. Since the ARM Framework has been adopted for management, we have been consistently recommending Harvest Package 3, which is a 500,000 male harvest and 0 female horseshoe crab harvest.

The way the optimization program works is that the program looks through all the possible states of populations of those species, and different life stages of both species. Then it builds a giant matrix of the combinations of population sizes of red knots and horseshoe crabs, and applies a harvest package to that, and calculates the reward of that harvest under each possible state of population for both species.

Ultimately, this is how we select the optimal harvest package, given our current state of red knots and current state of horseshoe crabs. The population threshold should dictate when the harvest of horseshoe crab has value are based on abundance of both species. The threshold for horseshoe crabs is a female horseshoe crab abundance that is equal to at least 80 percent of the theoretical carrying capacity of horseshoe crab, or essentially 11.2 million female horseshoe crabs in the Delaware Bay population.

For red knots the threshold is 81,900 birds. These thresholds dictate that when the harvest of horseshoe crabs has value, and there is value in female horseshoe crab harvest if either one of these thresholds is met. If the red knots are meeting their threshold, we can safely say that horseshoe crabs aren't limiting red knot population growth and sustainability. If the female horseshoe crab meets their threshold, we can say that there are plenty of horseshoe crabs, and again not limiting red knots. This graph illustrates the population estimate of red knots stopping over in the Delaware Bay since 2011. You can see as it has fluctuated annually, and these annual fluctuations could be due to changes in stopover duration, or changes in the proportion of the total red knot population that visits Delaware Bay in a given year.

The 2020 estimates were slightly lower than 2016 to 2019 estimates, but there is greater uncertainty on our 2020 estimates, compared to the previous four years. Twenty-twenty was kind of a unique year, in that the abundance of red knots in the Bay at a particular point in time during the stopover season was greatest in the first time period.

Usually the population that stopped over at the Bay tends to increase through time, and then decrease as the birds eventually continue on in their migration. But 2020 was kind of a unique year, because the greatest number of birds encountered was at the first time period in the stopover. Also, in 2020, obviously with the pandemic going on, you know that impacted some of the resighting ability, which can also contribute to the wider confidence intervals on the estimate for 2020.

In 2020 the estimated stopover duration was 10.7 days, which was less than the 12.1 days in 2019. There is a typo on that slide, that should say 2020 estimated stopover population or stopover duration, and also, it's the 2020 population was estimated at 40,444 birds, which of course is below the threshold of 81,900 birds, but still within the range that we've seen since 2011.

The green line here on the graph just demonstrates the peak aerial counts that are observed each year since 2011, and you can see those have fluctuated somewhat through time as well. The abundance of horseshoe crab is assessed from the Virginia Tech Trawl Survey, which is generally conducted in the fall of the year, typically around October.

The Virginia Tech Trawl Survey did lose funding for a few years, so between 2012 and 2015, we used a composite index that was correlated to and based on the Delaware 30 foot trawl, and New Jersey's Delaware Bay trawl, and the New Jersey Ocean Trawl Survey, and we came up with a correlation to the overlapping years with Virginia Tech Trawl to fill in those missing years.

The 2019 estimates in the fall ended up being 4.7 million females, and of course this is also under the 11.2 million threshold for horseshoe crab abundance. 2019 did show a decrease in abundance from previous years. This is a little bit perplexing, we're not exactly sure why the abundance of horseshoe crab declined, you know from 2018 to 2019, but part of the reason

may be due to the timing of the Virginia Tech Trawl Survey.

In 2019 it was conducted approximately a month earlier than it is typically conducted. A lot of this has to do with, and since it was conducted earlier than normal, water temperatures were higher than normal. That earlier timing of the trawl survey, and also the warmer water temperatures, may have affected the catchability of the trawl survey.

Perhaps horseshoe crabs hadn't migrated to the coastal waters like they typically do another year, and just weren't available for the trawl survey intercepting and capture them. This is something that we are examining, moving forward, is to include the timing of the survey, and also water temperature, to try to standardize these catches, and take into account the possible effect on catchability. In the end, 2019 we had 4.7 million females, and 8.9 million males for our population estimate, which is then carried over to the spring of 2020, when the birds are stopping over in Delaware Bay.

Just a summary table here of horseshoe crab and red knot abundance estimates, for horseshoe crab 8.9 million males, 4.7 million females. For red knots, 40,444 red knots, both males and females combined. When we put these inputs into the decision maker that is generated by the ARM optimization routine, the recommended harvest package is consistent with previous years, and that is Harvest Package Number 3, that calls for a harvest of 500,000 males and 0 females.

At this time, you can think of it this way, since both of these population estimates for crabs and birds are still below their threshold, there is no value in harvesting females, and no female harvest is recommended at this time. When we apply our allocation schemes to the recommended total harvest of Delaware Bay origin crabs, it comes out to an allocation of 162,000 male only for Delaware and New Jersey.

For Virginia and Maryland, they are allowed to harvest more males, because not all crabs in their state waters are of Delaware Bay origin. For Maryland it's approximately 256,000 males, and for Virginia 81,000 males, and those states again are harvesting males. I guess with that I will take any questions that we have on the recommendations for 2021 harvest year.

SET 2021 HARVEST SPECIFICATIONS

CHAIR CIMINO: Excellent, thank you, John. We're looking for questions from the Board right now. Toni, do we have any hands?

MS. KERNS: So far Joe, I don't see any hands. I'll give folks a second. John Clark.

MR. JOHN CLARK: Thank you for the presentation, John. I was just curious, you mentioned that the Virginia Tech Trawl had to trawl a month earlier in 2019. Did you have a chance to look at the other surveys to get horseshoe crabs? The Delaware 30' trawl, the New Jersey Delaware Bay Trawl. Did they also show similar results, or were they more what you were expecting?

DR. SWEKA: Yes, John, I guess I should have looked at that prior to the meeting here. Off the top of my head I can't remember exactly how their numbers trended. I don't recall any significant decline like we saw in the Virginia Tech Survey, so again perhaps, you know it is a timing issue, and the hot water temperature issue affected catchability of Virginia Tech.

MS. KERNS: Joe, you also have Mike Millard.

CHAIR CIMINO: Okay great, Mike.

MR. MIKE MILLARD: Thanks, John, for the presentation. I think I ask this every year. Imbedded in that ARM process in the modeling, are three competing models that attempt to further explain the relationship between the horseshoe crabs and red knots survival. I'm not going to attempt to characterize those three. You might do it to remind folks. But I'm wondering, after another year of data,

are we getting any closer to one of those competing models showing strength, or showing that relationship stronger than the others? Are we learning anything from this process, after another year of data?

DR. SWEKA: Yes, thanks for that question, Mike. I'll just reiterate the three possible models governing the population dynamics for red knots are Model Number 1 is a no effect model, so red knot abundance and population dynamics are clearly independent of horseshoe crab population dynamics.

Model Number 2 is what we kind of term the fecundity only model, where horseshoe crabs have an influence on the probability of red knots gaining weight while they are stopped over in the Delaware Bay, and then there is differential fecundity for light versus heavy birds. Then Model 3 is essentially a full effect model, where horseshoe crab abundance affects both fecundity and survival of birds that stopover in Delaware Bay.

Yes, are we getting any closer to adding weight in one of the models? That is going to be part of our ongoing update and revisions to the ARM Framework, which I'll discuss also during this Board meeting. Really, right now the population of red knots has been fairly stable through time. Horseshoe crabs have trended upward, but now have trended downward.

Right now, Mike, I would say the decision on that, have we put more faith in one versus the other two of the red knot models? I would say stand by, and that will be something that we'll be examining and discussing as our third ARM revision for dates.

MS. KERNS: Joe, you have David Borden as well.

CHAIR CIMINO: Okay good, go ahead, David.

MR. DAVID V. BORDEN: I've got a question on red knots. Have the governmental agencies that manage it, I think primarily U.S. Fish and Wildlife Service, apportioned mortality on red knots, and looked at it from a perspective of, within the United States versus outside of the United States? Then the related question is, what are the major sources of mortality on the red knot population?

DR. SWEKA: Well, I must admit that I am not a red knot expert. But under the listing document, you know the listing decision by the Fish and Wildlife Service, the Fish and Wildlife Service has expressed climate change and conditions in the Arctic as possibly one of the major factors, you know influencing red knot populations. But specifically, you know dictating the relative merits of various mortality sources on red knots, I'm probably not the best person to ask that question to.

MS. KERNS: We have Mike Luisi and Roy Miller.

CHAIR CIMINO: Okay, go ahead, Mike.

MR. MIKE LUISI: Thanks for the presentation, John. When you were talking about the years when the trawl survey was not in operation, you discussed a composite index that was used to produce an estimate for the horseshoe crab population. Was that just a compilation of other work being done by the states in that surrounding area? Is that how that estimate was determined?

DR. SWEKA: Yes. We came up with a composite index through a linear mixed random effects model that included those surveys. That composite index was then compared to the years when we had overlap with the Virginia Tech Trawl Survey, and used it to fill in the blanks.

MR. LUISI: Okay, yes. Just a quick follow up, Mr. Chairman. I think it would be interesting, given the fact that the Trawl Survey in 2019 was conducted a month early. Personally, I think it would be interesting to see what the results of that, if you were to run that modeling like you did the years when the trawl survey didn't operate, and kind of compare those results with what occurred as a result of working a month early.

Personally, I think it would be an interesting comparison of the model output, based on other surrounding work, versus the actual work, although it was early. Just wanted to throw that out there as an idea.

DR. SWEKA: That is certainly something we can look at.

CHAIR CIMINO: Thanks, Mike, that was a good thought. I appreciate that. Toni, it slipped my memory. Who's in the queue?

MS. KERNS: Roy Miller.

CHAIR CIMINO: Roy, go ahead, thank you.

MR. ROY W. MILLER: Thank you, Joe. Two questions for Dr. Sweka. That 2019 Virginia Tech Trawl Survey. I didn't catch the reason why it was conducted a month early. Was it strictly because water temperatures were warmer, or was it some issue with the vessel? The second question is, do you think there will be a trawl survey done this year in 2020? Thanks.

DR. SWEKA: Like any trawl survey, you know when they can get out on the water is weather dependent. They anticipate getting out on the water, and of course being that the survey is conducted in the fall of the year, looking at potential forecasts for hurricane season. It just so happened when they started the weather was apparently pretty decent.

They happened to be able to get all the trawls, all the tows in, in a quicker time period than normal. Other years, you know the survey can linger on in through November, given poor weather conditions. It was just an early start, given a potential forecast for hurricane season, to try to get all the sampling in. Your second question, to answer that, yes, Virginia Tech has funding to conduct the trawl survey this year.

MR. MILLER: Just a follow up, if I may. I assume that the 2020 survey will go forward as planned, barring any COVID issues. Is that a correct assumption?

DR. SWEKA: That is correct, yes.

MS. KERNS: Joe, you have Rob LaFrance.

CHAIR CIMINO: Broken up.

MR. ROBERT LAFRANCE: Thanks, Mr. Chair, and just a quick question. Thank you for the presentation. I'm new to this Board, and learning a lot, so I really appreciate it. Just a quick question, maybe this is speculative, but I'll ask it anyway. Are there any other reasons, we've talked about water temperature as being a potential impact for the downward trend? I'm just wondering whether there are other things we should be keeping our eye open for, for potential reasons for the downward trend.

DR. SWEKA: That is a good question. Like I said, we're examining the timing in the survey and water temperature as a possible reason why there was a decrease in the Virginia Tech catch. Other, I mean possible reasons could be just overall changes in migration timing of crabs into and out of the Bay, for whatever reason. But yes, it is very difficult to say why we saw that decrease. You know perhaps it is a change, a decrease in abundance.

MR. LAFRANCE: Thank you, I appreciate you giving me the time.

MS. KERNS: There are no other hands raised at this time, Joe. I lied. Hold on, we have two new hands, Chris Wright and Adam Nowalsky.

CHAIR CIMINO: Sure, okay. Go ahead, Chris.

MR. CHRIS WRIGHT: I just wanted to give a little bit more insight into the timing for 2019. When I was issuing the permit, they had requested to start a little earlier for that year, because of the New Jersey welk fishery, so that could be a reason also why they moved up and started a little bit earlier. At least I just checked my e-mail, that is what the rationale was that they were trying to avoid some of those gear conflicts

in that area, in certain parts of the area where they were doing the survey.

CHAIR CIMINO: Okay, well thank you for that addition. We have Adam Nowalsky.

MR. ADAM NOWALSKY: Great, thank you very much. If you're ready for a motion, I'm prepared to make it.

CHAIR CIMINO: I think so, Adam. Unless Toni says we have any other hands.

MS. KERNS: No other hands.

MR. NOWALSKY: Great, I would like to go ahead and move to select Harvest Package 3, 500,000 male only crabs for the 2020 horseshoe crab bait harvest in Delaware Bay.

CHAIR CIMINO: Thank you, Adam, and do we have a second to that motion?

MS. KERNS: You have Roy Miller.

CHAIR CIMINO: Thank you, Roy. We had some great questions. Is there any discussion on the motion from the Board?

MS. KERNS: I see no hands, Joe.

CHAIR CIMINO: Very good, thank you, Toni. As I mentioned, I do want to give the public the chance to comment here. We do have a pretty tight schedule, as far as the time to get through this agenda. If there are any public comments, I would ask that you keep it to three minutes. Thank you. Toni, any hands?

MS. KERNS: I'm just going to give folks a second to see if they would like to raise their hand. I see no hands raised on the public.

CHAIR CIMINO: Very good, thank you. I'm going to ask, are there any objections to this motion?

MS. KERNS: Joe, no objection, but should it be 2021, or is 2020 correct?

MS. STARKS: It should be 2021, Maya, can you correct that typo? Thank you.

CHAIR CIMINO: Well, with that excellent correction, if there is no objection then I think we can just approve this by consent.

PROGRESS UPDATE ON ARM REVISIONS

CHAIR CIMINO: With that, we'll move back to John to hear more about the ARM Model itself, and the Updates and Revisions.

DR. SWEKA: This will go pretty quick. Last year at the October 2019 Board meeting, the Board approved moving forward with a revision of the ARM Model. The 2019 stock assessment was approved for management use, and the big advancement in that was the Catch Multiple Survey Analysis for horseshoe crab was peer reviewed and deemed acceptable the estimated abundance of horseshoe crab.

We also have more than twice the amount of red knot data since the ARM was initiated and we first started working on this back in 2008. The bottom line is that we know more now about those species. Very briefly, this is a synopsis of our terms of reference in the ARM revision. That is to incorporate the stock assessment model, the Catch Multiple Survey Analysis, into the ARM Framework, and account for all sources of mortality, which includes bait, dead discards, biomedical, and natural mortality.

We want to reevaluate the definition of Delaware Bay crabs, update on red knot models, given the new information on red knots and their relationship to horseshoe crabs. We also need to move the model into a new step software platform, because the previous platform is obsolete, and isn't maintained anymore. We're moving it to a new software that can be updated, and continued to be run. We also are going to be conducting sensitivity runs to compare platforms of the previous model platform and the new model, to make sure that we can get the same relative answers and possible harvest decisions.

Our progress to date, we have been in collaboration with Bryan Nuse, who is a University of Georgia Admin post doc student, and Paul Fackler from NC State to convert the optimization model from ASDP to MDPSolve. Paul Fackler, he's the one who originated MDPSolve, so he is the expert on that.

In April 2020 we had our data workshop, bringing all the information together on horseshoe crab and red knot. In July of 2020 we had our first Assessment Workshop, where we discussed replacement of a horseshoe crab age structured model, with the Catch Multiple Survey Analysis model to describe the population dynamics of horseshoe crab, and how this would be done.

We also refined our dead discard estimation method with additional input from literature and TC members. We refined our natural mortality estimates of horseshoe crabs, based on more recent tagging information. Since that time, we've had biweekly meetings of a subgroup of the entire ARM Workgroup. The subgroup is specific to modeling and coding of the models in the new platform.

Our future activities, the reanalysis of red knot tagging data is ongoing by Jim Lyons of USGS. We anticipate by January or February of 2021 having our second assessment workshop, where all the models will now be in their updated forms. By April 2021, a preliminary report completed, May 2021, it will be presented to the Delaware Bay Ecosystem TC, and the Horseshoe Crab TC for review.

In July, we plan to have our peer review workshop, and then by either the August or October 2021 Board meeting, we will present the results of that peer review workshop to the Management Board. Hopefully it is accepted for management use by that time. I think yes that's all, and so I am happy to take any questions on our current progress, and where we're headed.

CHAIR CIMINO: Thank you, John, I appreciate all the work that you guys are doing, especially digging into any available information on the discards. I know that was a concern with our last assessment, and rightly so. Toni, do we have any hands for questions?

MS. KERNS: We have John Clark and Bill Hyatt.

CHAIR CIMINO: Go ahead, John.

MR. CLARK: I'm just curious, what did you mean by reevaluate the definition of Delaware Bay crabs?

DR. SWEKA: That was a term of reference. I mean there has always been some discussion, you know the farther away from the mouth of Delaware Bay you get, what proportion of those crabs are truly Delaware Bay origin crabs? We defaulted to the definition of Delaware Bay origin crabs are crabs that could potentially spawn within Delaware Bay during some portion of their life. We know that there is mixing of populations, both to the north and in the south. We've looked at tagging information on how crabs migrate. We've looked at genetic information on how populations in various areas along the coast are related.

Kind of a spoiler alert, not much is going to change. Essentially, the Delaware Bay population is the area that is sampled by the Virginia Tech Trawl Survey. Given the most recent genetic information and tagging information, it is reaffirming that when that Virginia Tech Trawl Survey was originally set up, they had a good idea of what were really Delaware Bay crabs. That is essentially going to be our population of interest.

CHAIR CIMINO: I'm sorry, was it Bill Hyatt next?

MR. WILLIAM HYATT: Yes, thank you, this is a question for John. It doesn't have to do specifically with the information that he just presented, but it is a follow up to some discussion that took place at previous meetings. I think a year ago the question was raised regarding the crab egg densities on (broke up) and some concern that those densities are going down over time, and may have decoupled from our index estimates of a number of female crabs.

At that time, you responded that there were some problems with that egg density data relative to the methodology being used to collect it, and the time series information that was available, and the fact that actually different methods were being used to collect it in different areas.

My question this time around is, is there any research that you're aware of underway to improve the methodology being used to monitor egg densities, or to identify a better methodology to be applied, or is there any research underway to better explore and understand the relationship between female crab numbers, and ultimate egg densities that are produced? The assumption here is that while there may be a relationship between the number of female crabs and red knots, the direct link is in effect eggs that are deposited on the beach, and the energy source that they represent to the birds, thank you.

DR. SWEKA: Yes, there still are egg surveys being conducted in New Jersey, you know Universities and other NGOs are refining the methods that are being used in collecting the egg density data. Those methods in the past, as you mentioned, in the past there were differences in methodology between New Jersey and Delaware.

Delaware is no longer doing any egg surveys, but they are still being conducted on the New Jersey side of the Bay. Methods are continually being refined by the stakeholders that are still interested in the egg density data. Hopefully, you know with more refinement in those methods, if additional information, we can still examine and look at to see how it correlates with abundance estimates of horseshoe crab.

But one of the problems with egg density data and will always be a problem, you know the number of eggs that you select and count on a beach is not only a function of horseshoe crab, but it's also a function of the weather conditions, you know prior to when those eggs were sampled. You know wind and wave action will obviously influence the density of eggs, especially the density of eggs in the surface sediment that are actually available to shore birds. It's something that we will still continue to keep an eye on and monitor. Whether or not that was the plan, a direct linkage to abundance of horseshoe crabs remains to be seen.

In our modeling and estimation within the ARM Framework, the new analysis of bird tagging data. If we can have a direct link or make that link between abundance of horseshoe crabs, the timing of their spawning, and possible weight gain and survival of red knots. That is actually an easier avenue to go down, because we have more confidence in our estimates of horseshoe crab abundance than what we would in egg density, given all those environmental factors that could influence egg density on a beach at a given point in time in a particular year.

MR. HYATT: Very good, thank you.

CHAIR CIMINO: Thanks for the question, Bill. Toni, any other hands?

MS. KERNS: Chris Wright has his hand up.

CHAIR CIMINO: Go ahead, Chris.

MR. CHRIS WRIGHT: Some of the materials that we had; I think it was noted that 118,000 roughly crabs were caught in the biomedical mortality. I was wondering, what percentage of those 118,000 were female crabs?

DR. SWEKA: That would be a question for Caitlin. If we can give that data out publicly, I'm not sure.

MS. STARKS: Sorry, could you repeat the question? I was having a sidebar.

MR. WRIGHT: There was 118,000 plus crabs that were caught, or the mortality rate was slated at 118,000 or estimated at 118,000. I was wondering how many of those were female crabs because it wasn't really specified, and I couldn't recall.

MS. STARKS: It's not specified, and I would have to go back to the data given to us by the biomedical facilities to sort that out. I don't have an answer in front of me right now.

MR. WRIGHT: Okay, thank you, because it was up a little bit higher this year compared to previous years. I was just wondering if there was a little bit more female mortality. Anyway, we can follow up later.

CHAIR CIMINO: Very good, thank you, Chris. Toni, any other hands?

MS. KERNS: No additional hands, Joe.

CONSIDER APPROVAL OF THE FISHERY MANAGEMENT PLAN REVIEW AND STATE COMPLIANCE FOR THE 2019 FISHING YEAR

CHAIR CIMINO: Okay great, thank you again, John. With that our next agenda item is Consider Approval for the Fishery Management Plan Review and State Compliance for the 2019 Fishing Year, and that is over to you, Caitlin.

MS. STARKS: We are running a little bit behind, so I am going to try and condense this. This is the management history. We've had seven addenda since the FMP was approved in 1998, and those are listed here, and for time I will skip to the next slide. This figure shows the coastwide bait harvest, biomedical collections, and estimated biomedical mortality over time.

Coastwide bait harvest declined following the establishment of the FMP, and it's remained fairly stable since about 2004. Then similarly, coastwide biomedical-only collections and estimated mortality have been fairly consistent since 2010, with some increases in the last few years. Then in 2019, the bait landings totaled 660,091 crabs, and that number does exclude unreported landings from Massachusetts, and confidential landings from Rhode Island.

Of the states that reported those 2019 landings, New York, Delaware, and Virginia contributed the most, and they account for 73 percent of the total when combined. The total landings equate to about 42 percent of the coastwide ASMFC quota, which is 1.59 million crabs. But again, that number is likely higher when you account for Massachusetts.

Then Delaware did exceed their adjusted state quota for 2019 by 5,014 crabs, and therefore they reduced their quota for 2020 to account for that overage. The biomedical only crabs that were collected in 2019 totaled 748,376 crabs, which is a 46 percent increase from 2018 collections, and the biomedical-only mortality estimate for 2019 is 102,758 crabs.

This number includes the reported number of crabs observed dead before bleeding, plus 15 percent of the reported number of biomedical-only crabs bled. That total biomedical mortality estimate represents 15 percent of the total directed removals in 2019 with that total, including biomedical mortality and bait harvest.

The biomedical mortality in 2019 does exceed the biomedical mortality threshold of 57,000 crabs that was established in the FMP. For horseshoe crab the states that qualify and requested de minimis were—and jurisdictions—were PRFC, South Carolina, Georgia, and Florida, and they all meet that criteria set in the FMP. New Jersey also meets the criteria, but it does not request de minimis status.

In this year's review, the Plan Review Team has continued to recommend that long term funding be established for the Virginia Tech Trawl Survey, which is currently funded through 2021. The PRT found that all states appear in compliance with the requirements of the FMP, and they recommend approval of the FMP review, state compliance reports and de minimis requests.

However, they did note some concern regarding New York's bait harvest, which increased by 25 percent in 2019, despite the poor stock status in that region. The PRT recommends that the Board make an effort to encourage and monitor actions for the New York region that would improve the population trend. The

PRT also notes that the biomedical mortality threshold has been exceeded in 2019, which requires the Board to consider management action.

Then lastly, the PRT recommends the Board consider efforts to annually characterize dead discard removals in other fisheries, and specifically they're calling for increasing access to and use of data from the Northeast Fishery Observer Program, and that would allow for improved monitoring and estimation of discard mortality. Next slide, that's a brief summary of the FMP review, and I can take any questions.

CHAIR CIMINO: We are looking for a motion here, and we are running late, but that was a lot of information. Are there any questions from the Board?

MS. KERNS: You have two hands up, Tom Fote and then Mike Luisi.

CHAIR CIMINO: Go ahead, Tom.

MR. THOMAS P. FOTE: Yes, can you refresh my memory. Is this the first time or is this a trend with the biomedical industry by going over?

MS. STARKS: This is the 12th year in the last 13 years that the biomedical mortality estimate exceeded that threshold. Previously, in the stock assessment, it was found that the levels that were occurring prior to 2019 did not appear to be having a significant negative impact on the stock. Just noting that the level this year, or last year, did increase from that level before. But yes, it is a trend in the past years.

CHAIR CIMINO: Follow up, Tom?

MR. FOTE: I'm looking at this trend over the years. You know we pride the states to stay in compliance, but the biomedical are supposed to be good partners. But they need to stay in compliance, and we let them slide for twelve years in a row, maybe we need to take some action.

CHAIR CIMINO: Okay, we'll look at it, Board members, if there is interest. You know I have had some conversations with staff, and we have some ideas on discussions that need to be run through our Technical Committee first. We have Mike Luisi.

MR. LUISI: Based on your request to have a motion if you're ready for that.

CHAIR CIMINO: Yes, go ahead, Mike.

MR. LUISI: All right, I would move to approve the FMP Review for the 2019 fishing year, state compliance reports and de minimis status for Potomac River Fisheries Commission, South Carolina, Georgia, and Florida.

CHAIR CIMINO: Thank you, do we have a second?

MS. KERNS: Malcolm Rhodes.

CHAIR CIMINO: Thanks, Dr. Rhodes. Any discussion on this?

MS. KERNS: You had two additional hands come up, Maureen Davidson and Bill Hyatt. It was before Mike made the motion.

CHAIR CIMINO: If there are further questions then we'll go to Maureen. We can, I think wrap them into this discussion. Go ahead, Maureen.

MS. MAUREEN DAVIDSON: I just wanted to respond to some of the comments made concerning the assessment findings for New York, where we had the decrease in abundance. For 2020, New York State did take further management efforts in response to the decrease in abundance of horseshoe crab. We did harvest closures around the last moon in May, and the first moon in June, and we also decreased the daily trip limit during that peak spawning period. Now obviously this went into effect in 2020, and the effects of that have not been seen.

Unfortunately, because of the COVID-19 pandemic, we're concerned that our harvest for horseshoe crabs

for this year are not really going to be normal, as they would have been in a normal year. But I just wanted to say that New York state has taken steps in response to the noted declined of horseshoe crabs in our local waters. Thank you.

CHAIR CIMINO: Thank you very much for speaking. That is important information for the Board. Bill.

MR. HYATT: Yes, I just wanted to speak briefly in support of the comment that Tom Fote made. I understand that the stock assessment determined that the previous overages were not affecting the population significantly, but the increase to 2020, the last increase was very significant, and I think regardless of whether or not there is a decision made to take action, we at least need to have some assessment done, as to whether or not that increase is significant.

CHAIR CIMINO: I don't disagree at all. In the interest of time, as I said. I've begun those discussions with staff. I think for our next Board meeting we will have some report out from the Technical Committee, or the Plan Review Team. To the motion, are there any other hands, Toni?

MS. KERNS: No other hands.

CHAIR CIMINO: Okay, we're good. Is there any opposition to this motion?

MS. KERNS: I see no hands in opposition.

CHAIR CIMINO: That sounds good to me. We'll consider the approval of the FMP review for 2019 unanimous**.**

REVIEW AND POPULATE ADVISORY PANEL MEMBERSHIP

CHAIR CIMINO: That brings us to, we have the AP nomination, so the Advisory Panel and Tina, if you could run us through that quickly. Thank you.

MS. TINA L. BERGER: Yes, I would offer for the Board's consideration the following, Christina Lecker as an addition to the Horseshoe Crab Advisory Panel. She is a biomedical representative from the Commonwealth of Virginia.

CHAIR CIMINO: Okay thank you, and that information is in the Board materials. Do we have a motion?

MS. KERNS: Pat Geer, seconder, Mel Bell.

CHAIR CIMINO: Go ahead, Pat. Pat, I think we're good, unless there was anything you wanted to add.

MR. PAT GEER: Yes, I was muted. I talked to Ms. Lecker a couple times. She's the Plant Manager of FUJI Wako Chemical U.S. Corporation. She's been there for a number of years, and they've been bleeding horseshoe crabs since about 2002. You know from my discussions with here, I think she would be an excellent representative to the Panel, you know representing the eastern shore of Virginia, Maryland and DelMarVa area as well for biomedical.

CHAIR CIMINO: Okay thanks.

MS. STARKS: Sorry, I just wasn't sure that the motion got read out loud, so I wanted to make sure that we did that.

CHAIR CIMINO: Much appreciated, I can do that. This is a motion to appoint Christina Lecker to the Horseshoe Crab Advisory Panel, motion was made by Pat Geer and seconded by Mel Bell. Is there any opposition to this motion?

MS. KERNS: I see no hands raised.

CHAIR CIMINO: Very good, we'll consider that approved by consent.

ADJOURNMENT

CHAIR CIMINO: I believe that wraps us up. I apologize for running this a little late. We had some great questions for Dr. Sweka, I think that was important for us all to hear. With that do we have a motion to adjourn?

MS. KERNS: Yes, Pat Geer.

CHAIR CIMINO: Pat again, thank you, we are adjourned, and Toni, sorry to run us late.

(Whereupon the meeting adjourned at 11:30 a.m. on October 21, 2020.)

Horseshoe Crab Harvest Recommendations Based on Adaptive Resource Management (ARM) Framework and Most Recent Monitoring Data

Report to the Delaware Bay Ecosystem Technical Committee by the ARM Subcommittee

September 2021

This report summarizes annual harvest recommendations. Detailed background on the ARM framework and data sources can be found in previous technical reports[1].

Objective statement

Manage harvest of horseshoe crabs in the Delaware Bay to maximize harvest but also to maintain ecosystem integrity and provide adequate stopover habitat for migrating shorebirds.

Alternative harvest packages

These harvest packages were compared to determine which will best meet the above objective given the most recent monitoring data. Harvest is of adult horseshoe crabs of Delaware Bay origin.

Harvest package	Male harvest (×1,000)	Female harvest (×1,000)
1	0	0
2	250	0
3	500	0
4	280	140
5	420	210

Population models

Population dynamics models that link horseshoe crabs and red knots were used to predict the effect of harvest packages. Three variations in the models represent the amount and type of dependence between horseshoe crabs and red knots. Stochastic dynamic programming was used to create a decision matrix to identify the optimal harvest package given the most recent monitoring data.

Monitoring data

Sources of data for horseshoe crab abundance were a set of trawl surveys conducted by Virginia Tech university.[2] Red Knot abundance estimates are taken from a mark-resight estimate for red knot abundance[3]. These data and methods can be evaluated in the respective reports from those studies.

Horseshoe crab abundance (millions)			Red knot abundance	
Year	Male	Female	Year	Male and female
2020 (Fall)	29.7	9.5	2021 (Spring)	42,271

Harvest recommendations

Decision matrix was optimized incorporating recommendations on red knot stopover population estimates and associated calibration of red knot threshold[4]. I followed the accepted procedure used in all past years where the empirical abundance estimates did not exactly fit the discretized population size "bins." For each empirical estimate I use the closest discretized abundance "bin" that was not larger than the estimate, in other words I rounded down to the nearest bin.

Recommended harvest package	Male harvest (×1,000)	Female harvest (×1,000)
3	500	0

Quota of horseshoe crab harvest for Delaware Bay region states. Allocation of allowable harvest under ARM package 3 (500K males, 0 females) was conducted in accordance with management board approved methodology in *Addendum VII to the Interstate Fishery Management Plan for Horseshoe Crabs*. Note: Maryland and Virginia total quota refer to that east of the COLREGS line.

	Delaware Bay Origin HSC Quota		**Total Quota**	
State	**Male**	**Female**	**Male**	**Female**
Delaware	162,136	0	162,136	0
New Jersey	162,136	0	162,136	0
Maryland	141,112	0	255,980	0
Virginia	34,615	0	81,331	0

References

[1] McGowan, C. P., D. R. Smith, J. D. Nichols, J. Martin, J. A. Sweka, J. E. Lyons, L. J. Niles, K. Kalasz, R. Wong, J. Brust, M. Davis. 2009. A framework for the adaptive management of horseshoe crab harvests in the Delaware Bay constrained by Red Knot conservation. Report to the Atlantic States Marine Fisheries Commission Horseshoe Crab Technical Committee.

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[2] Virginia Tech Trawl Survey report, August 31, 2021

[3] Jim Lyons' 2019 estimate in the 22 September, 2021 Memo

[4] ARM's recommendations for improved estimates of red knot stopover population size and associated calibration of red knot threshold

Results of the 2020 Horseshoe Crab Trawl Survey:

Draft Report to the Atlantic States Marine Fisheries Commission Horseshoe Crab and Delaware Bay Ecology Technical Committees

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23 September 2021

Abstract

To properly manage the mid-Atlantic horseshoe crab *Limulus polyphemus* fishery, a time-series of data on relative abundance of all demographic groups is needed. We conducted a trawl survey in the coastal Delaware Bay area and the lower Delaware Bay, quantified mean catch per 15-minute tow, and compared relative abundance of demographic groups with results from previous years. Mean catch-per-tow of immature and newly mature horseshoe crabs in the coastal Delaware Bay area have been variable since 2002 with no trend. Catches of mature females and males were both relatively high in 2020, although not statistically higher. Mean catch-per-tow of mature females and males are correlated, and both appear to display an increasing trend over time. Mean catches of immature and mature crabs in lower Delaware Bay are generally larger than catches in the coastal area, although usually not statistically significantly so. Mean catch-per-tow and population estimates of newly mature males are correlated with values for newly mature females of the same year-class the following year. Our findings will be used to parameterize the Adaptive Resource Management model used to set annual harvest levels for horseshoe crabs.

Introduction

To properly manage the mid-Atlantic horseshoe crab *Limulus polyphemus* fishery, accurate information on relative abundance levels and trends is needed. The Adaptive Resource Management model (McGowan et al. 2011) adopted by the ASMFC requires annual, fishery-independent indices of newly-mature recruit and adult abundances. The purpose of this project was to conduct a horseshoe crab trawl survey along the Mid-Atlantic coast in order to: (1) determine horseshoe crab relative abundance, (2) describe horseshoe crab population demographics, and (3) track inter-annual changes in horseshoe crab relative abundance and demographics. Here, we report our cumulative results through the fall 2020 trawl survey.

We have provided the Adaptive Resource Management (ARM) Subcommittee relative

abundance estimates of horseshoe crabs in the DBA and LDB surveys to inform the ARM model runs. Herein, we present the population estimates through the 2020 survey. Gear catchability has not been evaluated for these estimates, so they should be considered conservative.

Methods

The 2020 horseshoe crab trawl survey was conducted in two areas (Figure 1). The coastal Delaware Bay area (DBA) survey extended in the Atlantic Ocean from shore out to 22.2 km (12 nautical miles), and from 39º 20' N (Atlantic City, NJ) to 37º 40' N (slightly north of Wachapreague, VA). This area was previously sampled from 2002 to 2011, and again from 2016 to 2020. The lower Delaware Bay (LDB) survey area extended from the Bay mouth to a line between Egg Island Point, New Jersey and Kitts Hummock, Delaware. The LDB was previously sampled from 2010 to 2012 and in 2016- 2020. The surveys were conducted over a protracted period from 6 August to 8 September 2020.

The DBA survey area was stratified by distance from shore (0-3 nm, 3-12 nm) and bottom topography (trough, non-trough) as in previous years. The LDB survey area was stratified by bottom topography only, as in previous years. Sampling was conducted aboard a 16.8-m chartered commercial fishing vessel operated out of Ocean City, MD. We used a two-seam flounder trawl with an 18.3-m headrope and 24.4-m footrope, rigged with a Texas Sweep of 13-mm link chain and a tickler chain. The net body consisted of 15.2-cm (6-in) stretched mesh, and the bag consisted of 14.3-cm (5 5/8-in) stretched mesh. Tows were usually 15-minutes bottom time, but were occasionally shorter to avoid fishing gear (e.g., gill nets, crab and whelk pots) or vessel traffic. Start and end positions of each tow were recorded when the winches were stopped and when retrieval began, respectively. Bottom water temperature was recorded for each tow. We sampled 44 stations in the DBA survey and 4 stations in the LDB. Three planned LDB sites were not completed due to netting of excessive vegetation.

Horseshoe crabs were culled from the catch, and either all individuals or a subsample were examined for prosomal width (PW, millimeters) and identified for sex and maturity. Maturity classifications were: immature, newly mature - those that are capable of spawning but have not yet spawned, and mature - those that are have previously spawned. Newly mature and mature males are morphologically distinct and are believed to be classifiable without error. However, some error is associated with distinguishing newly mature from immature females. All examined females that were not obviously mature (i.e., bearing rub marks) or immature (too small or soft-shelled) were probed with an awl to determine presence or absence of eggs. Females with eggs but without rub marks were considered newly mature. Females with both eggs and rub marks were considered mature. Initial sorting classifications were: presumed adult males (newly mature and mature), presumed adult females, and all immature. Up to 25 adult males, 25 adult females, and 50 immatures were retained for examination. The remainder were counted separately by classification and released. Characteristics of the examined subsamples were then extrapolated to the counted portions of the catch.

In each stratum, the mean catch per 15-minute tow and associated variance were calculated using two methods, i.e., either assuming a normal-distribution model or a delta-lognormal distribution model (Pennington, 1983). Stratum mean and variance estimates were

combined using formulas for a stratified random sampling design (Cochran, 1977). The approximate 95% confidence intervals were calculated using the effective degrees of freedom (Cochran, 1977). Annual means were considered significantly different if 95% confidence limits did not overlap. Stratified means calculated using the delta-lognormal distribution model are not additive - i.e., means calculated for each demographic group do not sum to the mean calculated using all crabs. Means calculated using the normal-distribution model are additive, within rounding errors.

Annual size-frequency distributions, in intervals of 10-mm prosomal width, were calculated for each sex/maturity category by pooling size-frequency distributions of all stations (adjusted for tow duration if necessary) in a stratum in a year to calculate the relative proportions for each size interval. Those proportions then were multiplied by the stratum mean catch-per-tow that year to produce a stratum size-frequency distribution. Stratum size-frequency distributions then were multiplied by the stratum weights and added in the same manner as calculating the stratified mean catch per tow. Areas under the distribution curves then would represent the stratified mean catch per tow at each size interval.

The average 15-minute tow in the DBA was 1.17 kilometers at 4.7 KPH. The average 15-minute tow in the LDB was 1.20 km at 4.8 KPH. Valid net-spread measurements were obtained from 44 tows and averaged 10.1 meters. We used the net- spread (S, in meters)/tow speed (C, in KPH) relationship developed from previous trawl surveys to estimate net-spread for collections in which net-spread was invalid or not measured ($S = 13.84 - 0.858 \times C$).

For each tow, catch density (catch/km^2) was calculated from the product of tow distance (in km) and estimated net-spread (converted from meters to km) assuming that all fishing was done only by the net, and that there was no herding effect from the ground gear (sweeps):

$$\text{catch/km}^2 = \text{catch/[tow distance (km)} \times \text{net-spread (km)]}.$$

Within each stratum, the mean catch per square-kilometer and associated variance were calculated assuming a normal-distribution model and a lognormal delta-distribution model. Stratum mean densities and variance estimates were combined to produce a stratified mean density ($\bar{X}_{st}$) using formulas for a stratified random sampling design as with the catch-per-tow estimates described above. Population totals were estimated by multiplying stratified mean density ($\bar{X}_{st}$) by survey area (DBA = 5127.1 km^2; LDB = 528.4 km^2):

$$\text{Population total} = \bar{X}_{st} \times (5127.1 \text{ or } 528.4 \text{ km}^2).$$

Results

Delaware Bay area

Stratified mean catches-per-tow for all demographic categories were relatively consistent from 2016 to 2018, but showed variations in the two most-recent years (Tables 1 and 2; Figure 2). Stratified mean catches of mature females and males have been variable over the time-series, but are significantly correlated ($r = 0.779$; $T = 4.48$; $p < 0.001$; $n = 15$). Both mature females and males were relatively less abundant in 2019 and more abundant in 2020 than in the previous five years. Yearly trends from the delta- and normal-distribution models followed similar patterns for

all demographic groups.

Mean catches of newly mature males generally are correlated with mean catches of newly mature females the following year from 2002-2018 ($r = 0.746$; $T = 3.36$; $p = 0.008$, $n = 11$). In the two recent years, the trend of newly mature females and males are quite different. By adding results in 2019 and 2020, the correlations are no longer statistically significant ($r = 0.25$; $T = 0.91$; $p = 0.378$, $n = 15$), potentially due to low mean catches of newly mature females in 2019 and 2020.

Lower Delaware Bay

This was the eighth year of sampling within the Delaware Bay. Stratified mean catches of immature female and male crabs and newly mature female crabs in 2019 and 2020 were the least for the time-series (Tables 3 and 4; Figure 3). Mean catches of mature females were lower than in 2019 and further decreased in 2020, Both the male and females in all the three maturity groups were low in 2020. Mean catches of mature males are significantly correlated with mean catches of mature females ($r = 0.919$; $T = 5.71$; $p = 0.001$; $n = 8$).

Size distributions

Size-frequency distributions of immature horseshoe crabs in the DBA survey display considerable variability (Figure 4). Modal groups are generally indistinct, except for one large group of both females and males in 2009. However, that modal group, which would presumably be larger in size the following year, becomes indistinct again in 2010. Size-frequency distributions from the lower Delaware Bay do not show that modal group in 2010 either (Figure 5).

We had previously reported that mean prosomal widths of mature and newly mature male and female crabs in the DBA survey displayed slight but detectable decreases over time (Hata and Hallerman 2017, 2019). Those trends appear to continue through the 2020 survey (Table 5; Figure 6). In addition, decreasing trends in mean PW were observed for mature females and males in the lower Delaware Bay survey, but an increasing trend was detected for newly mature males.

Sex ratios

Mature males were typically more than twice as numerous as mature females throughout the survey time-series. Sex ratios (M:F) from mean catch-per-tow in the DBA surveys ranged from 1.72 in 2019 to 3.64 in 2016, averaging 2.41 over all years. The ratio of newly mature males to females was highly variable, ranging from 0.11 in 2003 to 5.60 in 2019, and averaged 1.44. This may reflect sampling effects, temporal variability in recruitment to the newly mature class relative to survey period, or differences in year-class abundance because females are believed to mature a year later than males.

Sex ratios of mature horseshoe crabs were higher within the lower Delaware Bay than on

the coast. Sex ratios (M:F) ranged from 2.60 in 2018 to 6.15 in 2016, averaging 3.98. As on the coast, sex ratios of newly mature crabs within the Bay were variable, and ranged from 0.45 in 2010 to 6.10 in 2012, averaging 3.09, with an exception of 2019 and 2020 in which mean catches of newly mature females were both very low and sex ratios were higher than historical observations (5.60 and 23.33). The higher sex ratios within Delaware Bay may reflect a tendency for male horseshoe crabs to remain near the spawning beaches.

Population estimates

Annual population estimates of immature crabs in the DBA survey mirror trends observed in the catch-per-tow estimates, and have been variable over time with a large peak in 2009 (Tables 6 and 7). Similarly, population estimates of newly mature crabs increased from 2002 to 2008, but have remained consistently low since 2009. Estimated numbers of mature males and females have been greater since 2006. Population estimates of mature females are significantly correlated with estimates of mature males ($r = 0.779$; $T = 4.48$; $p < 0.001$; $n = 15$), as observed for mean catches per tow above. Population estimates of newly mature females are significantly correlated with estimates of newly mature males, as observed for mean catches per tow above. Assuming males entering the newly mature category are of the same year-class as females entering that category the following year, annual trends for males may forecast similar trends for females. However, population estimates of newly mature females are not significantly correlated with estimates of newly mature males as in the previous year when incorporating estimates in 2019 and 2020, as observed for mean catches per tow above.

Population estimates of immature crabs in lower Delaware Bay have been consistent with coastal estimates since the LDB survey began in 2010 (Tables 8 and 9). On average, 15.6% of the total number of immature females and 19.7% of immature males occurred within Delaware Bay, although the LDB sampling area composed only 9.3% of the total combined area. In 2020, both immature and mature crabs occurring within the Bay were the lowest among the survey years. Over the whole time-series, about 5% of the combined population of newly mature females occurred within the Delaware Bay, and 9% of newly mature males. In 2020, 0 and 0.2% of newly mature females and males, respectively, occurred within Delaware Bay with the percentage of immature males the lowest in the history. About 21% of mature females and 28% of mature males occurred within the Bay on average, with 0.3 and 5%, respectively, occurring within the Bay in 2020. Within the combined survey population, the sex ratio of mature males:females ranged from 2.24 to 4.07 between 2010-2020, and averaged 3.02, with a ratio of 2.93 in 2020.

Effects of sampling period

The 2020 DBA survey was conducted from early August to early September. The average bottom water temperature in 2020 was close to those for the past four survey years and was among those for the highest values in the time series (Table 10; Figure 7). The 2020 lower Delaware Bay survey was conducted in early September, much earlier than in the past years, and later than the DBA survey. As a result, the average LDB water temperature was for the first time higher than the average DBA temperature. Horseshoe crabs that were within the Bay during most of the DBA survey because of the warm temperature and not enumerated, may have moved out

of the Bay by the time the LDB survey was conducted and again not enumerated. This may have resulted in underestimates of horseshoe crabs in both survey areas and contributed to the apparent decrease in mature M:F ratios in both survey areas since 2016.

When comparing survey time-frames and water temperatures, it appears that the DBA mean catches of immature crabs are correlated with mean sampling dates, but not with water temperature (p = 0.062 and 0.051 respectively for immature females and males); in contrast, mean catches of mature crabs were correlated with both mean water temperatures and ordinal dates (Table 11). Within the lower Delaware Bay, mean catches were not correlated with mean water temperatures or sampling dates.

Key findings

1. Mean catch-per-tow of immature male and female horseshoe crabs in the coastal Delaware Bay area have been variable since 2002 with no trend, and remain below the peak of 2009.
2. Mean catch-per-tow of newly mature crabs in the coastal Delaware Bay area have remained below peaks in 2006 (males) or 2008 (females) and show no long-term trend.
3. Mean catch-per-tow of mature males and females in the coastal Delaware Bay area have been variable throughout the time-series, but show increasing trends since 2002, and were relatively high in 2020.
4. Mean catch-per-tow of immature horseshoe crabs in the coastal Delaware Bay area may be related to sampling date. Mean catch-per-tow of mature horseshoe crabs may be related to water temperature.
5. Annual mean prosomal widths of newly mature and mature horseshoe crabs in the coastal Delaware Bay area show decreasing trends.

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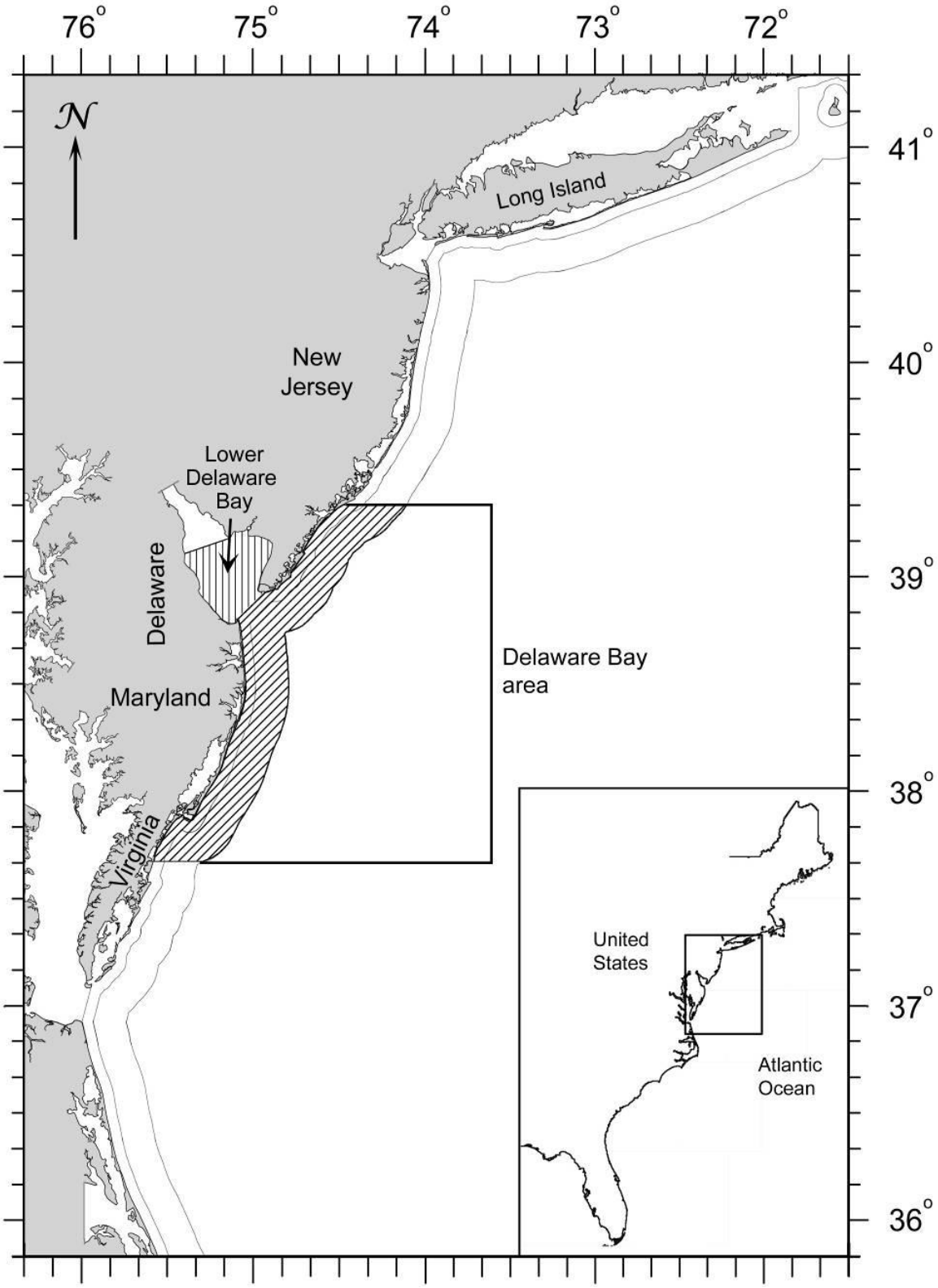

Figure 1. Fall 2020 horseshoe crab trawl survey sampling area. The coastal Delaware Bay area (DBA) and Lower Delaware Bay (LDB) survey areas are indicated. Mean catches among years were compared using stations within the shaded portions of the survey areas.

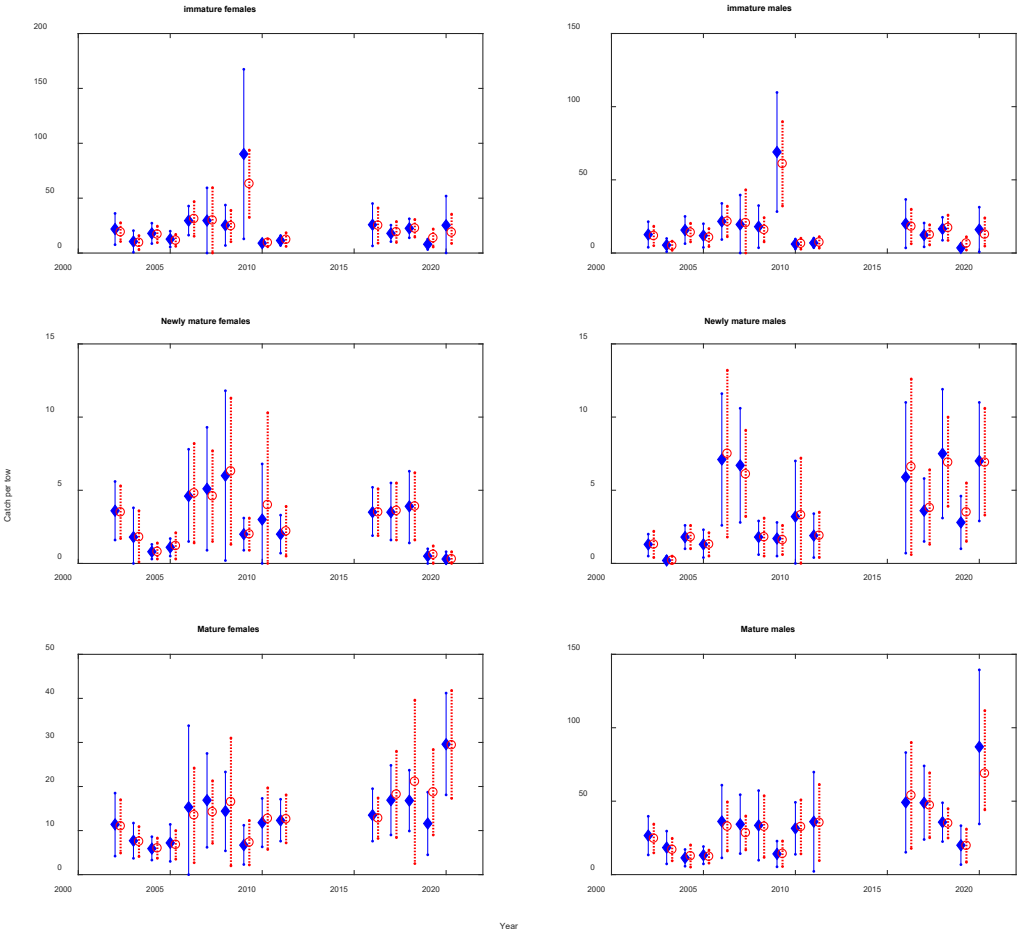

Figure 2. Plots of stratified mean catches per 15-minute tow of horseshoe crabs in the coastal **Delaware Bay area** survey by demographic group. Vertical lines indicate 95% confidence limits. Solid symbols and lines indicate the **delta distribution** model. Open symbols and dashed lines indicate the **normal distribution** model. Data are from Tables 1 and 2. Note differences in *y*-axis scales.

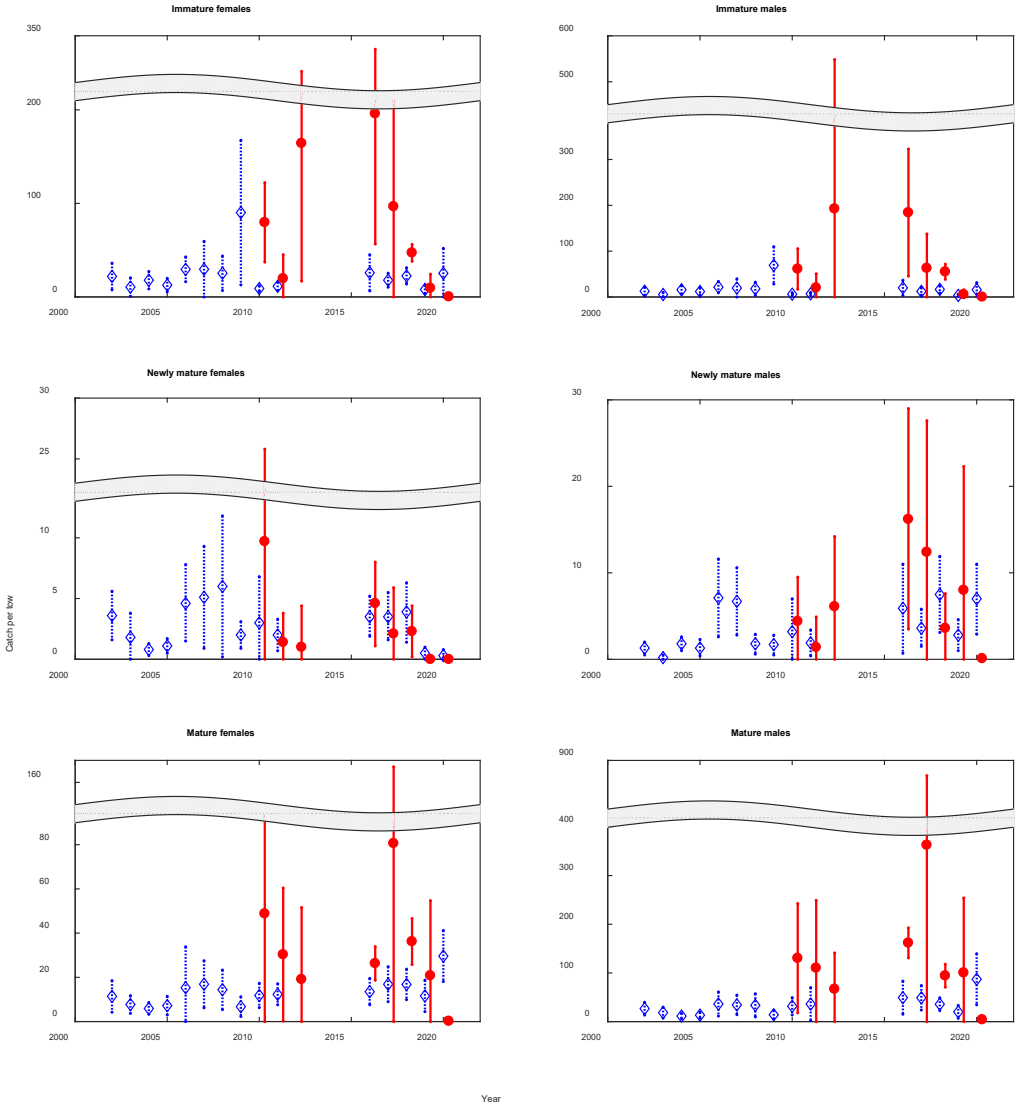

Figure 3. Plots of stratified mean catches per 15-minute tow of horseshoe crabs in the **lower Delaware Bay** survey by demographic group, with coastal **Delaware Bay area** survey means for comparison. Vertical lines indicate 95% confidence limits. Only the **delta distribution** model means are presented for clarity. Solid symbols and lines indicate the **lower Delaware Bay** survey. Open symbols and dashed lines indicate the coastal **Delaware Bay area** survey. Note differences in *y*-axis scales.

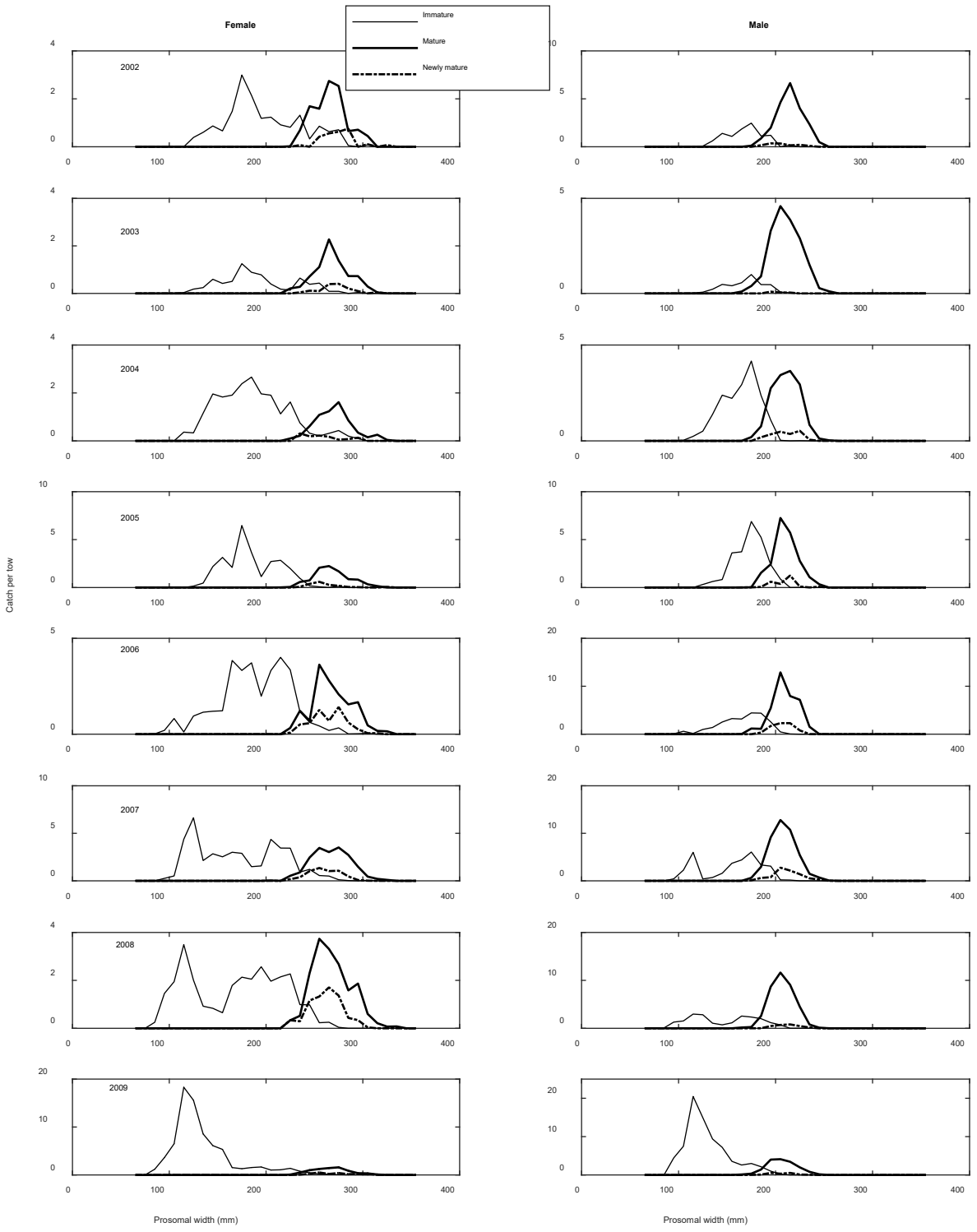

Figure 4. Relative size-frequency distributions of horseshoe crabs, by demographic group and year, in the coastal **Delaware Bay area** trawl survey. Relative frequencies are scaled to represent stratified mean catches in Table 1.

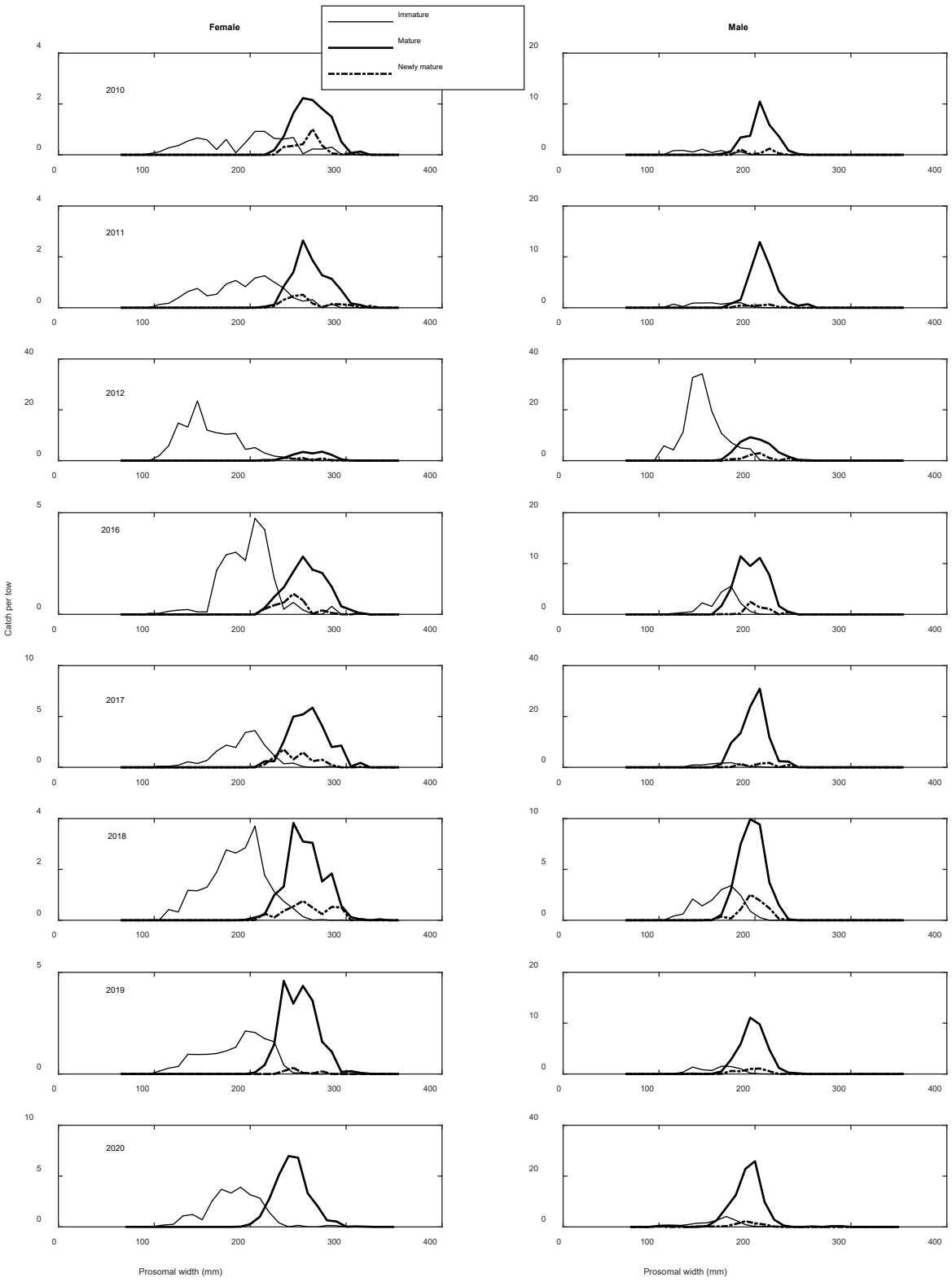

Figure 4. (continued).

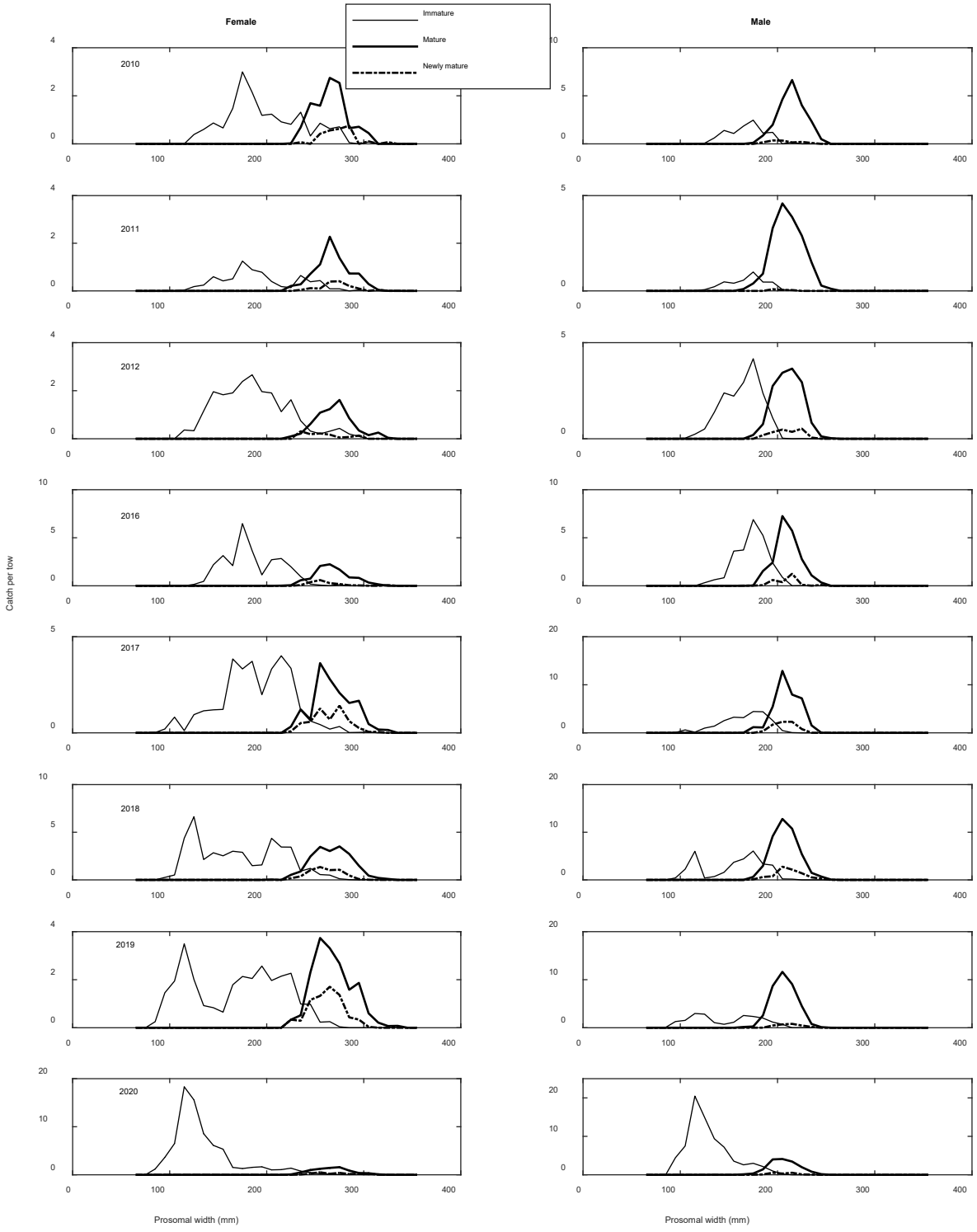

Figure 5. Relative size-frequency distributions of horseshoe crabs, by demographic group and year, in the **lower Delaware Bay** trawl survey. Relative frequencies are scaled to represent stratified mean catches in Table 3.

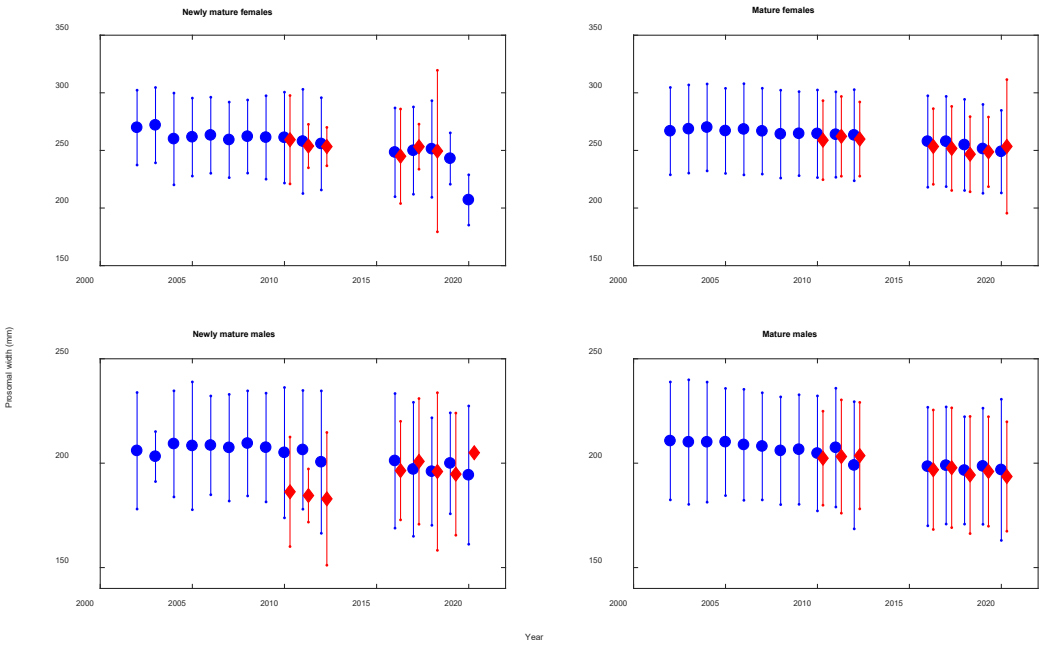

Figure 6. Mean prosomal widths (mm) (± 2 standard deviations) of mature and newly mature female and male horseshoe crabs in the Delaware Bay area (blue symbols and lines) and lower Delaware Bay (red symbols and lines) surveys.

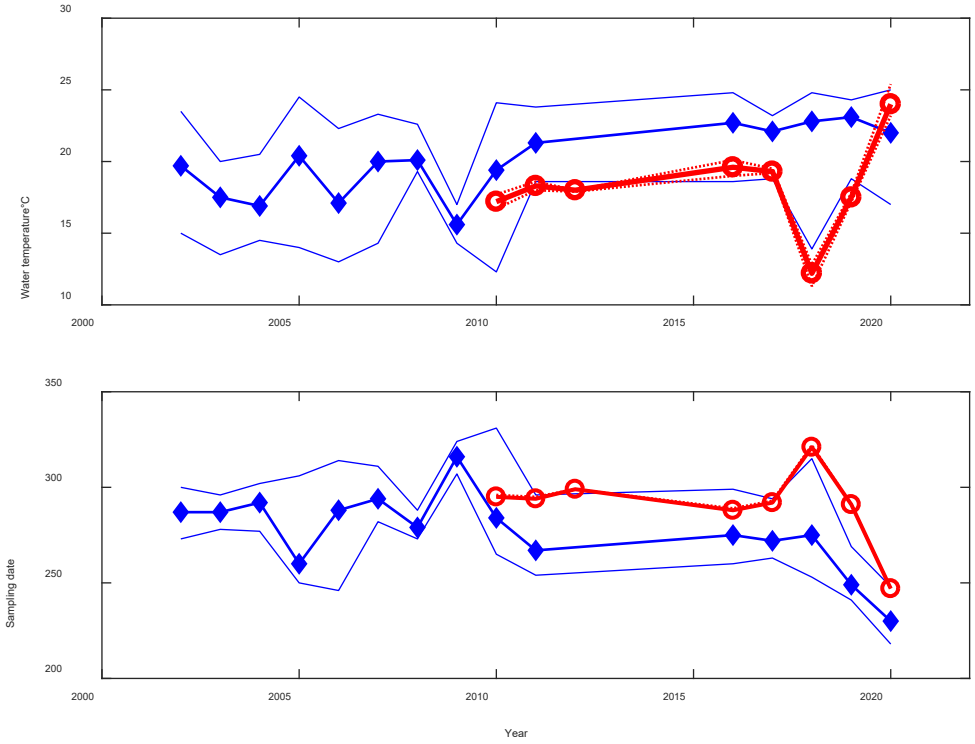

Figure 7. Plots of bottom water temperatures and ordinal sampling dates (days since 1 January) in the coastal Delaware Bay area and lower Delaware Bay trawl surveys. Solid symbols and blue lines indicate coastal Delaware Bay area. Open symbols and red lines indicate lower Delaware Bay. Points indicate mean values. Thinner lines indicate maximum and minimum values. Approximate calendar dates are indicated by gray horizontal lines for reference (ordinal dates are shifted by one day for leap years).

Table 1. Stratified mean catch-per-tow of horseshoe crabs in the coastal **Delaware Bay area** survey, 2002-2020, with the mean, standard deviation (sd) and coefficient of variation (CV), calculated using the **delta distribution** model, by demographic group. Also included are the estimated upper and lower 95% confidence limits (UCL, LCL).

	mean	UCL	LCL	CV	sd		mean	UCL	LCL	CV	sd
Immature females						Immature males					
2002	21.9	36.1	7.6	0.31	6.8	2002	12.6	21.4	3.9	0.33	4.2
2003	10.5	20.4	0.7	0.43	4.6	2003	5.4	9.9	0.9	0.39	2.1
2004	17.9	27.2	8.6	0.25	4.5	2004	15.7	25.0	6.4	0.29	4.5
2005	12.7	19.9	5.5	0.28	3.5	2005	11.9	20.0	3.8	0.33	3.9
2006	29.5	42.8	16.3	0.21	6.3	2006	21.6	33.9	9.2	0.25	5.4
2007	29.6	59.4	-0.2	0.41	12.2	2007	19.5	39.6	-0.6	0.42	8.2
2008	25.3	43.7	6.9	0.33	8.3	2008	18.0	32.4	3.6	0.35	6.3
2009	90.2	167.4	12.9	0.39	35.5	2009	69.0	109.7	28.3	0.29	19.8
2010	9.0	11.9	6.1	0.16	1.4	2010	6.1	9.5	2.8	0.27	1.6
2011	11.4	15.9	6.9	0.19	2.2	2011	6.9	10.1	3.7	0.23	1.6
2016	25.8	45.1	6.5	0.36	9.2	2016	20.0	36.6	3.5	0.39	7.9
2017	17.9	25.4	10.4	0.19	3.4	2017	12.3	20.5	4.2	0.27	3.3
2018	22.5	31.2	13.9	0.18	4.1	2018	16.5	24.4	8.7	0.22	3.7
2019	8.0	12.7	3.2	0.30	2.4	2019	3.5	6.0	1.0	0.35	1.2
2020	25.3	51.9	0.1	0.60	15.2	2020	16.0	31.3	0.8	0.56	9.1
Mature females						Mature males					
2002	11.4	18.5	4.2	0.30	3.4	2002	26.6	39.7	13.4	0.24	6.3
2003	7.7	11.7	3.7	0.25	1.9	2003	18.4	29.6	7.3	0.28	5.2
2004	5.9	8.6	3.3	0.21	1.3	2004	11.4	17.1	5.7	0.24	2.8
2005	7.2	11.4	3.0	0.27	2.0	2005	13.2	19.1	7.3	0.21	2.8
2006	15.3	33.8	-3.2	0.44	6.7	2006	36.2	60.9	11.4	0.28	10.1
2007	16.9	27.5	6.2	0.30	5.1	2007	34.3	54.4	14.3	0.28	9.7
2008	14.4	23.3	5.4	0.29	4.2	2008	33.5	57.2	9.8	0.33	11.2
2009	6.7	11.2	2.3	0.32	2.1	2009	14.1	22.8	5.3	0.30	4.2
2010	11.8	17.3	6.3	0.22	2.6	2010	31.5	49.2	13.8	0.27	8.6
2011	12.3	17.1	7.6	0.18	2.2	2011	36.0	69.8	2.2	0.41	14.7
2016	13.5	19.5	7.6	0.21	2.9	2016	49.2	83.1	15.2	0.29	14.3
2017	16.9	24.8	9.0	0.23	3.9	2017	48.9	74.0	23.9	0.25	12.2
2018	16.8	23.7	9.9	0.20	3.3	2018	35.7	48.9	22.5	0.17	6.2
2019	11.6	18.7	4.5	0.30	3.5	2019	20.0	33.3	6.8	0.33	6.6
2020	29.6	41.2	18.1	0.23	6.9	2020	87.0	139.4	34.5	0.36	31.1
Newly mature females						Newly mature males					
2002	3.6	5.6	1.6	0.26	0.9	2002	1.3	2.0	0.5	0.28	0.4
2003	1.8	3.8	-0.1	0.49	0.9	2003	0.2	0.5	-0.1	0.84	0.2
2004	0.8	1.3	0.3	0.30	0.2	2004	1.8	2.6	1.0	0.21	0.4
2005	1.1	1.7	0.5	0.28	0.3	2005	1.3	2.3	0.4	0.33	0.4
2006	4.6	7.8	1.5	0.30	1.4	2006	7.1	11.6	2.6	0.36	2.7
2007	5.1	9.3	0.9	0.39	2.0	2007	6.7	10.6	2.8	0.28	1.9
2008	6.0	11.8	0.2	0.44	2.7	2008	1.8	2.9	0.6	0.32	0.6
2009	2.0	3.1	0.9	0.26	0.5	2009	1.7	2.8	0.5	0.34	0.6
2010	3.0	6.8	-0.7	0.59	1.8	2010	3.2	7.0	-0.5	0.55	1.8
2011	2.0	3.3	0.7	0.31	0.6	2011	1.9	3.4	0.4	0.37	0.7
2016	3.5	5.2	1.9	0.23	0.8	2016	5.9	11.0	0.7	0.42	2.5
2017	3.5	5.5	1.6	0.27	0.9	2017	3.6	5.8	1.5	0.29	1.0
2018	3.9	6.3	1.4	0.30	1.2	2018	7.5	11.9	3.1	0.27	2.1
2019	0.5	1.0	0.0	0.46	0.2	2019	2.8	4.6	1.0	0.32	0.9
2020	0.3	0.8	0.0	0.85	0.3	2020	7.0	11.0	2.9	0.35	2.4

Table 2. Stratified mean catch-per-tow of horseshoe crabs in the coastal **Delaware Bay area** survey, 2002-2020, with the mean, standard deviation (sd) and coefficient of variation (CV), calculated using the **normal distribution** model, by demographic group. Also included are the estimated upper and lower 95% confidence limits (UCL, LCL).

	mean	UCL	LCL	CV	sd		mean	UCL	LCL	CV	sd
Immature females						Immature males					
2002	19.1	27.6	10.5	0.22	4.1	2002	11.7	18.3	5.0	0.27	3.2
2003	9.5	15.9	3.0	0.32	3.1	2003	4.9	8.1	1.8	0.30	1.5
2004	17.0	24.5	9.5	0.21	3.6	2004	14.0	20.3	7.6	0.22	3.1
2005	11.5	17.0	6.1	0.23	2.6	2005	10.6	16.7	4.4	0.28	2.9
2006	31.1	46.9	15.3	0.24	7.5	2006	21.5	32.0	11.1	0.23	5.0
2007	29.8	59.6	0.0	0.41	12.2	2007	20.5	43.2	-2.3	0.45	9.3
2008	24.6	38.9	10.3	0.27	6.6	2008	15.9	24.2	7.6	0.24	3.8
2009	63.1	93.8	32.4	0.24	14.9	2009	61.0	89.8	32.1	0.23	14.0
2010	9.4	13.0	5.7	0.19	1.8	2010	6.4	10.1	2.6	0.29	1.8
2011	12.2	18.5	6.0	0.25	3.0	2011	7.3	11.2	3.3	0.26	1.9
2016	25.1	41.1	9.0	0.31	7.7	2016	18.1	29.9	6.3	0.31	5.7
2017	19.1	28.7	9.6	0.24	4.6	2017	12.4	19.3	5.5	0.26	3.3
2018	22.5	30.6	14.5	0.17	3.8	2018	17.2	25.9	8.6	0.24	4.1
2019	13.7	21.9	5.5	0.30	4.1	2019	6.6	11.1	2.0	0.34	2.2
2020	18.8	35.4	8.7	0.32	6.0	2020	12.7	24.0	4.7	0.37	4.75
Mature females						Mature males					
2002	11.0	17.0	4.9	0.26	2.8	2002	24.6	34.4	14.8	0.19	4.7
2003	7.5	10.9	4.1	0.22	1.6	2003	17.0	24.7	9.4	0.21	3.6
2004	6.0	8.3	3.7	0.19	1.1	2004	12.6	20.2	5.1	0.29	3.6
2005	6.8	10.0	3.5	0.22	1.5	2005	12.3	16.7	7.8	0.17	2.1
2006	13.5	24.2	2.7	0.31	4.2	2006	32.8	49.5	16.1	0.22	7.4
2007	14.2	21.3	7.1	0.24	3.4	2007	28.4	39.9	16.8	0.20	5.6
2008	16.5	31.0	2.0	0.41	6.8	2008	32.7	53.7	11.7	0.31	10.0
2009	7.3	12.3	2.2	0.33	2.4	2009	14.2	22.9	5.5	0.29	4.1
2010	12.7	19.7	5.7	0.26	3.3	2010	32.5	50.9	14.1	0.27	8.8
2011	12.6	18.1	7.2	0.20	2.6	2011	35.4	61.4	9.5	0.32	11.5
2016	12.8	17.4	8.2	0.17	2.2	2016	53.9	90.0	17.8	0.30	16.2
2017	18.2	28.0	8.4	0.26	4.8	2017	47.2	69.3	25.1	0.23	10.8
2018	21.1	39.6	2.5	0.41	8.7	2018	34.9	44.9	24.9	0.14	4.8
2019	18.7	28.4	9.0	0.26	4.8	2019	19.7	31.0	8.4	0.28	5.6
2020	29.4	41.8	17.3	0.25	7.2	2020	68.8	111.7	44.1	0.21	14.7
Newly mature females						Newly mature males					
2002	3.5	5.3	1.7	0.24	0.9	2002	1.3	2.2	0.4	0.31	0.4
2003	1.8	3.6	0.1	0.45	0.8	2003	0.2	0.5	-0.2	0.84	0.2
2004	0.8	1.4	0.3	0.33	0.3	2004	1.8	2.6	1.0	0.21	0.4
2005	1.2	2.1	0.3	0.35	0.4	2005	1.3	2.1	0.5	0.29	0.4
2006	4.8	8.2	1.4	0.33	1.6	2006	7.5	13.2	1.8	0.36	2.7
2007	4.6	7.7	1.5	0.32	1.5	2007	6.1	9.1	3.2	0.23	1.4
2008	6.3	11.3	1.3	0.37	2.3	2008	1.8	3.1	0.5	0.34	0.6
2009	2.0	3.1	0.9	0.26	0.5	2009	1.6	2.6	0.6	0.30	0.5
2010	4.0	10.3	-2.3	0.74	3.0	2010	3.3	7.2	-0.6	0.56	1.9
2011	2.2	3.9	0.5	0.38	0.8	2011	1.9	3.5	0.4	0.38	0.7
2016	3.5	5.1	1.9	0.22	0.8	2016	6.6	12.6	0.6	0.43	2.9
2017	3.6	5.5	1.6	0.27	1.0	2017	3.8	6.4	1.3	0.32	1.2
2018	3.9	6.2	1.6	0.28	1.1	2018	6.9	10.0	3.9	0.21	1.5
2019	0.6	1.2	0.0	0.48	0.3	2019	3.5	5.5	1.5	0.29	1.0
2020	0.3	0.8	0.0	0.84	0.28	2020	6.9	10. 6	3.3	0.31	2.1

Table 3. Stratified mean catch–per-tow of horseshoe crabs in the **lower Delaware Bay** survey area in 2010-2020, with the mean, standard deviation (sd) and coefficient of variation (CV), calculated using the **delta distribution** model, by demographic group. Also included are the estimated upper and lower 95% confidence limits (UCL, LCL).

	mean	UCL	LCL	CV	sd		mean	UCL	LCL	CV	sd
Immature females						Immature males					
2010	79.7	122.2	37.3	0.21	16.5	2010	61.2	105.5	16.9	0.30	18.1
2011	19.7	45.2	-5.9	0.47	9.2	2011	20.2	50.7	-10.4	0.55	11.0
2012	164.3	311.8	16.9	0.32	53.1	2012	192.6	548.4	-163.3	0.43	82.7
2016	196.0	335.5	56.6	0.29	57.0	2016	184.2	322.9	45.5	0.32	58.7
2017	96.7	210.0	-16.7	0.46	44.1	2017	62.9	137.6	-11.7	0.46	29.0
2018	47.2	56.2	38.1	0.08	3.8	2018	55.1	71.8	38.4	0.12	6.8
2019	9.5	24.3	-5.3	0.60	5.7	2019	5.7	15.8	-4.5	0.70	4.0
2020	0.3	0.8	0.0	0.97	0.3	2020	0.2	0.6	0.0	0.97	0.2
Mature females						Mature males					
2010	48.8	98.9	-1.2	0.40	19.5	2010	130.3	242.6	18.1	0.34	43.7
2011	30.3	60.4	0.2	0.36	10.8	2011	110.2	249.0	-28.6	0.45	50.0
2012	19.1	51.6	-13.4	0.40	7.6	2012	66.8	141.1	-7.4	0.35	23.3
2016	26.3	33.9	18.7	0.12	3.2	2016	161.7	192.5	131.0	0.08	13.3
2017	80.6	167.1	-5.8	0.39	31.1	2017	362.7	868.5	-143.2	0.50	182.2
2018	36.2	46.6	25.8	0.12	4.3	2018	94.3	117.9	70.7	0.11	10.0
2019	20.8	54.7	-13.0	0.63	13.2	2019	100.4	254.0	-53.2	0.59	59.7
2020	0.2	0.5	0.0	0.97	0.2	2020	4.1	8.8	0.0	0.67	2.7
Newly mature females						Newly mature males					
2010	9.7	25.8	-6.3	0.64	6.2	2010	4.4	9.5	-0.8	0.46	2.0
2011	1.4	3.8	-0.9	0.58	0.8	2011	1.4	4.9	-2.2	0.94	1.3
2012	1.0	4.4	-2.3	0.76	0.8	2012	6.1	14.2	-2.0	0.48	2.9
2016	4.6	8.0	1.1	0.31	1.4	2016	16.2	29.0	3.5	0.30	5.0
2017	2.1	5.9	-1.7	0.65	1.4	2017	12.4	27.6	-2.7	0.44	5.4
2018	2.3	4.4	0.2	0.35	0.8	2018	3.6	7.6	-0.5	0.44	1.6
2019	0.0	0.0	0.0	NA	0.0	2019	8.0	22.3	-6.4	0.70	5.6
2020	0.0	0.0	0.0	NA	0.0	2020	0.1	0.3	0.0	0.97	0.1

Table 4. Stratified mean catch-per-tow of horseshoe crabs in the **lower Delaware Bay** survey area in 2010-2020, with the mean, standard deviation (sd) and coefficient of variation (CV), calculated using the **normal distribution** model, by demographic group. Also included are the estimated upper and lower 95% confidence limits (UCL, LCL).

	mean	UCL	LCL	CV	sd		mean	UCL	LCL	CV	sd
Immature females						Immature males					
2010	79.5	116.5	42.6	0.19	15.1	2010	60.4	95.7	25.1	0.25	15.3
2011	21.3	54.2	-11.5	0.55	11.8	2011	21.5	57.2	-14.3	0.60	12.9
2012	165.5	287.6	43.4	0.30	49.9	2012	183.9	360.1	7.8	0.34	63.4
2016	186.5	284.7	88.3	0.22	40.1	2016	167.9	249.7	86.0	0.21	34.6
2017	90.8	176.0	5.6	0.37	33.2	2017	58.2	109.0	7.5	0.36	20.7
2018	47.1	55.6	38.6	0.08	3.6	2018	54.9	69.6	40.2	0.11	6.2
2019	16.0	30.4	1.5	0.35	5.6	2019	10.7	21.7	-0.4	0.40	4.3
2020	0.3	0.8	0.0	0.97	0.3	2020	0.2	0.6	0.0	0.97	0.2
Mature females						Mature males					
2010	49.1	99.8	-1.7	0.40	19.7	2010	128.0	227.9	28.2	0.30	38.9
2011	28.6	49.9	7.4	0.27	7.7	2011	100.3	187.7	13.0	0.31	31.5
2012	18.7	46.2	-8.9	0.34	6.4	2012	65.3	111.7	18.8	0.28	18.1
2016	26.2	33.4	19.0	0.11	3.0	2016	161.8	192.4	131.1	0.08	13.3
2017	80.5	165.0	-4.0	0.38	30.4	2017	303.4	531.7	75.2	0.27	82.2
2018	36.2	47.2	25.1	0.12	4.3	2018	94.7	120.3	69.0	0.11	10.8
2019	29.3	54.8	3.8	0.34	9.9	2019	49.9	90.0	9.9	0.31	15.6
2020	0.2	0.5	0.0	0.97	0.2	2020	4.1	8.8	0.0	0.67	2.7
Newly mature females						Newly mature males					
2010	9.6	24.9	-5.7	0.62	5.9	2010	4.3	9.1	-0.5	0.43	1.9
2011	1.4	3.8	-0.9	0.58	0.8	2011	1.4	4.9	-2.2	0.94	1.3
2012	1.0	4.4	-2.3	0.76	0.8	2012	6.1	14.1	-1.9	0.47	2.9
2016	4.5	8.0	1.1	0.30	1.3	2016	16.0	27.2	4.9	0.27	4.3
2017	2.1	5.9	-1.7	0.65	1.4	2017	12.4	25.7	-1.0	0.42	5.2
2018	2.3	4.3	0.3	0.34	0.8	2018	3.6	7.6	-0.5	0.44	1.6
2019	0.0	0.0	0.0	NA	0.0	2019	8.5	22.9	-5.9	0.66	5.6
2020	0.0	0.0	0.0	NA	0.0	2020	0.1	0.3	0.0	0.97	0.1

Table 5. Results of correlation analyses of mean prosomal width (mm) and survey year for newly mature and mature males and females from the Delaware Bay area and lower Delaware Bay surveys. Statistics presented are number of years included, *n*; *T*-score; probability, *p*; and correlation coefficient, *r*. A negative correlation coefficient indicates a decreasing regression slope.

Maturity group	*n*	*T*	*p*	*r*
Delaware Bay area 2002-2019				
Mature females	16	-11.09	<0.001	-0.948
Newly mature females	16	-4.84	<0.001	-0.791
Mature males	16	-11.85	<0.001	-0.954
Newly mature males	16	-5.58	<0.001	-0.831
Lower Delaware Bay 2010-2019				
Mature females	8	-4.04	0.007	-0.855
Newly mature females	8	-2.00	0.116	-0.707
Mature males	8	-7.47	<0.001	-0.950
Newly mature males	8	4.78	0.003	0.890

Table 6. Estimated population (in thousands) of horseshoe crabs in the coastal **Delaware Bay area** survey, 2002-2020, with the mean, standard deviation (sd) and coefficient of variation (CV), calculated using the **delta distribution** model, by demographic group. Also included are the estimated upper and lower 95% confidence limits (UCL, LCL).

	mean	UCL	LCL	CV	sd		mean	UCL	LCL	CV	sd
Immature females						Immature males					
2002	9,470	15,665	3,275	0.31	2,936	2002	5,483	9,284	1,683	0.33	1,809
2003	4,585	8,848	321	0.43	1,972	2003	2,303	4,217	390	0.39	898
2004	7,774	11,770	3,778	0.25	1,944	2004	6,810	10,895	2,725	0.29	1,975
2005	5,630	8,856	2,404	0.28	1,576	2005	5,260	8,839	1,681	0.33	1,736
2006	12,928	18,691	7,164	0.21	2,715	2006	9,327	14,554	4,100	0.24	2,238
2007	13,684	27,486	-118	0.41	5,610	2007	8,966	18,246	-314	0.42	3,766
2008	10,933	18,650	3,216	0.32	3,499	2008	7,841	13,917	1,766	0.35	2,744
2009	39,032	72,868	5,197	0.39	15,222	2009	29,864	47,269	12,460	0.28	8,362
2010	3,954	5,220	2,688	0.16	633	2010	2,686	4,144	1,229	0.26	698
2011	4,965	6,945	2,985	0.20	993	2011	3,092	4,547	1,637	0.23	711
2016	11,699	20,462	2,935	0.36	4,212	2016	9,102	16,649	1,555	0.39	3,550
2017	7,505	10,708	4,302	0.19	1,426	2017	5,091	8,465	1,717	0.27	1,375
2018	10,173	14,285	6,061	0.19	1,933	2018	7,507	11,173	3,842	0.23	1,727
2019	3,397	5,516	1,279	0.31	1,053	2019	1,487	2,614	360	0.38	565
2020	9,475	19,779	0	0.65	6,159	2020	5,925	11,967	0	0.61	3,614
Mature females						Mature males					
2002	4,959	8,084	1,834	0.30	1,488	2002	11,584	17,335	5,834	0.24	2,780
2003	3,379	5,160	1,599	0.25	845	2003	8,069	13,029	3,110	0.29	2,340
2004	2,735	4,043	1,426	0.23	629	2004	5,150	7,788	2,511	0.25	1,288
2005	3,138	4,942	1,333	0.27	847	2005	5,844	8,461	3,228	0.22	1,286
2006	6,611	14,330	-1,108	0.42	2,777	2006	15,825	26,060	5,589	0.27	4,273
2007	7,746	12,704	2,789	0.31	2,401	2007	15,795	25,104	6,487	0.28	4,423
2008	6,311	10,202	2,419	0.29	1,830	2008	14,647	24,995	4,299	0.33	4,834
2009	2,975	4,971	979	0.32	952	2009	6,240	10,197	2,283	0.30	1,872
2010	5,178	7,616	2,740	0.23	1,191	2010	13,963	21,910	6,015	0.28	3,910
2011	5,290	7,282	3,297	0.18	952	2011	15,060	29,000	1,120	0.40	6,024
2016	6,024	8,635	3,413	0.21	1,265	2016	21,941	37,216	6,665	0.29	6,363
2017	7,185	10,525	3,844	0.23	1,653	2017	20,664	31,208	10,119	0.25	5,166
2018	7,326	10,520	4,131	0.21	1,538	2018	15,749	21,880	9,619	0.18	2,835
2019	5,110	8,454	1,767	0.32	1,635	2019	8,924	15,202	2,646	0.35	3,108
2020	10,803	15,359	6,247	0.25	2,706	2020	31,546	51,050	12,042	0.36	11,583
Newly mature females						Newly mature males					
2002	1,537	2,400	675	0.26	400	2002	548	869	227	0.28	153
2003	794	1,633	-45	0.49	389	2003	78	221	-65	0.84	66
2004	358	575	141	0.29	104	2004	789	1,127	451	0.21	166
2005	479	753	206	0.27	129	2005	597	1,002	191	0.33	197
2006	2,051	3,509	594	0.31	636	2006	3,113	5,113	1,113	0.31	965
2007	2,373	4,339	408	0.40	949	2007	3,129	4,972	1,287	0.28	876
2008	2,571	4,984	158	0.43	1,106	2008	757	1,254	261	0.31	235
2009	885	1,361	410	0.26	230	2009	725	1,240	210	0.34	247
2010	1,338	2,990	-314	0.59	789	2010	1,422	3,070	-226	0.55	782
2011	845	1,360	331	0.30	254	2011	749	1,335	164	0.36	270
2016	1,608	2,357	860	0.23	370	2016	2,608	4,884	331	0.42	1,095
2017	1,480	2,274	687	0.26	385	2017	1,523	2,392	654	0.28	426
2018	1,773	2,923	622	0.31	550	2018	3,341	5,367	1,316	0.29	969
2019	242	472	12	0.47	114	2019	1,271	2,154	389	0.34	437
2020	133	330	0	0.87	117	2020	2,492	4,030	953	0.37	914

Table 7. Estimated population (in thousands) of horseshoe crabs in the coastal **Delaware Bay area** survey, 2002-2020, with the mean, standard deviation (sd) and coefficient of variation (CV), calculated using the **normal distribution** model, by demographic group. Also included are the estimated upper and lower 95% confidence limits (UCL, LCL).

	mean	UCL	LCL	CV	sd		mean	UCL	LCL	CV	sd
Immature females						Immature males					
2002	8,222	11,875	4,568	0.21	1,727	2002	5,076	7,998	2,155	0.28	1,421
2003	4,089	6,860	1,317	0.32	1,308	2003	2,114	3,462	766	0.30	634
2004	7,376	10,616	4,135	0.21	1,549	2004	6,033	8,786	3,281	0.22	1,327
2005	5,104	7,521	2,687	0.23	1,174	2005	4,673	7,414	1,932	0.28	1,308
2006	13,714	20,988	6,439	0.25	3,429	2006	9,378	13,971	4,786	0.23	2,157
2007	13,692	27,335	48	0.41	5,614	2007	9,350	19,735	-1,035	0.45	4,208
2008	10,595	16,578	4,612	0.26	2,755	2008	6,897	10,443	3,350	0.23	1,586
2009	27,375	40,519	14,232	0.23	6,296	2009	26,435	38,730	14,140	0.23	6,080
2010	4,102	5,706	2,497	0.19	779	2010	2,781	4,423	1,139	0.29	806
2011	5,426	8,433	2,420	0.27	1,465	2011	3,301	5,219	1,382	0.28	924
2016	11,292	18,441	4,144	0.30	3,388	2016	8,185	13,512	2,858	0.31	2,537
2017	7,948	11,818	4,077	0.23	1,828	2017	5,082	7,829	2,335	0.26	1,321
2018	10,115	13,839	6,391	0.18	1,821	2018	7,768	11,653	3,882	0.24	1,864
2019	14,855	15,027	14,682	0.33	4,902	2019	66	236	-104	1.27	84
2020	6,832	10,559	3,106	0.32	2,213	2020	4,610	7,540	1,679	0.38	1,740
Mature females						Mature males					
2002	4,779	7,431	2,128	0.26	1,243	2002	10,711	14,972	6,450	0.19	2,035
2003	3,308	4,851	1,764	0.22	728	2003	7,454	10,827	4,082	0.21	1,565
2004	2,767	3,919	1,615	0.20	553	2004	5,586	8,875	2,297	0.28	1,564
2005	2,957	4,323	1,592	0.22	651	2005	5,408	7,322	3,494	0.17	919
2006	5,867	10,517	1,218	0.31	1,819	2006	14,461	21,734	7,188	0.23	3,326
2007	6,553	9,864	3,243	0.25	1,638	2007	13,100	18,506	7,694	0.20	2,620
2008	7,172	13,336	1,008	0.40	2,869	2008	14,244	23,240	5,247	0.30	4,273
2009	3,230	5,523	936	0.33	1,066	2009	6,319	10,255	2,383	0.29	1,833
2010	5,588	8,698	2,478	0.26	1,453	2010	14,396	22,600	6,192	0.27	3,887
2011	5,388	7,629	3,147	0.20	1,078	2011	14,858	25,890	3,825	0.33	4,903
2016	5,735	7,770	3,700	0.17	975	2016	24,017	40,197	7,837	0.30	7,205
2017	7,785	12,033	3,537	0.27	2,102	2017	19,985	29,245	10,724	0.23	4,597
2018	9,463	18,463	464	0.44	4,164	2018	15,264	19,849	10,680	0.15	2,290
2019	6,420	6,506	6,334	0.32	2,054	2019	11,660	11,824	11,497	0.37	4,314
2020	10.927	16,014	5,840	0.28	3,021	2020	25,200	34,983	15,416	0.23	5,810
Newly mature females						Newly mature males					
2002	1,509	2,278	741	0.24	362	2002	561	925	196	0.31	174
2003	787	1,547	26	0.45	354	2003	78	222	-66	0.84	66
2004	367	613	120	0.32	117	2004	786	1,120	452	0.20	157
2005	531	908	154	0.34	181	2005	580	927	233	0.29	168
2006	2,122	3,705	540	0.33	700	2006	3,377	6,076	678	0.38	1,283
2007	2,129	3,584	674	0.33	703	2007	2,841	4,214	1,468	0.23	653
2008	2,697	4,780	613	0.36	971	2008	776	1,315	237	0.33	256
2009	883	1,366	399	0.26	230	2009	708	1,157	259	0.31	219
2010	1,770	4,532	-992	0.74	1,310	2010	1,464	3,180	-252	0.56	820
2011	882	1,495	269	0.34	300	2011	766	1,343	190	0.36	276
2016	1,583	2,304	863	0.22	348	2016	2,939	5,588	290	0.43	1,264
2017	1,502	2,323	680	0.27	406	2017	1,590	2,623	557	0.32	509
2018	1,780	2,866	695	0.29	516	2018	3,064	4,466	1,663	0.22	674
2019	77	225	-70	0.94	73	2019	112	267	-43	0.68	77
2020	134	330	0	0.87	117	2020	2,430	3,676	1,184	0.30	740

Table 8. Estimated population (in thousands) of horseshoe crabs in the **lower Delaware Bay** survey area in 2010-2020, with the mean, standard deviation (sd) and coefficient of variation (CV), calculated using the **delta distribution** model, by demographic group. Also included are the estimated upper and lower 95% confidence limits (UCL, LCL).

	mean	UCL	LCL	CV	sd		mean	UCL	LCL	CV	sd
Immature females						Immature males					
2010	3,510	5,199	1,822	0.20	702	2010	2,632	4,476	788	0.29	763
2011	870	1,931	-191	0.44	383	2011	881	2,160	-397	0.52	458
2012	8,021	15,084	958	0.32	2,567	2012	9,381	21,965	-3,204	0.42	3,940
2016	9,046	15,558	2,534	0.29	2,623	2016	8,429	14,813	2,044	0.32	2,697
2017	4,536	10,029	-956	0.47	2,132	2017	2,920	6,458	-618	0.47	1,372
2018	2,211	2,803	1,619	0.10	221	2018	2,597	3,516	1,678	0.15	390
2019	525	1,278	-229	0.56	294	2019	308	816	-201	0.64	197
2020	12	33	0	0.97	12	2020	8	22	0	0.97	8
Mature females						Mature males					
2010	2,117	4,260	-25	0.39	826	2010	5,657	10,247	1,067	0.32	1,810
2011	1,348	2,599	96	0.33	445	2011	4,829	10,570	-912	0.43	2,076
2012	938	2,522	-646	0.39	366	2012	3,263	6,864	-338	0.35	1,142
2016	1,274	1,710	837	0.15	191	2016	7,735	9,709	5,761	0.10	774
2017	3,674	7,501	-153	0.38	1,396	2017	16,794	40,517	-6,929	0.51	8,565
2018	1,771	2,588	953	0.18	319	2018	4,616	6,600	2,631	0.18	831
2019	1,148	3,011	-715	0.63	723	2019	5,746	14,583	-3,092	0.60	3,448
2020	7	19	0	0.97	7	2020	152	332	0	0.68	103
Newly mature females						Newly mature males					
2010	414	1,087	-260	0.63	261	2010	187	409	-35	0.46	86
2011	65	170	-40	0.58	38	2011	58	208	-93	0.94	55
2012	50	214	-114	0.76	38	2012	301	710	-109	0.49	147
2016	206	357	55	0.30	62	2016	727	1,268	186	0.29	211
2017	88	249	-73	0.66	58	2017	542	1,100	-16	0.40	217
2018	115	220	9	0.36	41	2018	148	290	7	0.40	59
2019	0	0	0	NA	0	2019	361	1,022	-299	0.71	257
2020	0	0	0	NA	0	2020	4	11	0	0.97	4

Table 9. Estimated population (in thousands) of horseshoe crabs in the **lower Delaware Bay** survey area in 2010-2019, with the mean, standard deviation (sd) and coefficient of variation (CV), calculated using the **normal distribution** model, by demographic group. Also included are the estimated upper and lower 95% confidence limits (UCL, LCL).

	mean	UCL	LCL	CV	sd		mean	UCL	LCL	CV	sd
Immature females						Immature males					
2010	3,503	5,155	1,851	0.18	631	2010	2,588	4,056	1,120	0.24	621
2011	938	2,311	-435	0.53	497	2011	935	2,437	-567	0.58	542
2012	8,125	14,222	2,027	0.31	2,519	2012	9,023	17,690	356	0.35	3,158
2016	8,618	13,190	4,046	0.22	1,896	2016	7,725	11,638	3,812	0.21	1,622
2017	4,325	8,829	-178	0.41	1,773	2017	2,731	5,408	53	0.38	1,038
2018	2,209	2,780	1,638	0.10	221	2018	2,595	3,529	1,661	0.15	389
2019	852	868	836	0.01	9	2019	566	566	566	0.00	0
2020	12	33	0	0.97	12	2020	8	22	0	0.97	8
Mature females						Mature males					
2010	2,124	4,340	-91	0.41	871	2010	5,600	9,916	1,285	0.30	1,680
2011	1,290	2,239	340	0.27	348	2011	4,479	8,332	625	0.31	1,388
2012	915	2,242	-412	0.34	311	2012	3,188	5,456	921	0.28	893
2016	1,264	1,647	880	0.13	164	2016	7,727	9,570	5,883	0.10	773
2017	3,654	7,307	2	0.36	1,315	2017	13,805	23,702	3,908	0.26	3,589
2018	1,782	2,666	898	0.19	339	2018	4,647	6,901	2,393	0.19	883
2019	1,932	1,948	1,916	0.00	0	2019	8,356	8,356	8,356	0.00	0
2020	7	19	0	0.97	7	2020	152	332	0	0.68	103
Newly mature females						Newly mature males					
2010	418	1,097	-260	0.63	263	2010	185	391	-22	0.43	80
2011	65	170	-40	0.58	38	2011	58	208	-93	0.94	55
2012	50	214	-114	0.76	38	2012	302	719	-114	0.50	151
2016	205	355	55	0.28	57	2016	716	1,176	256	0.25	179
2017	88	249	-73	0.66	58	2017	541	1,090	-9	0.40	216
2018	114	226	3	0.35	40	2018	149	296	1	0.41	61
2019	0	0	0	NA	0	2019	401	408	394	0.00	3
2020	0	0	0	NA	0	2020	4	11	0	0.97	4

Table 10. Mean, minimum (min) and maximum (max) bottom water temperature (C°) and ordinal sampling date (numerical calendar date from 1 January) for survey collections in the Delaware Bay area and Lower Delaware Bay. For reference, 1 September is ordinal date 243 in non-leap years.

	Water temperature			Ordinal date		
	mean	max	min	mean	max	min
Delaware Bay area						
2002	19.7	23.5	15.0	287	300	273
2003	17.5	20.0	13.5	287	296	278
2004	16.9	20.5	14.5	292	302	277
2005	20.4	24.5	14.0	260	306	250
2006	17.1	22.3	13.0	288	314	246
2007	20.0	23.3	14.3	294	311	282
2008	20.1	22.6	19.3	279	288	273
2009	15.6	17.0	14.3	316	324	307
2010	19.4	24.1	12.3	284	331	265
2011	21.3	23.8	18.6	267	296	254
2016	22.7	24.8	18.6	275	299	260
2017	22.1	23.2	18.8	272	294	263
2018	22.8	24.8	13.9	275	315	253
2019	23.1	24.3	18.8	249	269	241
2020	22.0	25.0	17.0	230	248	218
Lower Delaware Bay						
2010	17.2	17.7	16.7	295	296	295
2011	18.3	18.6	18.0	294	295	294
2012	18.0	18.0	17.9	299	299	299
2016	19.6	20.1	19.0	288	289	288
2017	19.3	19.5	19.2	292	293	292
2018	12.2	12.8	11.3	321	322	321
2019	17.5	17.8	17.2	291	291	291
2020	24.0	25.4	23.2	247	247	247

Table 11. Correlations between annual mean catches-per-tow of horseshoe crabs with mean bottom water temperature and ordinal sampling date in the Delaware Bay area survey and the lower Delaware Bay survey, by demographic group. The Delaware Bay area surveys included 15 years, and the lower Delaware Bay surveys included 8 years. Statistics presented include correlation coefficient, *r*; *T*-score; and probability, *p*. Data are from Tables 1, 3, and 10.

Water temperature				Ordinal date		
	r	*T*	*p*	*r*	*T*	*p*
Delaware Bay area						
Immature females	-0.493	-2.04	0.062	0.553	2.39	0.033
Immature males	-0.512	-2.15	0.051	0.566	2.47	0.028
Mature females	0.527	2.24	0.043	-0.594	-2.66	0.020
Mature males	0.517	2.18	0.048	-0.589	-2.63	0.021
Newly mature females	-0.008	-0.02	0.978	0.433	1.73	0.107
Newly mature males	0.372	1.45	0.172	-0.231	-0.86	0.408
Lower Delaware Bay						
Immature females	-0.034	-0.083	0.936	0.258	0.65	0.537
Immature males	-0.081	-0.201	0.848	0.284	0.73	0.495
Mature females	-0.314	-0.811	0.449	0.453	1.24	0.260
Mature males	-0.077	-0.188	0.859	0.270	0.68	0.521
Newly mature females	-0.220	-0.553	0.601	0.241	0.61	0.566
Newly mature males	0.008	0.019	0.986	-0.184	0.46	0.663

MEMO

To: Delaware Bay ARM Working Group
From: Jim Lyons, USGS Eastern Ecological Science Center at the Patuxent Research Refuge, Laurel, MD
Re: Red Knot Stopover Population Estimate for 2021
Date: 22 September 2021

1 Acknowledgments

We thank the many volunteers in Delaware and New Jersey who collected mark-resight data in 2021. We are grateful to Henrietta Bellman (Delaware DFW) and Amanda Dey (New Jersey ENSP), and numerous volunteers in Delaware and New Jersey for data entry and data management, and Lena Usyk (bandedbirds.org) for data management.

2 Methods

Red knots have been individually marked at Delaware Bay and other locations in the Western Hemisphere with engraved leg flags since 2003; each leg flag is engraved with a unique 3-character alphanumeric code (Clark et al. 2005). Mark-resight data (i.e., sight records of individually-marked birds and counts of marked and unmarked birds) were collected on the Delaware and New Jersey shores of Delaware Bay according to the methods for mark-resight investigations of Red Knots in Delaware Bay (Lyons 2016).

Surveys to locate leg-flagged birds were conducted on each beach every three days according to the sampling plan (Table 1). During these resighting surveys, agency staff and volunteers surveyed the entire beach and recorded as many alphanumeric combinations as possible.

As in previous years, all flag resightings were validated with physical capture and banding data available in the data repository at http://www.bandedbirds.org/. Resightings without a corresponding record of physical capture and banding (i.e., "misread" errors) were not included in the analysis. However, banding data from Argentina for validation purposes are not available in bandedbirds.org; therefore, all resightings of orange engraved flags were included in the analysis without validation using banding data. We also omitted resightings of 12 flagged individuals in 2021 whose flag codes were previously accidentally deployed in both New Jersey and South Carolina (A. Dey, pers. comm.) because it is not possible to confirm individual identity in this case.

While searching for birds marked with engraved leg flags, observers also periodically used a scan sampling technique to count marked and unmarked birds in randomly selected portions of Red Knot flocks (Lyons 2016).

Table 1. Dates for mark-resight survey periods (3-day sampling occasion) in Delaware Bay.

Survey period	Dates	Survey period	Dates
1	≤10 May	6	23-25 May
2	11-13 May	7	26-28 May
3	14-16 May	8	29-31 May
4	17-19 May	9	1-3 June
5	20-22 May	10	4-6 June

To estimate stopover population size, we used the methods of Lyons et al. (2016) to analyze 1) the mark-resight data (flag codes), and 2) data from the scan samples of the marked-ratio. In this "superpopulation" approach, passage population size is estimated using the Jolly-Seber model for open populations, which accounts for the flow-through nature of migration areas and probability of detection during surveys.

In our analyses for Delaware Bay, the days of the migration season were aggregated into 3-day sampling periods (a total of 10 sample periods possible each season, Table 1). Data were aggregated to 3-day periods because this is the amount of time necessary to complete mark-resight surveys on all beaches in the study (a mark-resight data summary is provided in Appendix 1).

With the mark-resight superpopulation approach, we first estimated the number of birds that were carrying leg flags, and then adjusted this number to account for unmarked birds using the estimated proportion of the population with flags. The estimated proportion with leg flags is thus an important statistic. We used the scan sample data (i.e., the counts of marked birds and the number checked for marks) and a binomial model to estimate the proportion of the population that is marked. To account for the random nature of arrival of marked birds in the bay and the addition of new marks during the season, we implemented the binomial model as a generalized linear mixed model with a random effect for the sampling period. More detailed methods are provided in Lyons et al. (2016) and Appendix 2.

3 Summary of Mark-resight and Count Data Collected in 2020

Mark-resight encounter data.—The 2021 Red Knot mark-resight database included a total of 1,591 individual birds from six countries recorded at least once by observers in Delaware Bay (Table 2). This total is remarkably close to the 2020 total detected in the bay: 1,587 individual birds were recorded in 2020 (Table 2). **Approximately the same number of flagged Red Knots were detected in 2020 and 2021.**

There was sufficient data for analysis in all 10 sampling periods in 2021 (≤10 May to 6 June; Table 1). In some years, including 2020, the analysis was restricted to periods 1-9 (≤10 May to 3 June) because data beyond 3 June were sparse.

While the number of birds detected in 2021 was similar to the number detected in 2020, this number of resighted individuals is lower than recent (pre-COVID-19) years given the limited use of volunteers for safety reasons. The number of marked birds detected and available for analysis in 2021 was approximately 48% lower than the number in the 2019 analysis (n = 3,072 birds) and 58% lower than the number detected and used for analysis in 2018 (n = 3,820).

One assumption of the mark-resight approach is that individual identity of marked birds is recorded without error (see Lyons 2016 for discussion of all model assumptions). As noted above, some field-recording errors are evident when sight records are compared to physical capture records available from bandedbirds.org. Again, any engraved flag reported by observers that does not have a corresponding record of physical capture is omitted. Field observers submitted 3,792 resightings in 2021; 50 were not valid (i.e., no corresponding banding data), for an overall misread read of 1.3%. (In 2020, 3,364 resightings were submitted and 100 [2.9%] were not valid.) These invalid resightings were removed before analysis, but a second type of "false positive" is still possible, i.e., false positive detection of flags that were deployed prior to 2020 but were not in fact present in Delaware Bay in 2020. It is not possible to identify this second type of false positive with banding data validation or other QA/QC methods.

Marked-ratio data.—In 2021, 564 marked ratio scan samples were collected: 297 and 267 in Delaware and New Jersey, respectively (Appendix 3). Last year in 2020, 734 marked-ratio scan samples were collected: 376 samples in Delaware and 358 in New Jersey.

Aerial and ground count data.—Aerial surveys were conducted on 23 and 27 May 2021 (Table 3; data provided by A. Dey, New Jersey Division of Fish and Wildlife, Endangered and Nongame Species Program). Ground and boat surveys were conducted twice in New Jersey (on 23 and 27 May) but only once in Delaware (on 23 May; Table 3).

4 Summary of 2020 Migration

The pattern of arrivals at Delaware Bay in 2021 suggests a slow start to the migration season, with few birds arriving before 18 May. A large wave of arrivals occurred on or about 21 May: approximately 35% of the total 2021 stopover population arrived close to 21 May (Fig. 1a). The number of birds arriving in the following period, about 24 May, was low, but there was a small number of late arrivals around 27-31 May (approximately 21% of the stopover population). Thus in 2021, it appears there was one large wave of

arrivals near the middle of the season and relatively small fractions arriving in the other the sampling periods before and after the peak of arrivals around 21 May.

Stopover persistence is the probability that a bird present in the bay during sampling period *i* is present in the bay at sampling period *i* +1. In 2020, stopover persistence started off relatively low (0.6), which is unusual for this time of year (Fig 1b). Often the early-arriving birds remain in the study area with little turnover in the population (but see 2020), but in 2021 there was substantial turnover early in the season. Stopover persistence peaked around 15 May and declined steadily after that until 27 May (Fig 1b). The steady decrease in stopover persistence during 15-24 May suggested a high degree of turnover and shorter stopovers than most years. There was a spike in stopover persistence around 27 May (Fig. 1b), during which turnover slowed briefly, but otherwise, stopover persistence declined steadily from 15 May until the end of the season. That is, turnover was high and increasing from 15 May on, suggesting shorter stays in 2021 than in most other years.

Following Lyons et al. (2016), we used the Jolly-Seber model to estimate stopover duration. In 2021, estimated average stopover duration was 10.3 days (95% credible interval 9.0 – 12.1 days). This stopover duration estimate is slightly shorter than 2020 (10.7 days [9.9 – 11.7]) and shorter than 2019 (12.1 days). This method of estimating stopover duration provides a coarse measure in our Delaware Bay study, however, because it is based on the number of sampling periods that a bird remained in the study area. For our Delaware Bay analysis, sampling periods are 3 days in which the data are aggregated (Table 1). To estimate stopover duration at Delaware Bay with this method, we first estimate the number of sampling periods that each bird remained in the study area and then multiply this by 3 (the number of days in each period) to estimate stopover duration in days. The resolution of the estimate is thus limited by the resolution of the time step in the mark-recapture model.

Probability of resighting in 2021 was relatively high early in the season, approximately 40-50% until around 18 May (Fig 1c). Between 21-27 May, probability of resighting was lower, around 25%. At the end of the season, after 27 May, probability of resighting was lower still, especially the 3-day period around 31 May. Around 31 May, the probability of resighting was close to zero, which is unusual for the mark-resight work at Delaware Bay (Fig 1c). Resighting probability increased slightly during 1-6 June to levels more typical for this time of year.

In 2021, 8.2% of the stopover population carried engraved leg flags (95% CI, 7.0% – 9.1%). This is slightly lower than the 2020 estimate (9.6% with leg flags [95% CI 8.8 – 10.3%]).

5 Stopover Population Estimation

The passage population size in 2021 was estimated at 42,271 (95% credible interval: 35,948 – 55,210). This superpopulation estimate accounts for turnover in the population and probability of detection. The 2021 stopover population estimate is similar to the 2020 stopover population size estimate (given wide confidence intervals in both years), 40,444, and slightly lower than the 2018-2019 estimates (Table 4).

Like 2020, the 2021population estimate is slightly lower than the 2018 and 2019 estimates (Table 4) and the confidence interval is wider. The uncertainty in the population estimate and wide confidence intervals are due in part to the low probability of resighting for many of the sampling periods during 2020-2021 compared to other years (early 2021 notwithstanding).

The time-specific stopover population estimates in 2021 increased steadily from the beginning of the season and peaked around 21 May (21,846 birds; Fig. 1d), corresponding to the large influx of arrivals at this time (Fig. 1a). Time-specific estimates declined steadily from 21 May until 6 June (Fig. 1d). The relatively high degree of uncertainty (wide confidence interval) in the estimate for the 30 May period reflects the low probability of resighting at this time (Fig. 1c).

6 References

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Table 2. Number of flags detected in 2021 by banding location (flag color).

	No. flagged individuals detected		
Banding location (flag color)	***2019***	***2020***	***2021***
U.S. (lime green)	2,368	1,255	1,292
U.S. (dark green)	351	161	118
Argentina (orange)	216	89	81
Canada (white)	156	52	78
Brazil (dark blue)	35	21	17
Chile (red)	10	9	5
Total	3,136	1,587	1,591

Table 3. Number of Red Knots detected during aerial and ground surveys of Delaware Bay in 2021. Data provided by A. Dey, New Jersey Division of Fish and Wildlife, Nongame and Endangered Species Program.

	Delaware	New Jersey	Total
Aerial/Ground Surveys			
23 May 2021	1,123*	5,012	6,131
27 May 2021	895	5,985	6,880
Ground/Boat Surveys			
23 May 2021	1,123	3,651	4,774
27 May 2021	—	5,618	5,618

* Delaware ground survey total from 23 May (1,123) used here rather than the aerial count of Delaware on the same day because the aerial count was lower than the corresponding ground count.
"—" = no data; ground survey was not conducted in Delaware on 27 May.

Table 4. Stopover (passage) population estimate using mark-resight methods compared to peak-count index using aerial- or ground-survey methods. The mark-resight estimate of stopover (passage) population accounts for population turnover during migration; peak-count index, a single count on a single day, does not account for turnover.

Year	Stopover population[a] (mark-resight *N**)	95% CI Stopover population *N**	Peak-count index [aerial (A) or ground (G)]
2011	43,570	(40,880 – 46,570)	12,804 (A)[b]
2012	44,100	(41,860 – 46,790)	25,458 (G)[c]
2013	48,955	(39,119 – 63,130)	25,596 (A)[d]
2014	44,010	(41,900 – 46,310)	24,980 (A)[c]
2015	60,727	(55,568 – 68,732)	24,890 (A)[c]
2016	47,254	(44,873 – 50,574)	21,128 (A)[b]
2017	49,405[e]	(46,368 – 53,109)	17,969 (A)[f]
2018	45,221	(42,568 – 49,508)	32,930 (A)[b]
2019	45,133	(42,269 – 48,393)	30,880 (A)[g]
2020	40,444	(33,627 – 49,966)	19,397 (G)[c]
2021	42,271	(35,948 – 55,210)	6,880 (A)[h]

[a] passage population estimate for entire season, including population turnover
[b] 23 May
[c] 24 May
[d] 28 May
[e] Data management procedures to reduce bias from recording errors in the field; data from observers with greater than average misread rate were not included in the analysis.
[f] 26 May
[g] 22 May
[h] 27 May

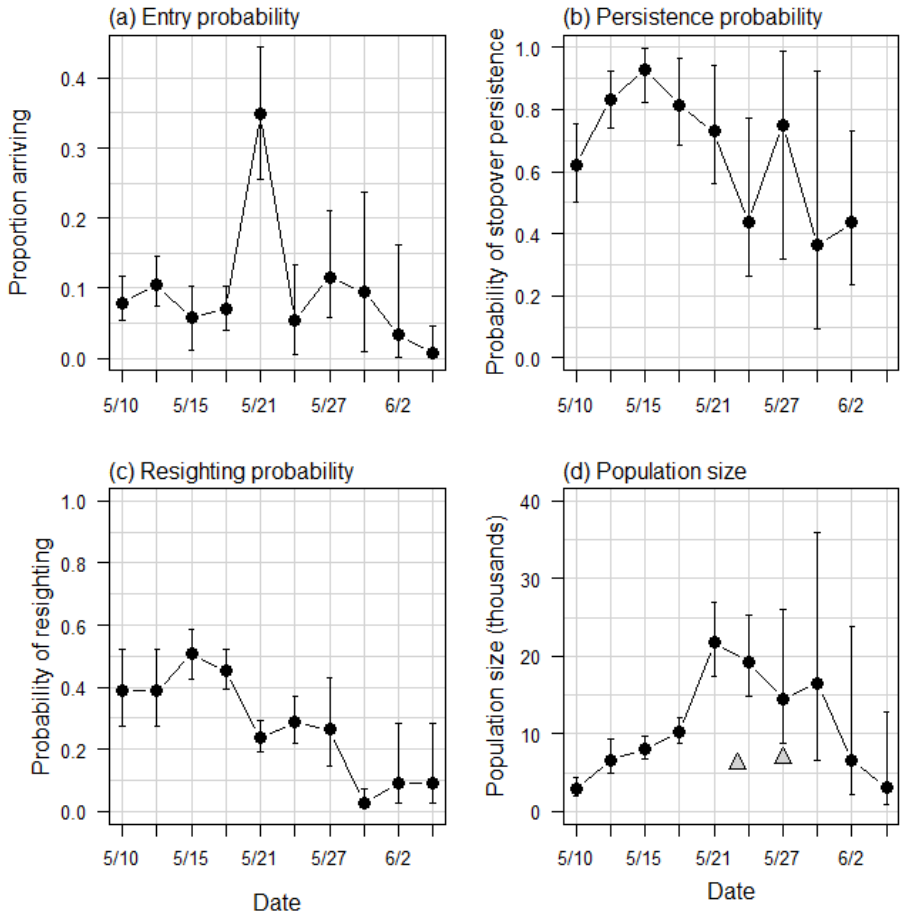


Figure 1. Estimated Jolly-Seber (JS) model parameters from a mark-resight study of Red Knots at Delaware Bay in 2021: (a) proportion of stopover population arriving at Delaware Bay, (b) stopover persistence, (c) probability of resighting, and (d) time-specific stopover population size. Dates on the x-axis represent sampling occasions (3-day survey periods). Triangles in (d) are total counts conducted on 23 (aerial count of NJ; ground count of DE) and 27 May (aerial count for both NJ and DE) 2021.

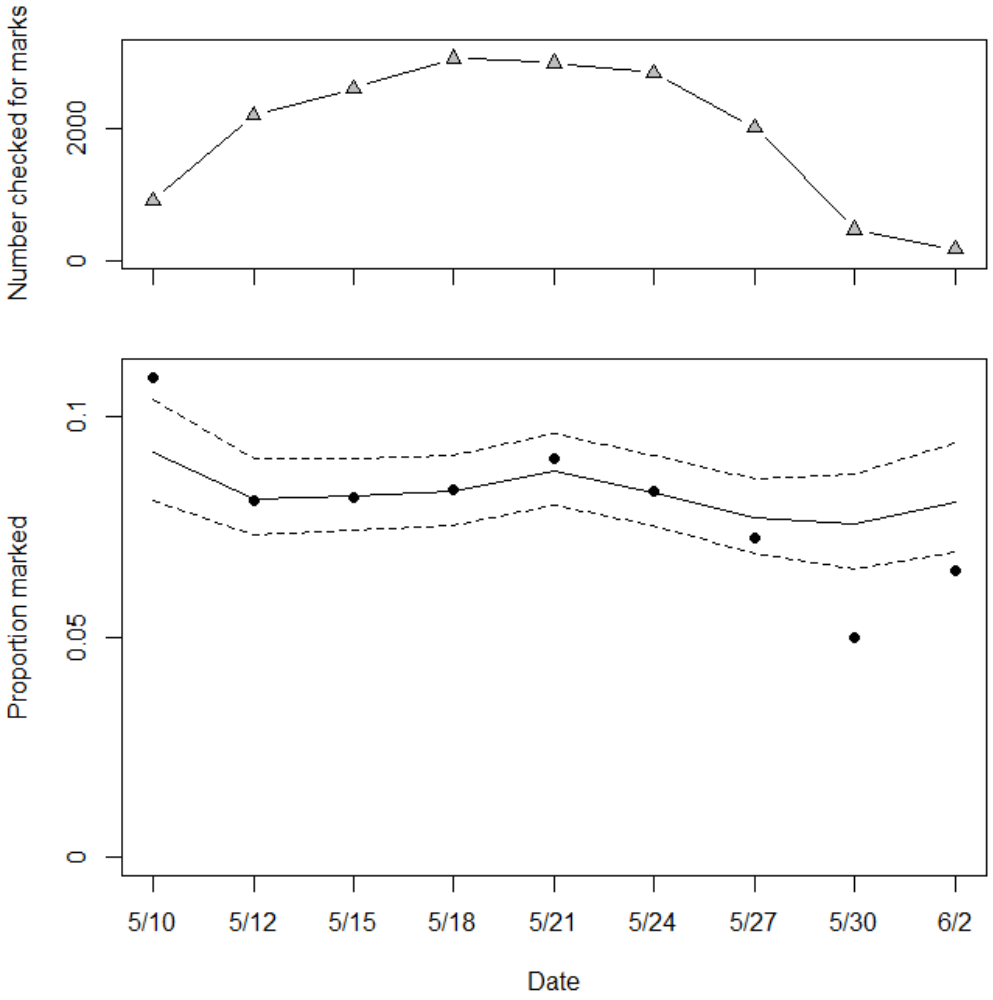


Figure 2. Estimated proportion of the Delaware Bay stopover population carrying leg flags in 2021. The marked proportion was estimated from marked-ratio scan samples for each 3-day sampling period. The dates for the sampling periods are shown in Table 1. The upper panel shows the sample size (number scanned, i.e., checked for marks) for each sample period. The bottom panel shows the estimated proportion marked at each sample occasion, which was estimated with the generalized linear mixed model described in Appendix 2. Solid and dashed lines are estimated median proportion marked and 95% credible interval; filled circles show (number with marks/number scanned).

Appendix 1. Summary of 2021 mark-resight data ("m-array"). NR = never resighted.

			Next resighted at sample								
Sample	Dates	Resighted	2	3	4	5	6	7	8	9	NR
1	≤10 May	48	23	9	3	0	1	0	0	0	12
2	11-13 May	210		95	30	6	9	1	0	0	69
3	14-16 May	331			146	21	24	9	1	1	129
4	17-19 May	385				85	43	11	1	0	245
5	20-22 May	452					96	25	2	1	328
6	23-25 May	458						56	1	4	397
7	26-28 May	290							7	7	276
8	29-31 May	33								0	33
9	1-3 June	48								4	44
10	4-6 June	22									

Appendix 2. Statistical Methods to Estimate Stopover Population Size Using Mark-Resight Data and Counts of Marked Birds

We converted the observations of marked birds into encounter histories, one for each bird, and analyzed the encounter histories with a Jolly-Seber (JS) model (Jolly 1965, Seber 1965, Crosbie and Manly 1985, Schwarz and Arnason 1996). The JS model includes parameters for recruitment (β), survival (φ), and capture (p) probabilities; in the context of a mark-resight study at a migration stopover site, these parameters are interpreted as probability of arrival to the study area, stopover persistence, and resighting, respectively. Stopover persistence is defined as the probability that a bird present at time t remains at the study area until time $t + 1$. The Crosbie and Manley (1985) and Schwarz and Arnason (1996) formulation of the JS model also includes a parameter for superpopulation size, which in our approach to mark-resight inferences for stopover populations is an estimate of the marked (leg-flagged) population size.

We chose to use 3-day periods rather than days as the sampling interval for the JS model given logistical constraints on complete sampling of the study area; multiple observations of the same individual in a given 3-day period were combined for analysis. A summary (m-array) of the mark-resight data is presented in an appendix.

We made inference from a fully-time dependent model; arrival, persistence, and resight probabilities were allowed to vary with sampling period [β_t φ_t p_t]. In this model, we set $p_1 = p_2$ and $p_{K-1} = p_K$ (where K is the number of samples) because not all parameters are estimable in the fully-time dependent model (Jolly 1965, Seber 1965, Crosbie and Manly 1985, Schwarz and Arnason 1996).

We followed the methods of Royle and Dorazio (2008) and Kéry and Schaub (2012, Chapter 10) to fit the JS model using the restricted occupancy formulation. Royle and Dorazio (2008) use a state-space formulation of the JS model with parameter-expanded data augmentation. For parameter-expanded data augmentation, we augmented the observed encounter histories with all-zero encounter histories (n = 2000) representing potential recruits that were not detected (Royle and Dorazio 2012). We followed Lyons et al. (2016) to combine the JS model with a binomial model for the counts of marked and unmarked birds in an integrated Bayesian analysis. Briefly, the counts of marked birds (m_s) in the scan samples are modeled as a binomial random variable:

$$m_s \sim Bin(C_s, \pi), \quad (1)$$

where m_s is the number of marked birds in scan sample s, C_s is the number of birds checked for marks in scan sample s, and π is the proportion of the population that is marked. Total stopover population size $\widehat{N^*}$ is estimated by

$$\widehat{N^*} = \widehat{M^*}/\hat{\pi} \quad (2)$$

where $\widehat{M^*}$ is the estimate of marked birds from the J-S model and $\hat{\pi}$ is the proportion of the population that is marked (from Eq. 1). Estimates of marked subpopulation sizes at each resighting occasion t $\left(\widehat{M_t^*}\right)$ are available as derived parameters in the analysis. We calculated an estimate of population size at each mark-resight sampling occasion $\widehat{N_t^*}$ using $\widehat{M_t^*}$ and $\hat{\pi}$ as in equation 2.

To better account for the random nature of the arrival of marked birds and addition of new marks during the season, we used a time-specific model for proportion with marks in place of equation 1 above:

$$m_{s,t} \sim Binomial(C_{s,t}, \pi_t) \quad (3)$$
$$for\ s\ in\ 1, \ldots, n_{samples}\ and\ t\ in\ 1, \ldots, n_{occasions}$$
$$logit(\pi_t) = \alpha + \delta_t$$
$$\delta_t \sim Normal(0, \sigma^2_{occasions})$$

where m_s is the number of marked birds in scan sample s, C_s is the number of birds checked for marks in scan sample s, δ_t is a random effect time of sample s, and π_t is the time-specific proportion of the population that is marked. Total stopover population size $\widehat{N^*}$ was estimated by summing time-specific arrivals of marked birds to the stopover (B_t) and expanding to include unmarked birds using estimates of proportion marked:

$$\widehat{N^*} = \sum \widehat{B_t} / \pi_t$$

Time-specific arrivals of marked birds are estimated from the Jolly-Seber model using $\widehat{B_t} = \widehat{\beta_t}\widehat{M^*}$ where $\widehat{M^*}$ is the estimate of the number of marked birds and $\widehat{\beta_t}$ is the fraction of the population arriving at time t.

Appendix 3. Number of marked-ratio scan samples.

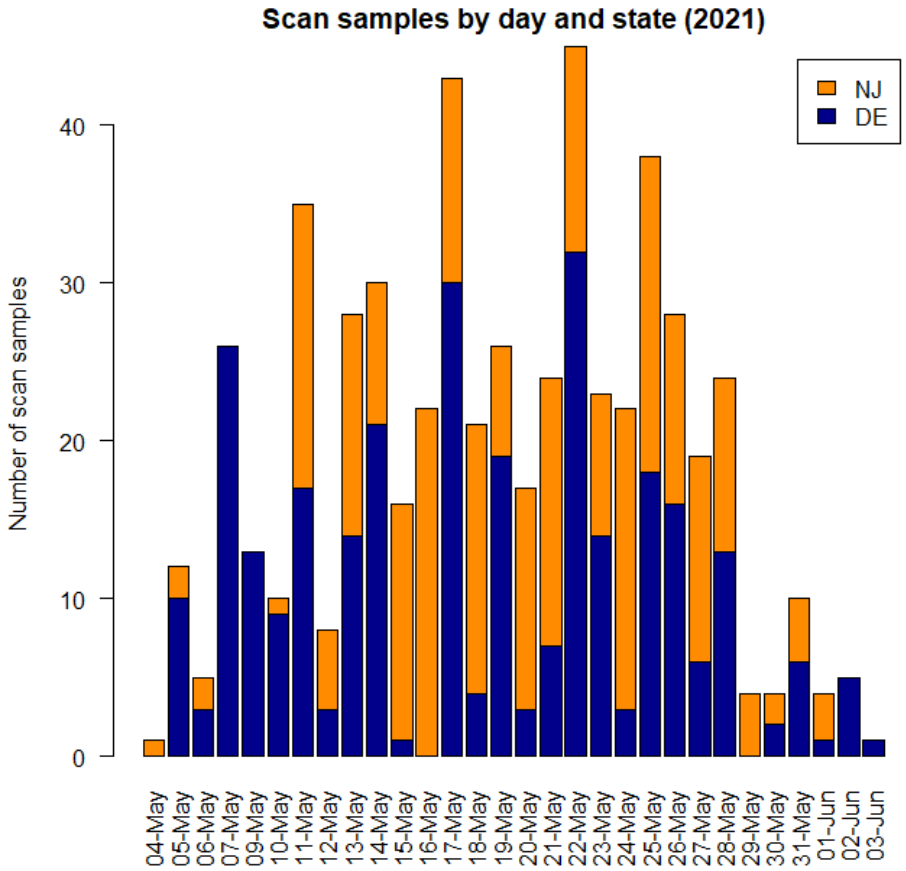


Figure A3.1. Number of marked-ratio scan samples (n = 564) collected in Delaware Bay in 2021 by field crews in Delaware (blue) and New Jersey (orange) and date. In 2021, observers in Delaware and New Jersey collected 297 and 267 scan samples, respectively.

Atlantic States Marine Fisheries Commission

Spiny Dogfish Management Board

October 21, 2021
10:15 – 11:15 a.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Call to Order (*C. Batsavage*)	10:15 a.m.
2. Board Consent • Approval of Agenda • Approval of Proceedings from October 2020	10:15 a.m.
3. Public Comment	10:20 a.m.
4. Review Analysis on Trip Limit and Market Price (*J. Didden*)	10:30 a.m.
5. Consider Fishery Management Plan Review and State Compliance for the 2020 Fishing Year (*K. Rootes-Murdy*) **Action**	10:45 a.m.
6. Update on Research Track Assessment (*J. Didden*)	11:00 a.m.
7. Other Business/Adjourn	11:15 a.m.

The meeting will be held via webinar, click here for details.

MEETING OVERVIEW

Spiny Dogfish Management Board
October 21, 2021
10:15 - 11:15 a.m.
Webinar

Chair: Chris Batsavage (NC) Assumed Chairmanship: 10/19	Technical Committee Chair: Scott Newlin (DE)	Law Enforcement Committee Representative: Moran (NJ)
Vice-Chair: Nichola Meserve	Advisory Panel Chair: VACANT	Previous Board Meeting: October 2020
Voting Members: ME,NH, MA, RI, CT, NY, NJ, DE, MD, VA, NC, NMFS, USFWS (13 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from October 2020

Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time should use the webinar raise your hand function and the Board Chair will let you know when to speak. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance, the Board Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Review Analysis on Trip Limit and Market Price (10:30 - 10:45 a.m.)

Background

- The Board has previously considered changes to the commercial federal trip limit due to concerns that it was an additional constraint to the state and regional trip limits.
- In August, the Mid-Atlantic Fishery Management Council (Council) Advisory Panel met and requested that the federal trip limit be raised to allow for more vessels to participate and allow for higher landings. (**Briefing Materials**)
- In response, Council Staff conducted a price analysis (**Briefing Materials**) to evaluate the potential effect of federal trip limit changes on spiny dogfish ex-vessel prices.

Presentations

- Analysis on Trip Limit and Market Price by J. Didden

5. Fishery Management Plan Review (10:45 - 11:00 a.m.) Action

Background

- State compliance reports were due July 1, 2021
- The Plan Review Team reviewed each state report and compiled the annual FMP Review.
- New York and Delaware requested *de minimis* status

Presentations

- Overview of the Spiny Dogfish FMP Review by K. Rootes-Murdy (**Briefing Materials**)

Board Actions for Consideration

- Accept 2020 FMP Review and State Compliance Reports.
- Approve *de minimis* requests for New York and Delaware.

6. Update on Research Track Assessment (11:00 - 11:15 a.m.)

Background

- The Research Track Assessment Working Group was formed earlier this year and is continuing work on the assessment scheduled for peer review in summer 2022.

Presentations

- Update on Research Track Assessment by J. Didden

7. Other Business/Adjourn

Spiny Dogfish

Activity level: Low

Committee Overlap Score: low (some overlaps with Coastal Sharks)

Committee Task List
• TC – July 1st: Annual compliance reports due

TC Members: Scott Newlin (DE, TC Chair), Tobey Curtis (NOAA), Jason Didden (MAFMC),Lewis Gillingham (VA), Greg Skomal (MA), Mike Frisk (NY), Lee Paramore (NC), Conor McManus (RI), Greg Hinks (NJ), Angel Willey (MD), Matt Gates (CT), Kathy Sosebee (NOAA), Michael Frisk (NY), Matt Cieri (ME), Kirby Rootes-Murdy (ASMFC)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

SPINY DOGFISH MANAGEMENT BOARD

Webinar
October 21, 2020

These minutes are draft and subject to approval by the Spiny Dogfish Management Board.
The Board will review the minutes during its next meeting.

Draft Proceedings of the Spiny Dogfish Management Board Webinar
October 2020

TABLE OF CONTENTS

INDEX OF MOTIONS

ATTENDANCE

Board Members

Megan Ware, ME, proxy for P. Keliher (AA)
Cheri Patterson, NH (AA)
G. Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Nicola Meserve, MA, proxy for D. McKiernan (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Jason McNamee, RI (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Rob LaFrance, CT, proxy for Bill Hyatt (GA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
John McMurray, NY, proxy for Sen. Kaminsky (LA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Houghtaling (LA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Mike Luisi, MD, proxy for B. Anderson (AA)
Russell Dize, MD (GA)
Phil Langley, MD, proxy for Del. Stein (LA)
Pat Geer, proxy for S. Bowman (AA)
Chris Batsavage, NC, proxy for S. Murphey (AA)
Jerry Mannen, NC (GA)
Derek Orner, NMFS
Mike Millard, USFWS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Staff

Robert Beal
Toni Kerns
Kristen Anstead
Max Appelman
Pat Campfield
Maya Drzewicki
Jeff Kipp
Laura Leach
Savannah Lewis
Sarah Murray
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Mike Armstrong, MA DMF
Pat Augustine, Coram, NY
Mel Bell, SC DNR
Alan Bianchi, NC DENR
Jason Boucher, DE DFW
Jeff Brust, NJ DEP
Kristin Butler, Fellow USS EPW
Mike Celestino, NJ DEP
Heather Corbett, NJ DEP
Jessica Daher, NJ DEP
Monty Deihl, Ocean Fleet
Andrea Didden
Jason Didden, MAFMC
Lynn Fegley, MD DNR
Jay Odell, TNC
Allison Ferreira, NOAA
Cynthia Ferrio, NOAA
Lewis Gillingham, VMRC
Angela Giuliano, MD DNR
Sonny Gwinn
Matthew Heyl, NJ DEP
Carol Hoffman, NYS DEC
Bill Hyatt, CT (AA)
Shanna Madsen, VMRC
Dan McKiernan, MA (AA)
Kim McKown, NYS DEC
Brandon Muffley, MAMFC
Allison Murphy, NOAA
Brian Neilan, NJ DEP
Ken Neill
Rich Pendleton, NYS DEC
Michael Pierdinock, CPF Charters
Brandon Raguz, NOAA
Jill Ramsey, VMRC
Tim Sartwell, NOAA
Tara Scott, NOAA
McLean Seward, NC DENR
Helen T-Heumacher, EDF
Beth Versak, MD DNR
John Whiteside
Angel Wiley, MD DNR
Chris Wright, NOAA
Renee Zobel, SC DNR

The Spiny Dogfish Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Wednesday, October 21, 2020, and was called to order at 11:30 a.m. by Chair Chris Batsavage.

CALL TO ORDER

CHAIR CHRIS BATSAVAGE: Good morning everyone, I would like to welcome you to the Spiny Dogfish Management Board meeting. My name is Chris Batsavage; I am the Administrative Proxy from North Carolina, and will be serving as Chair.

APPROVAL OF AGENDA

CHAIR BATSAVAGE: I want to start with Approval of the Agenda. Are there any modifications or additions requested for the agenda?

MS. TONI KERNS: I don't see any hands, Chris.

CHAIR BATSAVAGE: Okay great, we'll consider that approved.

APPROVAL OF PROCEEDINGS

CHAIR BATSAVAGE: Next is Approval of the Proceedings from the October 2019 Board meeting. Are there any changes, modifications, et cetera to the proceedings?

MS. KERNS: I see no hands.

CHAIR BATSAVAGE: All right, then those are approved.

PUBLIC COMMENT

CHAIR BATSAVAGE: Next is Public Comment. I'll offer the public the opportunity to provide comments on any items that are not on today's agenda. Are there any members of the public that would like to provide comment at this time?

MS. KERNS: I'm going to give an extra second. I see no hands.

CHAIR BATSAVAGE: All right, good deal. Okay moving along.

CONSIDER THE REVISED SPECIFICATIONS FOR THE 2021 AND 2022 FISHING SEASONS

CHAIR BATSAVAGE: Next item is to Consider the Revised Specifications for the 2021 and 2022 Fishing Seasons. Today we have Jason Didden from the Mid-Atlantic Fisheries Management Council that is going to go over the information on this with the Board. Jason, whenever you're ready, it's all yours.

MR. JASON T. DIDDEN: Okay thanks. Again, so looking at 2021 and 2022 fishing years here. We're currently in multiyear specs for '19, '20, and '21 fishing years. They were expected to go up a bit over those three years, because of the projections in the assessment just have the stock trend up.

Originally it was estimated to be at 67 percent of the target in 2018 with the last assessment, and then as the stock floats up with the projections, so does the ABC. That was the original recommendation from our SSC. The Council has modified its risk policy to tolerate a slightly higher chance of overfishing at any given stock size. The original chances of overfishing were like 27 to 30 percent in these multiyear specs. With the modification to the risk policy it allows, at the projected stock size, a 33 percent chance of overfishing.

That bumps up the projected 2021 ABC to 17,498 metric tons, and since we're expecting a benchmark in 2022, that probably really won't work into the specs process until the 2023 fishing year. Staff recommended just maintaining that same ABC for 2021 and 2022. Just from last year's update, the assessment is not just the spring trawl survey, but it is it with some bells and whistles.

These are SSB estimates coming out of the spring trawl fishery that really drives the bus on the assessment. There was no 2020 spring trawl because of COVID, but just kind of reviewing this to get a sense. It's really the terminal three years of data that kind of drive the assessment. This is not an assessment update. These are SSB point estimates from the survey, but you can kind of get a sense of the trends we saw, management starting in 2000.

The results from the spring trawl survey jumping up in a way that really doesn't match the biology of the species initially, right after management started, and then dropping off in recent years. Just landings since management, landings kind of tracked the increases in the quotas through 2011, and then since then the quotas went up a big with projections, landing basically kind of we're oscillating around that 20-million-pound mark.

With the last assessment update estimating smaller stock size, again you saw the trend in the survey. The quotas came back down. The annual landings have still been below quotas. The states have been kind of scrambling with some transfers to kind of optimize landings, given the state allocations.

You can see the 2019 fishing year there getting pretty close to the associated quota, and then the quotas popping back up. This 2021 is the original quota as would occur under the current multiyear specs. Just in terms of how landings have occurred the last few years. Blue here is the 2019 fishing year, the orange the year before, just to kind of get a sense how landings have come in week to week.

On the left is May 1, proceeding through the fishing year to late April of the following calendar year for again, 2019 here in blue, 2018 in orange. This is the same basic thing, but here blue is the current fishing year, orange the previous fishing year, so tracking a little bit behind 2019 fishing year this year, but pretty similar, all things considered, at least from my perspective. Just the price of spiny dogfish. This is inflation adjusted, everything in kind of constant real 2019 dollars.

The long-term trend is down. The last three years have been pretty stable though. With our process, first let me get some input from the Advisory Panel. They kind of flagged continuing weak demand, and that that weak demand coupled with the trip limit restrains landings flagged that local conditions affect local landings. That especially kind of has come up, and Virginia has had some pretty mild winters, and some pretty good winter landings in recent years. There remains concern that we've had some new science, in terms of vertical distribution in the water column, in terms of distribution in and out of the survey area. What does that mean for an assessment that is so driven by the survey? There is a lot of concern, are we underestimating the population and productivity?

Hope that that gets evaluated in the upcoming research track assessment, but no concerns about the stock from the AP. We did get input, especially this year that, given the executive order, things should really be opened up with spiny dogfish to facilitate additional landings. I got some input early this current fishing year being a little bit lower than last year, some fewer northern participants.

The fish seemed offshore, and folks having trouble kind of landing full trip limits. But big picture wise, landings seem to be tracking fairly closely to the year before so far in this fishing year. Again, the staff recommendation was the updated ABC, given the new risk policy, and extend it through 2022 as well. Next to our SSC, and then the SSC accepted that recommendation as being consistent with the Council's updated risk policy. There is certainly concern about not having that spring survey.

We're getting a big distant in time from when these projections were done in the last stock assessment, so that increases some uncertainty. But they noted that if you just went with the original projections done several years ago, even the original ones, the old risk policy had a bit higher ABC for 2022. There is a little bit of kind of conservatism, precaution built in through extending 2022 at the 2021 level, even the higher 2021 level with the new risk policy.

The SSC also highlighted and updated some research recommendations, given the pending research track assessment. The Monitoring Committee took those ABC recommendations, recommending some deductions for Canadian landings, for U.S. discards, for U.S. recreational landings. Those you can see, some of those are most recent year, some of the discards are three-year average, the calculation of those and what to take out for those came out of some correlation analyses that we've done in previous years.

Also, they seem to be performing fairly well. When you get to taking out the Canadian landings, discards, recreational landings, the revised 2021 and potentially 2022 quotas would be 13,408 metric tons, or just shy of 30 million pounds, which is higher than it was originally intended to be, and of course given the trends, higher than they are now.

There is always some discussion of trip limits at the Monitoring Committee. The Monitoring Committee has generally stayed away from a kind of heavy input on the trip limit, since from a biological perspective, as long as the states are adhering to their quotas, the trip limit shouldn't matter that much from a biological perspective.

The Monitoring Committee has kind of noted process considerations that within the Council FMPs major changes should really be handled via a framework, like getting rid of the trip limits. Both in terms of what's allowable vs specs, vs a framework. Then frameworks, since the topics are clearly identified under these two Council meetings for the Councils, really allows greater public input, greater awareness if there are potential changes, and greater just time for analysis also. Some follow up discussions with GARFO noted that some minor changes could probably be handled with low administrative costs. Council really wasn't intending on any action this year for spiny dogfish, but because of the way the previous NEPA document was structured, we can handle the quota change with pretty minor administrative cost.

But bigger changes beyond a couple thousand-pound increase would need an EA that really have not planned for resources for this year, but could probably deal with a thousand or two thousand pound increase within the current NEPA document structure in the abbreviated document we're planning.

However, Council staff still recommended to the Mid-Atlantic Council that really, use a framework to consider trip limit changes, because I don't really think participants are expecting trip limit changes right now, since we're in the middle of multiyear specs. We've gotten a lot of input over the years about given the relatively low price of spiny dogfish, changes to the trip limit potentially change price, so potentially fishermen are hauling more fish for the same revenue.

Because of a number of considerations, staff kind of really recommends using a framework to consider trip limit changes, so that folks can kind of be made aware of potential changes, and allow some additional socio-economic analysis of what trip limit changes might result in. The New England Council has voiced some concerns that New England preferences have been kind of masked by the Council's Committee as a Whole approach.

The Mid-Atlantic Council did that just to try for some kind of administrative savings. I think

probably in the future we'll likely just have separate committee meetings, so that kind of to address this concern. If the Committees are fairly balanced between Mid-Atlantic and New England members right now, but since we had it as a Committee of the Whole Mid-Atlantic Council, and all of our members vote as a Committee of the Whole.

If there are New England preferences, and its roughly split at the Committee level, that can get kind of masked. If all the Mid-Atlantic Council members are voting at Committee of the Whole, which is how we handle it, I anticipate in future years we'll just hold the Committee meetings separately.

The Mid-Atlantic Council did adopt the Monitoring Committee changes with no trip limits. It has set up as a 2021 priority in response to the Executive Order, some socio-economic analyses of what some potential trip limit changes could mean, and that could inform future action. New England Council meets in December.

If the two Councils recommend different things, basically the way the plan is set up that NMFS can resolve any differences by selecting any modification that hasn't been rejected by both Councils. Last year the Councils were aligned with each other, but if there is a disagreement between the Councils, GARFO/NMFS has a lot of flexibility to resolve those differences. That is it for me, thanks.

CHAIR BATSAVAGE: Thank you, Jason. Any questions for Jason on his presentation?

MS. KERNS: We have Jason McNamee and Eric Reid, and then Chris, I can just really quickly remind the Board that the Board has set the 2021, 2022 specifications. If we want to change the specification to mirror what the Mid-Atlantic Council has done to the 29.6 million pounds, we would need to revisit that quota, and determine if we want to set a quota for the 2022, 2023 fishing year.

CHAIR BATSAVAGE: Thanks, I appreciate that. Jason McNamee, you're up.

DR. JASON McNAMEE: Thank you, Jason for the report that was very, very well done. I have a question on the Monitoring Committee portion with regards to the trip limit. My question is, I was wondering, so there was a bullet in there where you indicate that it doesn't appear that the 6,000-pound trip limit is impacting things, because a lot of the trips aren't coming close to that, they are underneath it. That was what I took away from that part of the discussion anyways.

What I was wondering is, if the Monitoring Committee discussed at all kind of the indirect impact of where the trip limit is set. In other words, the fact that it's at 6,000 might have some potential participants who might want to come in with dogfish. It might not be enough for them, given the low price per pound, so if they're just discarding everything. I'm just wondering if that was brought up, because I'm wondering if that statement that I just made is true or not.

MR. DIDDEN: The Monitoring Committee's charge is to recommend measures to ensure that the specifications are not exceeded. Our input on the trip limit, not needing to change it, is more along the lines that we think if it's left where it is odds are the specs will not be exceeded. But I didn't look at it specifically this year, but in other years I've looked at it. Actually, there are many trips right at the 6,000-pound trip limit, and very close to it.

I think that does impact landings, both for the existing participants who are often landing right at 6,000 pounds, and other potential participants. I know, and we've gotten some input for some trawling interest, maybe like even a couple times a month to have like a

30,000-pound trip limit that they can make a trip out of. The Monitoring Committee is really more, in terms of not needing a change, more that if it's left as is, we don't think the specs will be exceeded.

But certainly, and with the state-by-state quotas, we think that changes to that probably aren't going to lead to overages either, as long as states adhere to their quotas. But I think it is impacting the nature of landings in a pretty strong way, because when I do like a scatter plot of all the trips, there are, I'm not quite sure about a majority, but it is really striking how many trips are right at 6,000 pounds.

DR. McNAMEE: Thank you very much, that was super helpful.

CHAIR BATSAVAGE: Next up is Eric Reid.

MR. ERIC REID: I have a question about process. I do have a motion, but it might need to be two motions. A motion to revise requires two-thirds vote, but a simple motion to set specs is only a majority, is that right, or is one motion going to be able to do the whole thing?

CHAIR BATSAVAGE: Eric, yes, I believe you're right. I'll turn to Toni to see if we could potentially handle both years in one motion. Toni.

MS. KERNS: It's the will of the Board. You are correct, Eric, it does take two-thirds majority to revise. But if we don't think that there is going to be much opposition to revising and setting the specs at the 29.6 million pounds, we can do it all in one.

MR. REID: Okay, thanks for that. Mr. Chairman, I can give you a motion whenever you're ready and see what happens.

CHAIR BATSAVAGE: I'm going to see if any other Board members have questions, and if not, I'll come back to you for your motion. Toni, anyone else in the queue?

MS. KERNS: I see no one else with their hand raised. I apologize, David Borden just snuck in.

CHAIR BATSAVAGE: Great, David.

MR. DAVID V. BORDEN: Just a quick question. Is the observation by the Advisors about the dogfish resource moving into federal waters? I just wondered to what extent is that supported by the science?

CHAIR BATSAVAGE: I think I'll turn to Jason Didden on any insight he has on that.

MR. DIDDEN: That was kind of an on-the-fly observation of really 2020 fishing year landings. I have, and I think particular to 2020, and there is a reason why landings may have slacked, may have been a little bit below last year's trend. I have not looked into that in any detail. Without the spring survey, you know that would further compromise our kind of ability to see changes.

We don't really have much, in terms of distribution in the summer when that was occurring. I think it would be pretty hard to delve into, but I haven't, since it's really just summer 2020 that their observation was mostly pertinent to. I haven't kind of been able to dig through any data on that.

MR. BORDEN: Thank you, Jason. Mr. Chairman, can I follow up with a question?

CHAIR BATSAVAGE: Yes, definitely.

MR. BORDEN: My follow up is, to what extent has the Mid-Atlantic Council talked about the subject of the surveys being modified, and the observer system being modified? Have they taken that up and had a discussion on how that might affect out-year specifications?

MR. DIDDEN: Our Assister has certainly been chewing on that quite a bit. I don't know. I would have to follow up on any resolution. I think if, you know we've had some gap years with spiny dogfish before, with missing the 2020. But it's hard to say exactly which way the research track proceeds, and what data sources it uses. But I can only imagine that it will increase uncertainty, and that's never a good thing.

MR. BORDEN: Thank you.

CHAIR BATSAVAGE: Any other questions from Board members?

MS. KERNS: No other hands.

CHAIR BATSAVAGE: Okay great, so Eric, I will turn to you for your motion.

MR. REID: If somebody wants to put it on the screen, I'm happy to read it. Move to revise the 2021/2022 fishing year spiny dogfish commercial quota to 29,559,580 pounds, and to set the 2022/2023 fishing year quota at 29,559,580 pounds. The rationale for that motion was given very clearly by Mr. Didden in his presentation.

MS. KERNS: We have a second by Ray Kane.

CHAIR BATSAVAGE: Thanks, so motion by Eric Reid, second by Ray Kane. Any discussion on the motion?

MS. KERNS: I don't see any hands raised.

CHAIR BATSAVAGE: This is a final action by the Board, which is roll call, but I think we can try to see if there are any objections, am I correct on that, Toni?

MS. KERNS: You can.

CHAIR BATSAVAGE: All right, in the interest of time and lunch creeping up on us here. I'll ask, are there any objections to this motion?

MS. KERNS: I see no hands in objection.

CHAIR BATSAVAGE: Okay then the motion passes by unanimous consent. I guess Toni, does that take care of what we need to do for specifications? I guess if there is no interest in modifying the northern region trip limits, then they would stay at 6,000 pounds, and no action would be needed by the Board. Am I correct on that?

MS. KERNS: That is correct, Mr. Chairman.

CHAIR BATSAVAGE: Okay, if there is no interest in making any modifications to that, and as Jason mentioned that there is going to be some more work done on analyzing that next year. Then we can move on to our next item on the agenda. I'll just pause to make sure that that is the case.

MS. KERNS: I don't see any hands, so I think you are correct.

CHAIR BATSAVAGE: Thank you again everyone for getting through this action item.

ELECT A VICE-CHAIR

CHAIR BATSAVAGE: Next item on the agenda is to Elect a Vice-Chair. Now I'll entertain a motion for a Vice-chair.

MS. KERNS: You have Nichola Meserve, I mean sorry, Megan Ware. I might have made a spoiler.

MS. MEGAN WARE: I would like to nominate Nichola Meserve.

CHAIR BATSAVAGE: Move to nominate Nichola Meserve as Vice-Chair of the Spiny Dogfish Board, can I get a second, please?

MS. KERNS: Cheri Patterson.

CHAIR BATSAVAGE: Seconded by Cheri Patterson. Is there any objection to the motion?

MS. KERNS: I see no hands in objection.

CHAIR BATSAVAGE: All right, great, congratulations and thank you, Nichola. Last item is other business. Is there any other business for the Management Board to consider today?

MS. KERNS: I see no hands raised for other business.

ADJOURNMENT

CHAIR BATSAVAGE: Great, well if there is no objection than we are adjourned. Thanks everyone.

(Whereupon the meeting adjourned at 12:00 p.m. on October 21, 2020.)

Spiny Dogfish
AP Fishery Performance Report
August 2021

The Mid-Atlantic Fishery Management Council's (Council) Spiny Dogfish Advisory Panel (AP) met via webinar on August 19, 2021 to review the Spiny Dogfish Fishery Information Document and develop the following Fishery Performance Report. The primary purpose of this report is to contextualize catch histories for the Scientific and Statistical Committee (SSC) by providing information about fishing effort, market trends, environmental changes, and other factors. Trigger questions (see below) were posed to the AP to generate discussion of observations in the spiny dogfish fishery. Advisor comments described below are not necessarily consensus or majority statements.

Advisory Panel members attending: Scott MacDonald, John Whiteside, Jr., Jeremy Hancher, James Fletcher, Scott Curatolo-Wagemann, and Roger Rulifson. **Others attending:** Jason Didden, Daniel Salerno, Chris Batsavage, Alan Bianchi, Angel Willey, Willow Patten, John Almeida, Kirby Rootes-Murdy, Sonny Gwin, and Stephanie Sykes.

Trigger questions:

The AP was presented with the following trigger questions:

1. What factors have influenced recent catch (markets/economy, environment, regulations, other factors)?
2. Are the current fishery regulations appropriate? How could they be improved?
3. What would you recommend as research priorities?
4. What else is important for the Council to know?

Market/Economic Conditions

COVID-19 has not had a large impact to date. Similar market issues persist as with previous years – demand has been low but stable recently – market could support more landings than in most recent year if participation/production at the vessel level increases.

Changing the name to Chip Fish would help with marketing/exports. We could sell these in the U.S. if we could change the name (like snakehead). No advisors were opposed but practical challenges were highlighted.

There are no Southern processors – they were “burnt” by previous management and won’t get back in without quota stability on a decadal timeframe. They would need to know that the quota won’t go down for 5-10 years. Southern fishermen have to ship to MA.

Previous reports have noted not having a processor also depresses NY landings.

Developing industrial markets, be it fertilizer, processed export, or pharmaceutical (livers), requires a higher trip limit for trawlers.

Expanding use of liver components could increase overall value – several outreach efforts have occurred to pharmaceutical companies with no interest expressed back.

Regarding the fin market – there are self-imposed bans by cargo lines than prohibit fin transport even from sustainable sources (i.e. this is beyond our control).

General reasons for reduced participation: Increased fuel costs and opportunities in other fisheries.

In VA, fishermen have calculated that other fisheries (oysters, shrimp) are better opportunities and have reduced spiny dogfish effort. Shrimping drew off 8 boats last year.

The lowering of the quota from 38 million to 20 million had a negative impact on landings – would have been better to have taken an averaged approach.

Cornell has continued efforts to expand domestic consumption of spiny dogfish and other "exotic" species. E.g. chefs sampler events, underserved communities/foodbanks.

Public: Stephanie Sykes - One MA buyer had stipulations around having to land both skate and dogfish for a portion of the season, so if fishermen were unable to land both species they were forced to take days off or find another buyer.

Environmental Conditions

Environmental conditions are always a factor.

Public: Stephanie Sykes – Early in summer 2021 Cape Cod fishermen had trouble finding dogfish and switched over to other fisheries (hook/tub-trawl and gillnet). Dogfish came inshore and some shifted to dogfish with steady landings. When buyers stopped buying mackerel more shifted back to dogfish. Catches really dropped in mid-August, seem to be improving currently. Water temperatures are particularly warm – dogfish are not coming up cold currently.

In VA weather (late January through March 2021) further reduced catches for remaining vessels.

Management Issues

Regulations (especially the trip limit) do not allow a male fishery. State regulations do not allow new fishermen to participate. The current regulations are geared to keep price up and production limited and do not allow industrial production.

Raising the trip limit to 10,000 pounds could entice more vessels to participate and allow higher landings once dogfish are located. Vessels won't immediately all land 10,000 pounds but helps with flexibility.

Other Issues

Given the lack of an off-shelf survey and vertical water column usage by dogfish, we don't really know the population size. See Carlson AE, Hoffmayer ER, Tribuzio CA, Sulikowski

JA (2014) The Use of Satellite Tags to Redefine Movement Patterns of Spiny Dogfish (Squalus acanthias) along the U.S. East Coast: Implications for Fisheries Management. PLoS ONE 9(7): e103384. https://doi.org/10.1371/journal.pone.0103384. The general biological section of the fishery information document should be updated accordingly. Also see Garry Wright's thesis that concluded that the NEFSC trawl survey is not accurately representing spiny dogfish biomass.

Allowing dogfish populations to increase has hurt all other fish populations. We need calculations regarding consumption by dogfish of other fish.

You should note the continual nature of embryo development/pupping in the general biological information section.

The repeated failure of the Bigelow since 2014 to complete its mission in terms of not fishing at a consistent time and not achieving planned stations eliminates our ability to have good information about spiny dogfish abundance given the dependence on the survey for spiny dogfish. This compounds uncertainty concerns and the Bigelow performance degrades the credibility of the resulting information (individual years and interpreting the time series). We have 1/8 years of full surveys in recent years. This affects all species' management. The Council should call in NEFSC maritime operations manager (D. Simon?) to account for Bigelow performance. The advisors agreed that the Bigelow performance issues are doing a disservice to all the fisheries and fishermen.

There is concern whether the NEFSC is continuing wire/net measurements to ensure survey consistency. The timing of the survey is critical for spiny dogfish due to the observed migration patterns and not sampling the same areas consistently reduces the meaningfulness of the resulting data.

Condition of NC inlets makes it very difficult to get product into NC. NC trawl fishermen can't land spiny dogfish in VA due to state regulations.

Research Priorities

To add fishery value, we should research the value and production of squalamine in spiny dogfish livers for medical use.

The assessment needs to account for the continual pup production observed in females, which is primarily affected by food availability/consumption.

We should conduct research into the purposes of the horn/spine – is it offensive (weakening potential prey), or defensive?

Off the shelf sampling needs to occur to understand biomass. Why can't Bigelow do some deeper sampling? Could we send a drone to monitor?

East Carolina Univ has tagged 43,000 + spiny dogfish – trying to get graduate student to publish. Appears to be an availability gap from years 2-8/10 where if not caught in first few years fish are not caught for a number of years but then eventually show back up in commercial catches.

Spiny Dogfish Fishery Information Document

August 2021

This Fishery Information Document provides a overview of the biology, stock condition, management system, and fishery performance for spiny dogfish (*Squalus acanthias*) with an emphasis on recent data. Data sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and should be considered preliminary. For more resources, including previous Fishery Information Documents, please visit http://www.mafmc.org/dogfish.

Key Facts

- 2020 fishing year landings were about 12.8 million pounds; 2019 fishing year landings were about 19.1 million pounds.
- The current 2021 fishing year quota is 29.6 million pounds.
- The 2022 fishing year quota is planned to stay the same if no changes are recommended by the Scientific and Statistical Committee (SSC) or the Councils.
- A formal update from the NMFS Science Center is not anticipated, but we expect an update of the spring trawl survey results and pup index through 2021. The previous data update is available at https://www.mafmc.org/s/3_2019-Data-Update-for-spiny-dogfish.pdf.

Basic Biology

Spiny dogfish is a coastal shark with populations on the continental shelves of northern and southern temperate zones throughout the world. It is the most abundant shark in the western north Atlantic and ranges from Labrador to Florida, but is most abundant from Nova Scotia to Cape Hatteras, North Carolina. Its major migrations on the northwest Atlantic shelf are north and south, but it also migrates inshore and offshore seasonally in response to changes in water temperature. Spiny dogfish have a long life, late maturation, a long gestation period, and relatively low fecundity, making them generally vulnerable to depletion. Fish, squid, and ctenophores dominate the stomach contents of spiny dogfish collected during the Northeast Fisheries Science Center (NEFSC) bottom trawl surveys, but spiny dogfish are opportunistic and have been found to consume a wide variety of prey. More detailed life history information can be found in the essential fish habitat (EFH) source document for spiny dogfish at: https://www.fisheries.noaa.gov/region/new-england-mid-atlantic#science. [1]

Status of the Stock

Based on the current biomass reference point and an assessment update considering data through spring of 2018 (available at http://www.mafmc.org/ssc-meetings/2018/sept-11), the spiny dogfish stock is not overfished or experiencing overfishing. The 2018 biomass was 67% of the target. Fishing mortality in 2017, the most recent year available, was 83% of the overfishing threshold. A research track assessment has begun and is scheduled for review in 2022. The spiny dogfish spawning stock biomass estimate timeseries is provided in Figure 1. [2] Updated trawl data, which is the chief determinant of biomass in the assessment, will be distributed when available.

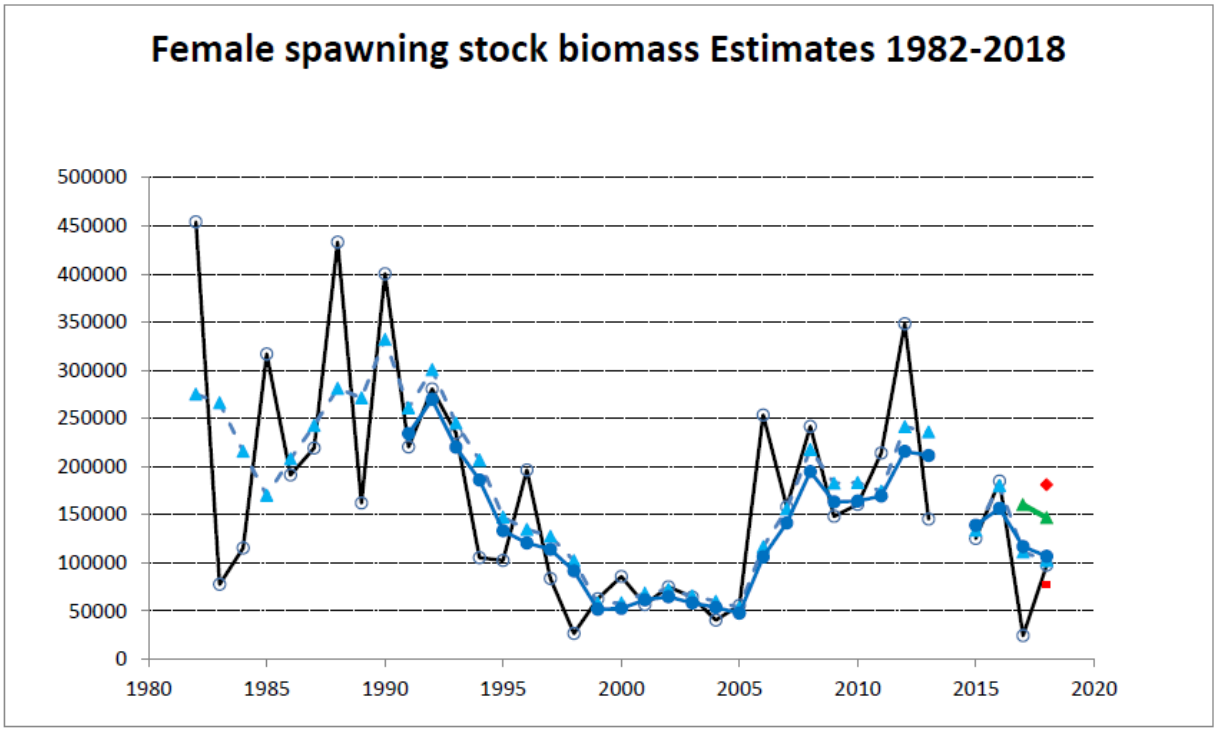


Figure 1. Stochastic SSB estimates for 1991 to 2018. Year refers to the terminal year in the three point moving average. The open circles are the yearly swept area SSB estimates, the blue triangles are the 3-year moving average of the swept area estimates, and the **closed blue circles are the stochastic SSB estimates**. The green triangles are the stochastic estimates not including 2017 and not adjusted with a Kalman filter, and the red diamond (no 2017) and square (with 2017) are the stochastic estimates adjusted with a Kalman filter (not used in last update). [2]

Management System and Fishery Performance

Management

The Council established management of spiny dogfish in 2000 and the management unit includes all federal East Coast waters.

Access to the fishery is not limited, but a federal permit must be obtained to fish in federal waters and there are various permit conditions (e.g. trip limit and reporting). There is a federal trip limit of 6,000 pounds. Some states mirror the federal trip limit, but states can set their own trip limits. The annual quota has been allocated to state shares through the Atlantic States Marine Fisheries Commission (http://www.asmfc.org/species/spiny-dogfish).

Spiny Dogfish three-year specifications were adopted by the Council in October 2018 for May 1, 2019 through April 30, 2022 (the 2019-2021 fishing years). Quotas were adjusted to the current 29.6 million pounds for the 2021 fishing year after an adjustment to the Council's risk policy and are planned to remain there since a 2022 research track assessment should be able to project catches for specifications starting with the 2023 fishing year.

Recreational landings are a minimal component of fishing mortality, and dead recreational discards comprise a relatively low portion of discard mortality.

Commercial Fishery

Figure 2 and Table 1 illustrate spiny dogfish landings for the 2000-2020 fishing years relative to the quotas in those years. Additional years' landings are available in the 2019 NMFS Science Center data update. The Advisory Panel has previously noted that the fishery is subject to strong market constraints given weak demand.

Figure 3 provides inflation-adjusted spiny dogfish ex-vessel prices in "real" 2019 dollars.

Figure 4 illustrates preliminary landings from the 2021 and 2020 fishing years relative to the current quota. The last 2021/blue data point is typically the most incomplete.

Tables 2-4 provide information on landings in the 2018-2020 fishing years by state, month, and gear type.

Table 5 provides information on the numbers of participating vessels that have at least one federal permit. State-only vessels are not included, but the table should still illustrate trends in participation.

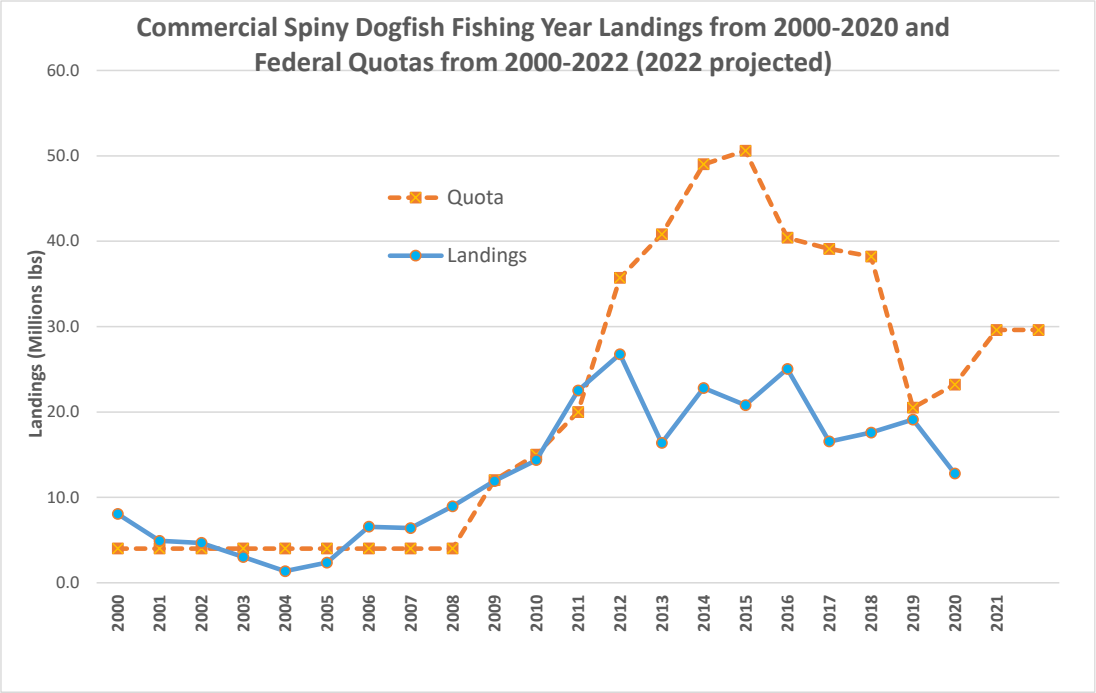


Figure 2. Annual spiny dogfish landings and federal quotas since 2000. [4]

Table 1. Commercial spiny dogfish fishing year landings from 2000-2020 and federal quotas from 2000-2022 (2022 Proposed)[4]

Fishing year	Fed Quota (M lb)	Landings (M lb)
2000	4.0	8.1
2001	4.0	4.9
2002	4.0	4.7
2003	4.0	3.0
2004	4.0	1.3
2005	4.0	2.3
2006	4.0	6.6
2007	4.0	6.4
2008	4.0	8.9
2009	12.0	11.9
2010	15.0	14.4
2011	20.0	22.5
2012	35.7	26.8
2013	40.8	16.4
2014	49.0	22.8
2015	50.6	20.8
2016	40.4	25.0
2017	39.1	16.5
2018	38.2	17.6
2019	20.5	19.1
2020	23.2	12.8
2021	29.6	
2022	29.6	

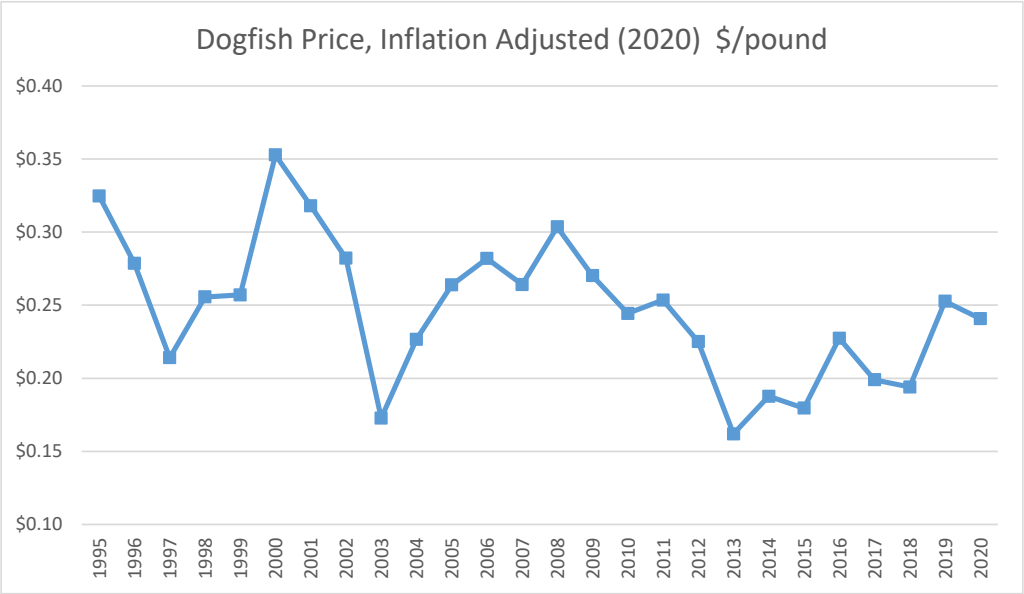


Figure 3. Price of spiny dogfish ($/live pound) (adjusted to 2020 "real" dollars using the GDP deflator, 1995-2020 fishing years. Given the difference between fishing year and the calendar year used for inflation adjusting, adjusted prices are approximate. Source: NMFS unpublished dealer data. [4]

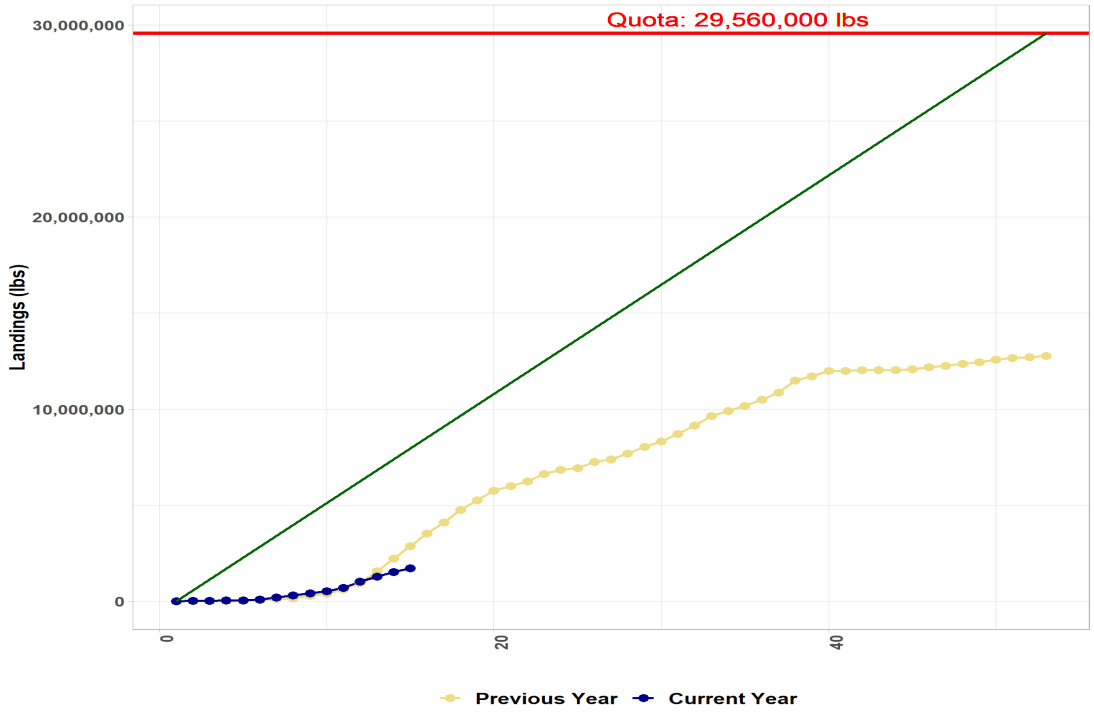


Figure 4. Preliminary Spiny dogfish landings; the 2021 fishing year (Starts May 1) is in blue through August 11, 2021, and the 2020 fishing year is in yellow-orange. Source: https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region . [4]

Table 2. Commercial Spiny Dogfish landings (live weight – millions of pounds) by state for 2018-2020 fishing years. Source: NMFS unpublished dealer data. [4]

fishyear	MA	VA	NJ	Other (NC,NH, MD, RI,CT, NY)	Total
2018	7.7	5.6	1.3	3.0	17.6
2019	6.6	7.4	1.9	3.1	19.1
2020	6.6	2.9	1.9	1.4	12.8

Table 3. Commercial Spiny Dogfish landings (live weight – millions of pounds) by month for 2018-2020 fishing years. Source: NMFS unpublished dealer data. [4]

fishyear	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
2018	0.0	0.1	2.3	2.7	1.8	1.5	1.3	2.5	1.6	1.8	1.2	0.8	17.6
2019	0.1	0.2	2.3	2.7	1.6	1.0	1.6	2.6	2.3	1.9	2.4	0.4	19.1
2020	0.0	0.3	1.8	2.8	1.5	0.9	1.4	1.6	1.6	0.0	0.4	0.3	12.8

Table 4. Commercial Spiny Dogfish landings (live weight – millions of pounds) by gear for 2018-2020 fishing years. Source: NMFS unpublished dealer data. [4]

fishyear	GILL_NET_SINK__OTHER	UNKNOWN	LONGLINE__BOTTOM	GILL_NET_SET__STAKE__SEA_BASS	HAND_LINE__OTHER	TRAWL_OTTER_BOTTOM_FISH	Other	Total
2018	10.2	2.9	0.5	1.3	1.8	0.4	0.4	17.6
2019	12.1	3.0	1.3	1.5	0.5	0.5	0.3	19.1
2020	9.0	1.2	2.0	0.1	0.0	0.4	0.0	12.8

Table 5. Participation by fishing year of federally-permitted vessels. State-only vessels are not included. [4]

YEAR	Vessels 200,000+	Vessels 100,000 - 199,999	Vessels 50,000 - 99,999	Vessels 10,000 - 49,999	Total with at least 10,000 pounds landings
2000	16	10	8	43	77
2001	4	12	10	33	59
2002	2	14	8	31	55
2003	4	5	3	17	29
2004	0	0	0	42	42
2005	0	0	1	67	68
2006	0	4	11	114	129
2007	1	2	21	72	96
2008	0	5	20	119	144
2009	0	11	42	166	219
2010	0	26	54	124	204
2011	1	48	73	135	257
2012	25	55	56	146	282
2013	10	27	45	87	169
2014	27	38	38	81	184
2015	31	33	36	59	159
2016	52	26	14	45	137
2017	28	27	24	32	111
2018	28	26	20	35	109
2019	29	25	21	29	104
2020	23	27	15	22	87

Staff received a request about participation in May-August 11, 2021 (i.e. most recent year to date). While very preliminary, no federally-permitted vessels had yet landed over 200,000 pounds and only 22 had landed over 10,000 pounds.

Trip Limits and Prices

To consider the potential effect of federal trip limit changes on spiny dogfish ex-vessel prices, staff examined the most recent two federal trip limit changes, which occurred on September 8, 2014 (4,000 pounds to 5,000 pounds and August 15, 2016 (5,000 pounds to 6,000 pounds). The May 1, 2013 trip limit change (3,000 pounds to 4,000 pounds) occurred during a time of the year when weekly landings are low, making analysis across the trip limit change date problematic. Trip limit changes further back in time may be less reflective of current conditions.

Staff first noted that looking at annual prices (Figure 3), there did not seem to be negative changes in the relevant fishing years. The changes took place about one-third into the fishing year (begins May 1) so were in effect for about two-thirds of each respective fishing year. Compared to the prior year, annual average price increased in both 2014 (vs 2013) and 2016 (vs 2015). While average price fell in each subsequent year (the first full year after the trip limit change), the subsequent full year's average price was still above the prior full year's average price in both instances (i.e. 2015 vs 2013 and 2017 vs 2015).

Staff then reviewed landings data from the four weeks preceding and following the two respective trip limit changes. In both instances, vessels began using the higher trip limit after the change, but not all trips landed at or near the trip limit. In neither case did there appear to be a negative effect on prices. Staff examined these relatively small time periods in an effort to isolate the effect of the trip limit change from other potential external effects on supply and demand that could affect prices paid to vessels.

In 2014, in the four weeks before the change (September 8, 2014), 2.6 million pounds of spiny dogfish were landed at an average price of $0.21. In the four weeks after the change, 2.2 million pounds were landed at an average price of $0.22.

In 2016, in the four weeks before the change (August 15, 2016), 4.2 million pounds of spiny dogfish were landed at an average price of $0.23. In the four weeks after the change, 3.8 million pounds were landed at an average price of $0.25.

Staff also reviewed 2018-2020 data for trips over 10,000 pounds, which all occurred in North Carolina. Prices for these trips (about 120 and averaging 12,800 pounds) averaged $0.12 per pound, well below the average prices in those years. However differences in shipping costs make it difficult to determine if trip size is a factor in the differences in ex-vessel prices. By comparison, landings from those years between 5,000 pounds and 6,000 pounds averaged $0.17 per pound in Virginia and $0.22 per pound in Massachusetts.

In general, a review of fishery performance bridging the last two trip limit increases does not raise concern to staff that a relatively small, incremental trip limit change would substantially affect ex-vessel prices. However, data are not available to examine larger changes and any proposal for a large increase in trip limits should be considered cautiously.

References

[1] Stehlik, Linda. 2007. Essential Fish Habitat source document: Spiny Dogfish, *Squalus acanthias*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-203; 52 p.

[2] NEFSC 2018. Spiny Dogfish Assessment Update. Available at http://www.mafmc.org/ssc-meetings/2018/sept-11.

[3] NEFSC 2019. Spiny Dogfish Data Update. Available at http://www.mafmc.org/ssc-meetings/2019/september-9-11.

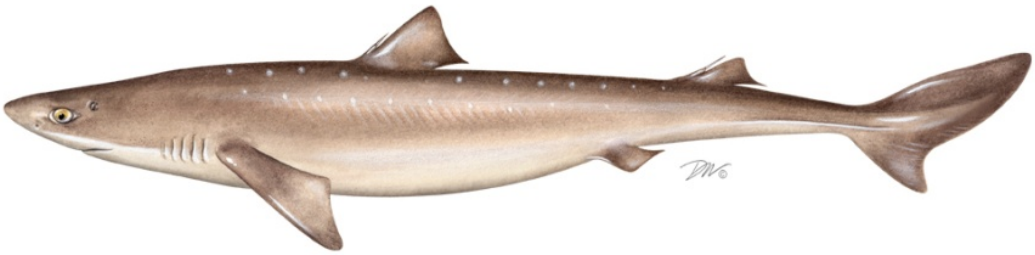
[4] Unpublished NMFS dealer and/or Vessel Trip Report data.

ATLANTIC STATES MARINE FISHERIES COMMISSION

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR SPINY DOGFISH
(*Squalus acanthias)*

2020/2021 FISHING YEAR



Prepared by the Plan Review Team

For Board Review

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

REVIEW OF THE ASMFC FISHERY MANAGEMENT PLAN AND STATE COMPLIANCE FOR SPINY DOGFISH (*Squalus acanthias*) FOR THE 2020/2021 FISHERY

Management Summary

Date of FMP Approval:	November 2002
Amendments	None
Addenda	Addendum I (November 2005) Addendum II October 2008) Addendum III (April 2011) Addendum IV (August 2012) Addendum V (October 2014) Addendum VI (October 2019)
Management Unit:	Entire coastwide distribution of the resource from the estuaries eastward to the inshore boundary of the EEZ
States with Declared Interest:	Maine – North Carolina
Active Boards/Committees:	Spiny Dogfish Management Board, Advisory Panel, Technical Committee, and Plan Review Team

I. Status of the Fishery Management Plan

In 1998, NMFS declared spiny dogfish overfished and initiated the development of a joint fishery management plan (FMP) between the Mid-Atlantic (MAFMC) and New England Fishery Management Councils (NEFMC) in 1999. NMFS approved the Federal Fishery Management Plan (FMP) in September 1999, but implementation did not begin until May 2000 at the start of the 2000/2001 fishing year.

In August 2000, the Atlantic States Marine Fisheries Commission (Commission) took emergency action to close state waters to the commercial harvest, landing, and possession of spiny dogfish when Federal waters closed in response to the quota being fully harvested. With the emergency action in place, the Commission had time to develop an interstate FMP, which prevented the undermining of the Federal FMP and further overharvest of the coastwide spiny dogfish population. Needing additional time to complete the interstate FMP, the Commission extended the emergency action twice through January 2003. During that time, the majority of spiny dogfish landings were from state waters because states had either no possession limits or less conservative possession limits than those of the Federal FMP.

The Commission approved the Interstate FMP for Spiny Dogfish in November 2002 (first implemented for the 2003-2004 fishing year). In general, the Interstate FMP (FMP) for spiny dogfish complements the Federal FMP. The goal of the FMP is "to promote stock rebuilding and management of the spiny dogfish fishery in a manner that is biologically, economically, socially, and ecologically sound." In support of this goal, the FMP established the following objectives:

1. Reduce fishing mortality and rebuild the spawning stock biomass to prevent recruitment failure and support a more sustainable fishery.
2. Coordinate management activities between state, Federal, and Canadian waters to ensure complementary regulations throughout the species' range.
3. Minimize the regulatory discards and bycatch of spiny dogfish within state waters.
4. Allocate the available resource in a biologically sustainable manner that is equitable to all the fishers.
5. Obtain biological and fishery related data from state waters to improve the spiny dogfish stock assessment that currently depends upon data from the Federal bottom trawl survey.

The original Interstate and Federal FMPs established an annual quota that was allocated via fixed percentages between two seasonal periods: 57.9% to Period I (May 1st to October 31st) and 42.1% to Period II (November 1st to April 30th). When the quota allocated to a period is exceeded, the amount over the allocation is deducted from the same period in the subsequent fishing year. The periods could have separate possession limits that were specified on an annual basis. The FMPs also allowed for a five percent rollover of the annual coastwide quota once the stock is rebuilt, and allows each state to harvest up to 1,000 spiny dogfish for biomedical supply or scientific research.

Addendum I (November 2005)

Addendum I to the Interstate FMP for Spiny Dogfish allows the Board to set the quota and trip limit for up to 5 years. This addendum was developed to provide fishermen with the ability to set long term business plans and goals for their fishery operations. The Board may adjust specifications during a fishing season with a 2/3-two-thirds majority vote.

Addendum II (October 2008)

Addendum II replaces the seasonal allocation with a regional distribution of the quota. The regional allocation distributes quota with 58% to Maine – Connecticut, 26% to New York – Virginia, and 16% to North Carolina. Paybacks to regional quota overages are applied in the subsequent fishing seasons.

Addendum III (April 2011)

Addendum III divides the southern region's annual quota of 42% into state-specific shares (see table below). It also allows for quota transfer between states, rollovers of up to 5% and state-specified possession limits, and includes a three-year reevaluation of the measures. The

Addendum's provisions apply only to states in the southern region (New York through North Carolina) and do not modify the northern region allocation. The states of Maine to Connecticut will continue to share 58% of the annual quota as specified in Addendum II.

Southern Region State Shares. Quota allocation differs slightly from specific options presented in the draft addendum and are based on needs of states in the southern region with a consideration of historic landings.

	NY	NJ	DE	MD	VA	NC
Percent of Annual Coastwide Quota	2.707%	7.644%	0.896%	5.920%	10.795%	14.036%

Addendum IV (August 2012)

The Addendum updates the definition of overfishing to be consistent with that of the Mid-Atlantic Fishery Management Council and provides the Board the flexibility to update or modify the management program's overfishing definition through Board action based on the recommendations of its Technical Committee. The prior overfishing definition, adopted in 2002, was based on the number of pups per female that recruit to the stock. The updated definition will now be based on maximum sustainable yield or a reasonable proxy, consistent with the best available science. Although there are no immediate impacts to regulations, the change allows the Commission and Council to work from the same starting point when determining annual specifications. The Board considered modifying the management program's 5% rollover provision to either preclude rollovers entirely without specific Board approval or to allow rollovers beyond the current 5% maximum with Board approval. The Board voted to maintain the 5% maximum rollover. Any rollover is predicated on a rebuilt stock.

Addendum V (October 2014)

Addendum V ensures consistency in spiny dogfish management with the Shark Conservation Act of 2010 by prohibiting processing at-sea, including the removal of fins. Prior to approval, states could process spiny dogfish at-sea if the fin to carcass ratio aboard the vessel did not exceed five percent by weight. The Board set an implementation date of May 1, 2015 for states to promulgate this measure.

Addendum VI (October 2019)

Addendum VI allows commercial quota to be transferred between all regions and states to enable full utilization of the coastwide commercial quota and avoid payback for unintended quota overages. Prior to this addendum, quota transfers were only possible between states with individual state quotas, whereas regions have not been granted the authority to donate or receive quota via transfers. Consequently, regions were unable to share in the benefits of quota transfers. In order for the northern region to participate in quota transfers, the Director of each state's marine fisheries agency within the region must agree to the transfer in writing. As with transfers between states, transfers involving regions do not permanently affect the shares of the coastwide quota. Additionally, the Addendum extends the timeframe for when quota

transfers can occur up to 45 days after the end of the fishing year to allow for late reporting of landings data.

II. Status of the Stocks

Stock size estimates (e.g., female SSB) for spiny dogfish rely heavily on fishery-independent data collected during the Northeast Fisheries Science Center (NEFSC) spring bottom trawl survey. Due to mechanical problems, the 2014 survey was unable to sample strata in the mid-Atlantic region. As a result, the 2015 assessment update for spiny dogfish was unable to produce reliable estimates of stock size for 2014, as well as stock size projections utilized for annual specifications. Accordingly, at the direction of the MAFMC and the Science and Statistical Committee (SSC), the NEFSC examined alternative methods to smooth out the effects of the missing 2014 survey data on projected estimates of SSB, F, and other stock status indicators (NEFSC 2015b). A Kalman filter approach was ultimately chosen as the best method to smooth out the effects of the missing data, and to project SSB forward. In 2016, while all core survey strata were completed, the survey was delayed and the effects of the delay in survey timing on the abundance indices are unknown (NEFSC 2017). In 2017 and 2018, the survey was completed on time and all core strata were surveyed.

Based on results of the 2018 stock assessment update, and in comparison to the biological reference points below, spiny dogfish are not overfished and overfishing is not occurring (NEFSC 2018). The MAFMC's SSC recommended not applying the Kalman filter to the three year moving average of 2016-2018 given the survey data were available and gap filling was not needed. Spiny dogfish was declared rebuilt in 2008 when female SSB exceeded the target level for the first time since implementation of the Interstate FMP. Female SSB has remained above the threshold level and was estimated to be 106,753 metric tons (235.36 million pounds) in 2018 (Table 1 and Figure 1). In 2017, F on exploitable females was estimated to be 0.202 and has remained below the target level since 2005 (Table 1 and Figure 2).

	Female Spawning Stock Biomass (SSB)	Fishing Mortality (F)
Target	B_{msy} Proxy = SSB_{max} (the biomass that results in the maximum projected recruitment) = 159,288 metric tons	There is no F target defined for management use at this time
Threshold	½ of SSB_{max} = 79,644 metric tons	F_{msy} Proxy = 0.244

The next benchmark stock assessment for spiny dogfish is scheduled for summer 2022. In the interim, in order to inform fishery specifications, the NEFSC will continue to summarize the most recent information on the status of spiny dogfish. The 2018 assessment update utilizes catch and landings data from 1982-2017, and NEFSC spring survey data from 1968-2017 (as noted, the survey was incomplete in 2014 and the 2016 survey was delayed). From 2009-2015, female SSB estimates based on area swept by NEFSC bottom trawl during spring surveys were above the target-level (NEFSC 2017). The 2016 estimate increased, while the 2017 estimate

decreased; in 2018 the estimate decreased further from 2017. It is important to note that these estimates from the assessment update are not based on outputs of the stochastic assessment model and cannot be directly compared to the SSB targets and thresholds.

III. Status of the Fishery

In the U.S., the majority of spiny dogfish commercial fisheries operate in state waters targeting aggregations of large females. As a result, an estimated 83% of the commercial landings (2018) are comprised of females, which is consistent with the long-term pattern (NEFSC 2018).

In 2020, total U.S. commercial landings based on state compliance reports were estimated at 12.7 million pounds (5,787 metric tons). Atlantic coast landings from Canada were significant from the early 1990s to the mid-late 2000s (hovering around 4.5 million pounds or 2,000 metric tons). Commercial landings from Canada and Distant Water fleets for 2019 or 2020 are not available at this time. Recreational harvest is estimated via the Marine Recreational Information Program (MRIP). In 2020, recreational harvest (A + B1) of spiny dogfish on the Atlantic coast was estimated at 56,851 fish or an estimated 263,594 pounds[1] (120 metric tons) which is an 81% increase relative to 2019 (Table 2). To address reduced intercept sampling caused by the COVID-19 pandemic, 2020 harvest estimates use imputed data from previous fishing years, and may be subject to change. On the coastwide level, the contribution of imputed data to the total harvest of spiny dogfish in pounds was 6% in weight and 7% in numbers of fish. Landings estimates for the U.S. commercial and recreational sectors are detailed in Table 2.

For 2020, dead discards from the U.S. commercial fishery were not available at the time of this report. Recreational releases (B2, or fish caught by recreational anglers and released back to the water) were estimated at 8.5 million pounds (3,896 metric tons). Applying a 20% post-release mortality rate (NEFSC 2019), 2020 recreational dead discards were estimated at 1.7 million pounds (779 metric tons), which is a 32% decrease relative to 2019 levels (2.5 million pounds).

IV. Status of Management Measures and Issues

Specifications

The spiny dogfish commercial fishery runs from May 1-April 30. The coastwide quota for the 2020/2021 season was set at 23.19 million pounds. For the northern region, the maximum possession limit was set at 6,000 pounds. Possession limits for states of New York-North Carolina vary by state and are detailed in Table 6.

Quotas

Per Addendum III, 58% of the annual quota is allocated to the northern region (states from Maine-Connecticut), and the remaining 42% is allocated to the states of New York-North Carolina via fixed percentages. Table 4 details 2020/2021 commercial quotas by region and state. All regions and states harvested within their quota the previous fishing year, therefore no

[1] Assuming the average weight of landed and discarded spiny dogfish is 5.12 pounds or 2.5 kilograms.

deductions were applied to 2020/2021 quotas. Quota transfers are allowed under Addendum III and until recently have been uncommon. For the 2020/2021 season, the northern region transferred quota to New Jersey (300,000 pounds) and Virginia (2 million pounds). As there was no stock assessment update or change to 2017 projections that indicated that the stock was below the biomass target, no quota was eligible for rollover per Addendum IV.

Based on compliance report data, commercial landings from the 2020/2021 fishing year were estimated at 12.7 million pounds (5,787 metric tons), which is approximately 55% of the coastwide quota and a 30% decrease relative to the previous season (Table 4). Virginia (27%), Massachusetts (52%), Virginia (22%), and New Jersey (15%) accounted for the majority of commercial landings by weight (Table 4).

From 2000-2011, the U.S. spiny dogfish commercial fishery, for the most part, had fully utilized its quota (MAFMC 2017). However, in recent years (2012-2018), the commercial fishery significantly underutilized its quota. The MAFMC Advisory Panel (2019) noted that markets are critical for stimulating fishing activity and that the low level of harvest relative to the quota in recent years is primarily due to low price per pound and effort, not biomass. Vessels generally have no problem catching their limits. Being such a low value fishery (hovering around $0.20/pound over the last 10-years; MAFMC 2018), even a small increase in price could stimulate fishing activity. Participation in the fishery has been further discouraged due to general public sentiment regarding sharks and shark fins which has created regulatory issues (e.g., foreign and domestic import and shipping bans) and other barriers to the market (e.g., the species common name dissuades many consumers).

V. Status of Research and Monitoring

Under the Interstate FMP for Spiny Dogfish, the states are not required to conduct any fishery-dependent or independent studies. The Interstate FMP requires an annual review of recruitment, spawning stock biomass, and fishing mortality, which relies heavily on the NEFSC's spring trawl survey data. However, states are encouraged to submit any spiny dogfish information collected while surveying for other species. Table 5 details state-implemented fishery-independent monitoring information relative to spiny dogfish compiled from annual state compliance reports. Please see individual reports for more information.

Exempted Fishing Permits (scientific/education permits)
States may issue exempted fishing permits for the purpose of biomedical supply, educational, or other scientific purposes. In 2019, North Carolina issued 51 exempted fishing permits for scientific and educational collection not specific to spiny dogfish. Of these permits, no interactions with spiny dogfish were reported.

VI. Annual State Compliance

The following lists the specific compliance criteria that a state or jurisdiction must implement in order to be in compliance with the Interstate FMP for Spiny Dogfish (*Section 5.1*):

1. States are required to close state waters to the commercial landing, harvest and possession of spiny dogfish for the duration of the seasonal period when the commercial quota is projected to be harvested in their state or region.
2. States are required to report landings weekly to NOAA Fisheries or SAFIS.
3. Dealer permits issued pursuant to state regulations must submit weekly reports showing at least the quantity of spiny dogfish purchased (in pounds), the name, and permit number of the individuals from whom the spiny dogfish were purchased.
4. States are required to implement possession limits as determined through the annual specification process.
5. States may issue exempted fishing permits for the purpose of biomedical supply not to exceed 1,000 spiny dogfish per year.
6. State regulations must prohibit "finning" as described in Addendum V.

Additionally, each state must submit a compliance report detailing its spiny dogfish fisheries and management program for the previous fishing year. Compliance reports are due annually on July 1st (Table 6) and must include at a minimum:

1. the previous fishing year's fishery and management program including activity and results of monitoring, regulations that were in effect and harvest, including estimates of non-harvest losses;
2. the planned management program for the current fishing year summarizing regulations that will be in effect and monitoring programs that will be performed, highlighting any changes from the previous year; and
3. the number of spiny dogfish exempted fishing permits issued in the previous fishing year, the actual amount (in numbers of fish and pounds) collected under each exempted fishing permit, as well as any other pertinent information (i.e. sex, when and how the spiny dogfish were collected). The report should also indicate the number of exempted fishing permits issued for the current fishing year.

Under the Spiny Dogfish FMP, a state may request *de minimis* status if its commercial landings of spiny dogfish are less than 1% of the coastwide commercial total. If granted, the state is exempt from the monitoring requirements of the commercial spiny dogfish fishery for the following fishing year. However, all states, including those granted *de minimis* status, must continue to report any spiny dogfish commercial or recreational landings within their jurisdiction via annual state compliance reports. New York and Delaware have requested *de minimis* status for the 2021/2022 fishing season (Table 6).

VII. Plan Review Team Recommendations

In evaluating compliance with the FMP, the Plan Review Team (PRT) notes that a number of states did not clearly indicate if landings data were reported to NOAA Fisheries or the Standard Atlantic Fisheries Information System (SAFIS)on a weekly basis. Staff noted that nearly all states within the management unit report landings through SAFIS on a daily basis. North Carolina does

not report daily through SAFIS but does report weekly landings to NOAA Fisheries as indicated in the weekly quota monitoring NOAA webpage. Moving forward, the PRT recommends that states more clearly indicate that landings are reported to NOAA and through SAFIS in their compliance reports. Additionally, the PRT notes that exempted fishing permits in recent years have primarily been for educational or research purposes, not biomedical. The Board should consider whether to adjust the language in the FMP moving forward to make clear this distinction. That being said, based on the PRT's review, all states have implemented regulations consistent with the requirements of the Interstate FMP for Spiny Dogfish and Addenda I-VI. Additionally, the Board should consider the current De Minimis provisions and what the purpose of designation is given all states still must report annual landings. That being said, New York and Delaware have requested and meet the requirements for *de minimis* status in the 2020/2021 fishing year.

Members of the PRT noted that states have improved in providing compliance reports that are standardized and uniform in format and should continue doing so moving forward. Staff will provide states with a template to submit compliance reports moving forward to aid with consistency. Additionally, the PRT indicated the need to continue monitoring the resource based on the results of the 2018 assessment update that indicated a recent declining trend in female SSB. The PRT expressed support for keeping spiny dogfish on the current assessment schedule (currently scheduled for benchmark stock assessment to be completed in 2022).

VIII. Research Recommendations

The following research priorities pertaining to spiny dogfish were identified in Special Report No. 89 (2013). **Please note** that the Board does not need to take action on these recommendations currently and a number of them will be evaluated through the next stock assessment which is currently underway.

Fishery-Dependent Priorities
High

- Determine area, season, and gear-specific discard mortality estimates coastwide in the recreational, commercial, and non-directed (bycatch) fisheries.
- Characterize and quantify bycatch of spiny dogfish in other fisheries.
- Increase the biological sampling of spiny dogfish in the commercial fishery and on research trawl surveys.
- Further analyses of the commercial fishery is also warranted, especially with respect to the effects of gear types, mesh sizes, and market acceptability on the mean size of landed spiny dogfish.

Fishery-Independent Priorities

- Conduct experimental work on NEFSC trawl survey gear performance, with focus on video work to study the fish herding properties of the gear for species like dogfish and other demersal groundfish.

- Investigate the distribution of spiny dogfish beyond the depth range of current NEFSC trawl surveys, possibly using experimental research or supplemental surveys.
- Continue to analyze the effects of environmental conditions on survey catch rates.

Modeling / Quantitative Priorities

- Continue work on the change-in-ratio estimators for mortality rates and suggest several options for analyses.
- Examine observer data to calculate a weighted average discard mortality rate based on an assumption that the rate increases with catch size.

Life History, Biological, and Habitat Priorities

- Conduct a coastwide tagging study to explore stock structure, migration, and mixing rates.
- Standardize age determination along the entire East Coast. Conduct an ageing workshop for spiny dogfish, encouraging participation by NEFSC, North Carolina Division of Marine Fisheries (NCDMF), Canada DFO, other interested agencies, academia, and other international investigators with an interest in spiny dogfish ageing.
- Identify how spiny dogfish abundance and movement affect other organisms.

Management, Law Enforcement, and Socioeconomic Priorities

- Monitor the changes to the foreign export markets for spiny dogfish, and evaluate the potential to recover lost markets or expand existing ones.
- Update on a regular basis the characterization of fishing communities involved in the spiny dogfish fishery, including the processing and harvesting sectors, based upon Hall-Arber et al. (2001) and McCay and Cieri (2000).
- Characterize the value and demand for spiny dogfish in the biomedical industry on a state by state basis.
- Characterize the spiny dogfish processing sector.

IX. References

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X. Tables

Table 1: Spiny dogfish female spawning stock biomass (SSB) in millions of pounds 1991-2018 and fishing mortality (F) point estimates, 1991-2017. A Kalman Filter was applied to the 2015 point-estimate. Point-estimates from 1991-2014 via the Kalman filter were not available at the time of this report. Although the absolute values will change after the Kalman filter is applied, the time series trend is similar. Source: NEFSC 2018.

Year	Female SSB	F
1991	516	0.082
1992	594	0.177
1993	485	0.327
1994	410	0.465
1995	294	0.418
1996	266	0.355
1997	252	0.234
1998	202	0.306
1999	114	0.289
2000	116	0.152
2001	136	0.109
2002	143	0.165
2003	129	0.168
2004	118	0.474
2005	105	0.128
2006	234	0.088
2007	312	0.090
2008	429	0.110
2009	360	0.113
2010	362	0.093
2011	373	0.114
2012	476	0.149
2013	466	NA
2014	NA	0.214
2015	306	0.126
2016	345	0.211
2017	257	0.202
2018	235	NA

Table 2: Landings estimates (pounds) of spiny dogfish off the Atlantic coast by commercial fisheries of the United States, Canada, and foreign fleets, and U.S. recreational harvest, 1987-2020. All values in pounds. Source: Commercial Data through 2018 provided by NEFSC 2019. 2019-202 U.S. Commercial landings provided through State Compliance Reports and SAFIS. Recreational Data from MRIP

Year	Canada	Distant Water Fleets	U.S. Commercial	U.S. Recreational	Total Landings
1987	619,498	306,442	5,959,859	707,683	7,593,483
1988	2,205	1,426,389	6,845,658	767,208	9,041,460
1989	368,172	564,383	9,903,197	485,016	11,320,768
1990	2,885,848	866,416	32,475,331	473,993	36,701,588
1991	676,818	515,881	29,049,484	529,109	30,771,292
1992	1,913,610	147,710	37,165,286	381,399	39,608,005
1993	3,163,630	59,525	45,509,707	412,264	49,145,126
1994	4,012,408	4,409	41,441,357	321,875	45,780,049
1995	2,107,617	30,865	49,775,493	196,211	52,110,185
1996	950,191	520,290	59,823,640	59,525	61,353,646
1997	983,261	471,789	40,457,417	242,508	42,154,974
1998	2,325,874	1,338,204	45,476,080	79,366	49,219,525
1999	4,609,860	1,221,359	32,748,858	182,983	38,763,062
2000	6,042,863	886,257	20,407,500	8,818	27,345,439
2001	8,421,648	1,492,528	5,056,497	55,116	15,025,789
2002	7,901,358	1,044,990	4,847,674	789,254	14,583,275
2003	2,870,415	1,417,571	2,579,437	119,049	6,986,472
2004	5,207,312	727,525	2,164,011	787,049	8,885,898
2005	5,004,487	727,525	2,528,114	92,594	8,352,720
2006	5,377,068	22,046	4,957,360	163,142	10,519,616
2007	5,255,814	68,343	7,723,004	284,396	13,331,558
2008	3,466,368	288,805	9,057,020	520,290	13,331,778
2009	249,122	180,779	11,854,242	224,871	12,509,014
2010	13,228	279,987	11,993,133	26,455	12,312,803
2011	273,373	315,261	20,899,798	127,868	21,616,299
2012	143,300	302,033	23,501,249	99,208	24,045,790
2013		134,482	16,120,181	147,710	16,402,373
2014	119,049	68,343	23,481,408	238,099	23,906,899
2015	2,205	50,706	19,098,623	97,003	19,248,537
2016	81,571	52,911	26,669,288	310,851	27,114,621
2017	119,049	0	19,257,356	319,009	19,663,006
2018	99,208		16,747,942	136,094	16,983,244
2019	NA	NA	18,435,114	116,376	18,551,490
2020	NA	NA	12,757,583	263,594	13,021,177

Table 3: Total dead discards estimates (pounds) from the U.S. Atlantic coast spiny dogfish fishery by sector, 1981-2020. Commercial dead discards for 2019 and 2020 are not available. Source: MRIP and NEFSC 2019.

Year	Commercial	Recreational (20% B2)	Total Dead Discards
1987	35,239,087	411,823	35,650,910
1988	35,307,210	601,420	35,908,630
1989	34,724,970	875,675	35,600,645
1990	41,754,621	830,701	42,585,322
1991	28,668,217	1,146,402	29,814,619
1992	41,401,992	577,170	41,979,161
1993	25,898,443	858,479	26,756,922
1994	18,435,804	654,331	19,090,135
1995	23,812,762	392,863	24,205,625
1996	13,136,779	205,030	13,341,809
1997	9,255,656	537,045	9,792,702
1998	7,305,008	460,325	7,765,333
1999	9,865,123	399,477	10,264,600
2000	6,128,182	370,376	6,498,558
2001	10,236,492	1,271,184	11,507,675
2002	10,392,799	1,099,664	11,492,464
2003	7,998,031	1,746,500	9,744,531
2004	12,011,321	2,982,410	14,993,731
2005	10,775,411	2,186,542	12,961,953
2006	10,847,557	2,574,996	13,422,553
2007	12,456,478	2,660,094	15,116,572
2008	9,843,805	2,442,719	12,286,524
2009	11,735,909	3,180,385	14,916,294
2010	8,146,291	2,134,513	10,280,804
2011	9,533,163	2,615,120	12,148,283
2012	10,081,275	1,903,028	11,984,303
2013	9,875,386	5,295,056	15,170,442
2014	10,657,861	7,724,988	18,382,849
2015	6,783,726	1,886,273	8,669,999
2016	7,122,686	4,001,826	11,124,513
2017	6,756,168	1,572,335	8,328,503
2018	5,310,158	1,642,883	6,953,041
2019	NA	2,555,481	NA
2020	NA	1,717,694	NA

Table 4: Commercial quotas and landings estimates in pounds for May 1, 2020 - April 30, 2021 by region and state. There was no adjustment to quotas due to the biomass estimate was below the target. Due to confidentiality, NY-NC landings estimates have been redacted. Source: State Compliance Reports.

State	Fixed Percent Allocation	Preliminary Quota	Adjusted Quota	Estimated Landings
Northern Region	58.00%	13,453,004	11,153,004	7,491,235
NY	2.71%	628,069	628,069	
NJ	7.64%	1,773,165	2,073,165	
DE	0.90%	207,835	207,835	
MD	5.92%	1,373,141	1,373,141	
VA	10.80%	2,503,932	4,503,932	
NC	14.04%	3,255,689	3,255,689	
Total	**100%**	**20,522,832**	**20,522,832**	**12,757,583**
% of quota harvested				**55%**
% diff. relative to previous fishing year (2019/2020 landings = 18,435,114 lbs.)				**30.7%**

Table 5: State implemented fishery-independent monitoring programs that encounter spiny dogfish. Source: annual state compliance reports, 2020. Note: this list is not comprehensive.

Fishery-Independent Monitoring Programs That Encounter Spiny Dogfish	Number of Spiny Dogfish Encountered	Comments
ME-NH Inshore Trawl survey	95	Spring survey cancelled due to COVID-19 pandemic; catch was from Fall survey
RI DFW, Monthly and seasonal trawl survey	2	2020 Fall Survey - 1; 2021 Spring Survey - 0; Monthly Survey - 1
CT Long Island Sound Trawl Survey	NA	2020 survey was not conducted due to the COVID-19 pandemic
NY DEC Multispecies Ocean Trawl Survey	408.1 lbs	Only two trips were attempted, due to COVID-19 pandemic
NJ Ocean Stock Assessment (trawl) Survey	0	No sampling due to COVID restrictions
DE Bay Bottom Trawl (30- and 16-foot)	108 (30-ft)	72 tows, majority taken in December (87)
NC DMF Gill Net Survey	76	sampled dogfish ranged from 723 to 958 mm, total length

Table 6: State-by-state compliance with the Interstate Fishery Management Plan for Spiny Dogfish, 2020/2021 reporting period. Source: annual state compliance reports, 2019. 'C' is compliant; 'NC' is noncompliant.

State	Report Submitted (Due July 1)	De Minimis Request	Biomedical Permit Harvest	Finning Prohibition	Possession limit (pounds per trip)
Maine	C	No	No	C	5,000
New Hampshire	C	No	No	C	6,000
Massachusetts	C	No	No	C	6,000
Rhode Island	C	No	No	C	6,000
Connecticut	C	No	No	C	6,000
New York	C	Yes	No	C	5,000
New Jersey	C	No	No	C	6,000
Delaware	C	Yes	No	C	10,000[#]
Maryland	C	No	No	C	up to 10,000*
Virginia	C	No	No	C	6,000
North Carolina	C	No	No	C	20,000

Maximum trip limit increased to 6,000 lbs following notification of the Federal trip limit increase. Specific implementation dates vary by state.

[#]It is unlawful for DE commercial fishermen to possess spiny dogfish taken from federal waters in excess of the federal possession limit.

*MD – possession limits range from 1,000 lbs to 10,000 lbs depending on permit category.

XI. Figures

Figure 1: Spiny dogfish spawning stock biomass, 1991 – 2018. Point-estimate for 2015 was derived via application of a Kalman filter. NEFSC 2018.

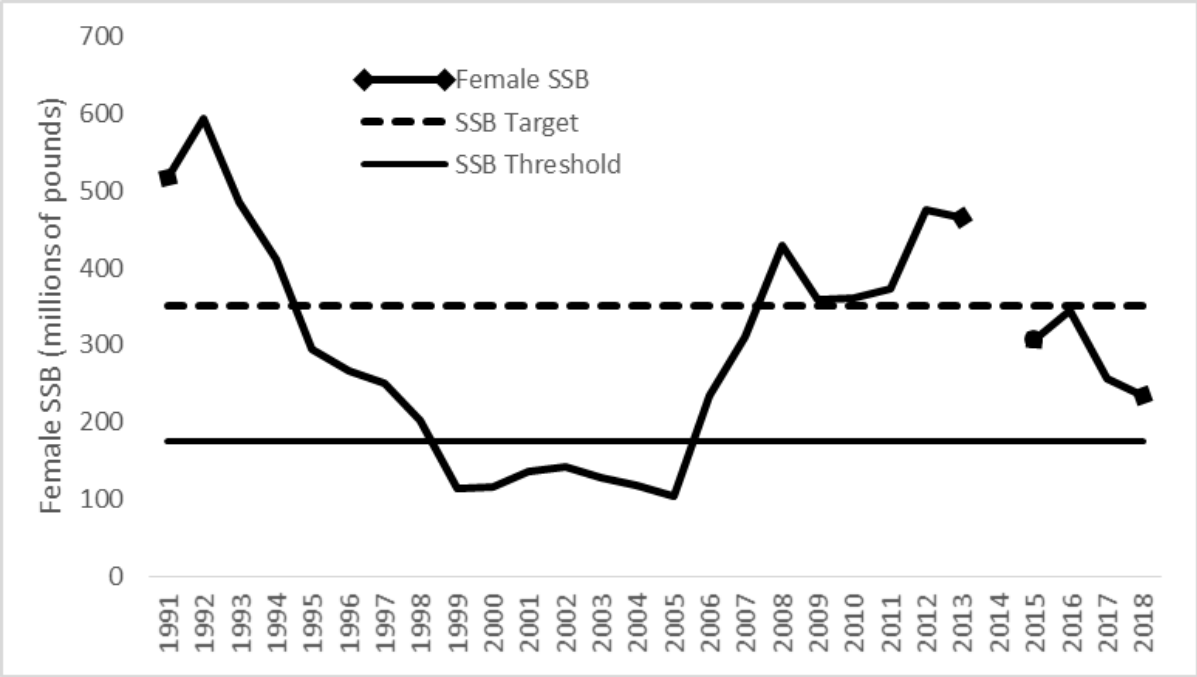
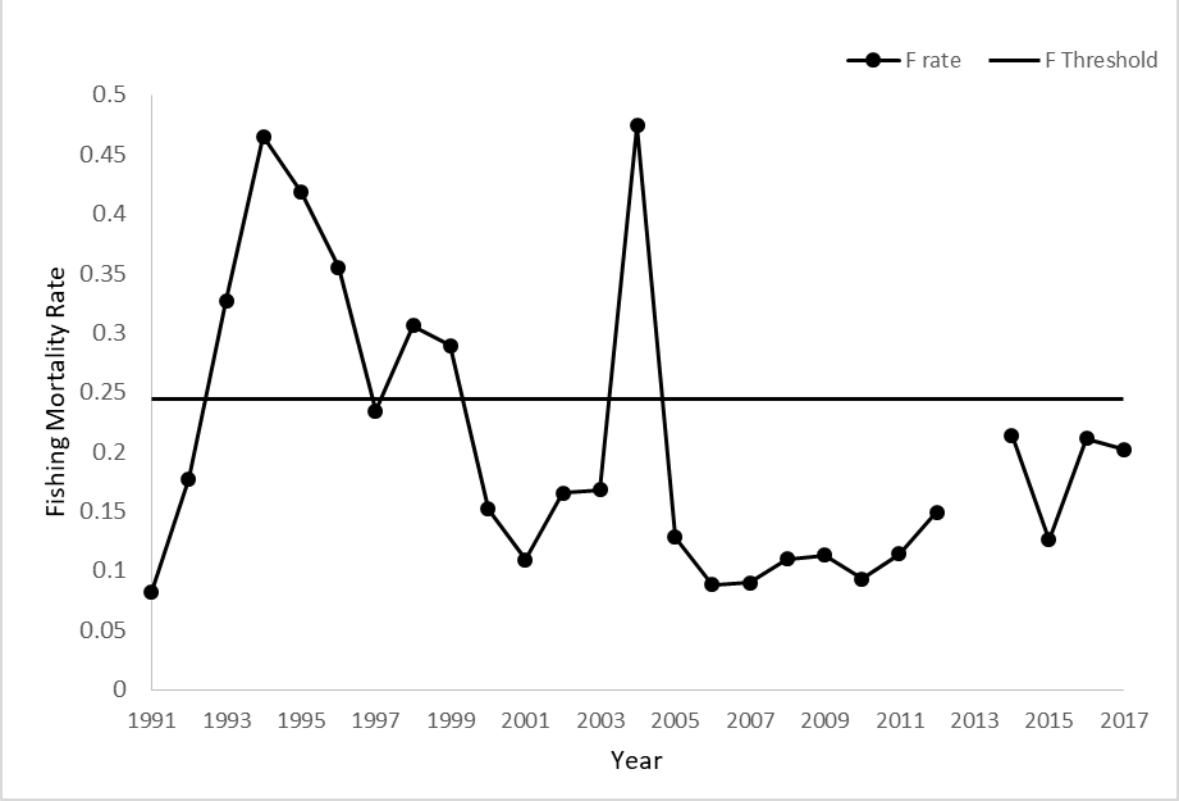


Figure 2: Fishing mortality rates in the spiny dogfish fishery, 1991 – 2017. Source: NEFSC 2018.



Atlantic States Marine Fisheries Commission

American Eel Management Board

October 21, 2021
11:30 a.m. – 12:15 p.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Call to Order (*L. Fegley*)	11:30 a.m.
2. Board Consent • Approval of Agenda • Approval of Proceedings from May 2021	11:30 a.m.
3. Public Comment	11:35 a.m.
4. Consider Extending Maine's Glass Eel Quota for 2022-2024 (*K. Rootes-Murdy*) **Final Action**	11:45 a.m.
5. Consider Fishery Management Plan Review and State Compliance for the 2020 Fishing Year (*K. Rootes-Murdy*) **Action**	11:55 a.m.
6. Progress Update on 2022 Benchmark Stock Assessment (*K. Anstead*)	12:05 p.m.
7. Other Business/Adjourn	12:15 p.m.

The meeting will be held via webinar, click here for details.

MEETING OVERVIEW

American Eel Management Board
Thursday, October 21, 2021
11:30 a.m. – 12:15 p.m.
Webinar

Chair: Lynn Fegley (MD) Assumed Chairmanship: 10/19	Technical Committee Chair: Troy Tuckey (VIMS)	Law Enforcement Committee Representative: Beal (ME)
Vice Chair: Phil Edwards (RI)	Advisory Panel Chair: Mari-Beth DeLucia (TNC)	Previous Board Meeting: May 4, 2021
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, PRFC, VA, NC, SC, GA, FL, D.C, NMFS, USFWS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from May 2021

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Consider Extending Maine's Glass Eel Quota for 2022-2024 (11:45-11:55 a.m.) Final Action

Background

- Addendum V (2018) set Maine's glass eel quota at 9,688 pounds for three years (2019-2021) and to be revisited before year four (2022). The Board can extend Maine's quota at 9,688 pounds for an additional three years (2022-2024) without requiring a new addendum; setting the quota at a higher level would require a new addendum.

Presentations

- Extending Maine's Glass Eel Quota by K. Rootes-Murdy

Board Actions for Consideration

- Extend Maine's Glass Eel Quota for 2022-2024.

5. Fishery Management Plan Review (11:55 a.m.-12:05 p.m.) Action

Background

- State compliance reports were due September 1, 2021
- The Plan Review Team reviewed each state report and compiled the annual FMP Review.
- New Hampshire, Massachusetts, Pennsylvania, Georgia, and Florida requested *de minimis* status for their yellow eel fisheries; and South Carolina requested *de minimis* status for both their yellow eel and glass eel fisheries.

Presentations

- Overview of the American Eel FMP Review by K. Rootes-Murdy (**Supplemental Materials**)

Board Actions for Consideration

- Accept 2020 FMP Review and State Compliance Reports.
- Approve *de minimis* requests.

6. Progress Update on 2022 Benchmark Stock Assessment (12:05-12:15 p.m.)

Background

- In May, the Board was provided an initial update on work by the Stock Assessment Subcommittee (SAS) to complete the next benchmark stock assessment. The SAS had met multiple times to evaluate and pursue modelling approaches but had encountered data and modelling challenges.
- From June-October, the SAS has continued work and identified promising potential modelling approaches to pursue further.

Presentations

- Progress Update on Benchmark Stock Assessment by K. Anstead

7. Other Business/Adjourn

American Eel

Activity level: Medium

Committee Overlap Score: Medium (SAS overlaps with BERP, Atlantic herring, horseshoe crab)

Committee Task List
• TC –July 2019: review of Maine's aquaculture proposal • TC – September 1st: Annual compliance reports due • 2022 Benchmark Stock Assessment

TC Members: Troy Tuckey (VIMS, TC Chair), Jordan Zimmerman (DE), Ellen Cosby (PRFC), Ryan Harrell (GA), Kimberly Bonvechio (FL), Bradford Chase (MA), Chris Adriance (DC), Robert Atwood (NH), Sheila Eyler (USFWS), Alex Haro (USGS), Wendy Morrison (NOAA), Carol Hoffman (NY), Todd Mathes (NC), Patrick McGee (RI), Jennifer Pyle (NJ), , Danielle Carty (SC), Keith Whiteford (MD), Gail Wippelhauser (ME), Tim Wildman (CT), Kirby Rootes-Murdy (ASMFC)

SAS Members: Sheila Eyler (USFWS, SAS Chair), Laura Lee (NC), John Sweka (USFWS), Troy Tuckey (VIMS), Jason Boucher (NOAA), Matt Cieri (ME), Keith Whiteford (MD), Kristen Anstead (ASMFC), Kirby Rootes-Murdy (ASMFC)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

AMERICAN EEL MANAGEMENT BOARD

Webinar
May 4, 2021

These minutes are draft and subject to approval by the American Eel Management Board.
The Board will review the minutes during its next meeting.

Draft Proceedings of the American Eel Management Board Meeting
May 2021

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Draft Proceedings of the American Eel Management Board Meeting
May 2021

ATTENDANCE

Board Members

Pat Keliher, ME (AA)
Cheri Patterson, NH (AA)
Ritchie White, NH (GA)
Nichola Meserve, MA, proxy for D. McKiernan (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Phil Edwards, RI, proxy for J. McNamee (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Matt Gates, CT, proxy for J. Davis, CT (AA)
Rob LaFrance, CT, proxy for B. Hyatt (GA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Houghtaling (LA)
Kris Kuhn**,** PA, proxy for T. Schaeffer (AA)
G. Warren Elliott, PA (LA)
Loren Lustig, PA (GA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Lynn Fegley, MD, proxy for B. Anderson (AA)
Russell Dize, MD (GA)
David Sikorski, MD, proxy for Del. Stein (LA)
Pat Geer, VA, proxy for S. Bowman (AA)
Chris Batsavage, NC, proxy for K. Rawls (AA)
Jerry Mannen, NC (GA)
Bill Gorham, NC, proxy for Rep. Steinburg (LA)
Ross Self, SC, proxy for P. Maier (AA)
Doug Haymans, GA (AA)
Spud Woodward, GA (GA)
Jim Estes, FL, proxy for J. McCawley (AA)
Marty Gary, PRFC
Chris Wright, NMFS
Mike Millard, USFWS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Mari-Beth DeLucia, Advisory Panel Chair

Staff

Bob Beal
Toni Kerns
Maya Drzewicki
Tina Berger
Kristen Anstead
Pat Campfield
Lisa Carty
Emilie Franke
Chris Jacobs
Jeff Kipp
Heather Konell
Laura Leach
Dustin Colson Leaning
Savannah Lewis
Kirby Rootes-Murdy
Sarah Murray
Joe Myers
Marisa Powell
Julie Defilippi Simpson
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Bill Anderson, MD DNR
Pat Augustine, Coram, NY
Mike Bednarski, VA DWR
Alan Bianchi, NC DENR
Jason Boucher, NOAA
Bill Brantley, NC DENR
Delayne Brown, NH F&G
Jeff Brust, NJ DEP
Heather Corbett, NJ DEP
Jessica Daher, NJ DEP
Julie Evans
Sheila Eyler, USFWS
Lewis Gillingham, VMRC
Angela Giuliano, MD DNR
Carol Hoffman, NYS DEC
Kyle Hoffman, SC DNR
Jesse Hornstein, NYS DEC
Asm. Eric Houghtaling, NJ (LA)

Guests (continued)

Wilson Laney
Mike Luisi, MD DNR
Chip Lynch, NOAA
Shanna Madsen, VMRC
Casey Marker, MD DNR
Molly Martin, NOAA
Genine McClair, MD DNR
Mike Millard, US FWS
Steve Myers
Brian Neilan, NJ DEP
George O'Donnell, MD DNR
Paul Piavis, MD DNR
Bill Post, SC DNR
Somers Smott, VMRC
Renee St. Amand, CT DEEP
David Stormer, DE DFW
Jason Surma, Woods Hole Group
John Sweka, USFWS
Michael Toole
Jessica Valenti, Rutgers
Scott Wagemann, Cornell Univ
Megan Ware, ME DMR
Meredith Whitten, NC DENR
Rene Zobel, NH F&G

The American Eel Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Tuesday, May 4, 2021 and was called to order at 10:45 a.m. by Chair Lynn Fegley.

CALL TO ORDER

CHAIR LYNN FEGLEY: Welcome everybody! We're going to call to order the meeting of the American Eel Management Board. My name is Lynn Fegley. I represent the state of Maryland, and have the honor of serving as your Chair today. I just wanted to also make a note that today sitting for Bill Hyatt is Rob LaFrance, so I wanted to extend a welcome to him.

APPROVAL OF AGENDA

CHAIR FEGLEY: With that, the first order of business is going to be approval of our agenda. Is there anybody, if you have any suggested changes or modifications to the agenda, please raise your hand.

MS. TONI KERNS: I don't see any hands raised, Lynn.

CHAIR FEGLEY: Okay, seeing none, then we will consider the agenda approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR FEGLEY: This Board hasn't met in a little while, and the proceedings from the last meeting are from October, 2019, and they were in the meeting materials. If you have any edits or changes needed to those meeting minutes, please raise your hand.

MS. KERNS: I don't see any hands raised, Lynn.

CHAIR FEGLEY: Awesome, so we will consider the proceedings from October, 2019 approved by consent.

PUBLIC COMMENT

CHAIR FEGLEY: Next, we have public comment. I know that I have at last one person, so if you would like to make public comment, I would request, this is a short meeting, so to keep us on time I would request that you keep it pretty brief. If you have public comment, please raise your hand, we'll get you recognized and on the microphone.

MS. KERNS: Des Kahn's hand is up.

CHAIR FEGLEY: Okay, Desmond Kahn, please go right ahead.

MR. DESMOND KAHN: Thank you very much, Madam Chair. Yes, briefly, I sent hopefully the members of the management board received a copy of my 2019 paper titled trends in abundance in fishing mortality of American eel. The reason I re-sent this to you, is because the ongoing stock assessment is occurring right now.

I used a very widely used set of data in this paper, to look at the trends in abundance of eels, which was not used in the last assessment. I would like to encourage the Stock Assessment Team to consider using it. That is the MRIP catch per trip index of abundance, and because I used the whole Atlantic coast, this was an immensely powerful dataset with many thousands of data points every year. I think it's quite reliable, and the only part of the MRIP data that the last assessment used, was the recreational landings, which had declined and were declining.

This may have given them the signal that the stock was declining, but in fact what happened over this period from 1981 to 2014, which is what I covered, was that people stopped keeping American eels. The discard rate increased noticeably. The fact that there was not a reduction in landings, did not really indicate abundance at the time. But they may have gotten that signal.

Just in brief, what the trend was, was that they were in a peak in '81, declined dramatically until 1995, remained low for several years, and then starting in 2003, the stock began recovery, and by 2014 was back up to half the level it had been in 1981. This does not seem to me to be consistent with a depleted status.

I'm going to just wrap this up with one more comment. What the last assessment did, they had three different sets of indices that they came up with three different trends in abundance from, and not one of those trends agreed with any other trend. They didn't have a clear, sound picture of the trend in abundance, and I believe the MRIP catch per trip, which is used in virtually every assessment I worked on, striped bass, weakfish, bluefish, is a great resource for assessments. That is all I would like to say, thank you very much.

CHAIR. FEGLEY: Thank you, Des. I appreciate your comments and insight. Okay, so we have anybody else who would like to provide public comment? If you do, please raise your hand.

MS. KERNS: Lynn, I do not see any other hands raised at the time.

CHAIR FEGLEY: Okay, thank you, Toni.

REVIEW THE 2020 COMMERCIAL YELLOW EEL LANDINGS

CHAIR. FEGLEY: With that we'll move on to the next agenda item, which is to Review the 2020 Commercial Yellow Eel Landings. I just want to take a minute. We just got off the ACCSP call, and I really want to extend appreciation to all the states for getting their landings in, so that we can have this discussion at the spring meeting. I know we were a little bit skeptical that we could make it happen, and just thank you to all of you and your staff for making it work. With that I'll turn it over to Kirby, and I think to Mari-Beth DeLucia as well for the Advisory Panel Report.

MR. KIRBY ROOTES-MURDY: Good morning all, this is Kirby Rootes-Murdy. I think Maya is working to get up on the screen my presentation, there we go. I have a brief presentation to review recent yellow eel landings information. To help provide some context to why the Board is reviewing this information today, I wanted to provide some background first.

Addendum V, which was approved in 2018, was initiated in part as a response to preliminary 2016 yellow eel landings that indicated that the cap at that time established in Addendum IV, had been exceeded. Through Addendum V, a new cap was established of 916,473 pounds, as well as a new management trigger, and a cap overage policy. Under Addendum V, the current cap is evaluated against the management trigger, or if the cap is exceeded by 10 percent for two consecutive years, then the Board will take management action. To prevent the management trigger from being met, Addendum V outlines the process of proactive monitoring. As Lynn mentioned, annually the Board is to review yellow eel landings from the previous year at the spring meeting, in an effort to respond as quickly as possible if needed. If landings exceed the cap, the Board will convene a work group for this task, determining whether voluntary action may be needed, based on the magnitude of the overage and the trend in landings.

In the event that landings exceed the cap by 5 percent or more in one year, the work group will make recommendations to the Board on what type of voluntary action to reduce landings of states or jurisdictions that harvested 1 percent or more of the coastwide total in the year of the overage. To aid with this review by the Board today, an Advisory Panel meeting was scheduled late last month.

There was, unfortunately, low turnout for the webinar, and we only had a few folks follow up outside of the webinar by phone to provide

feedback. Mari-Beth DeLucia, our Advisory Panel Chair will present a report of feedback we did receive from both Advisory Panel members and other individuals involved in the yellow eel fishery.

The Board should consider the current American Eel AP representation and following this meeting follow up with staff, if there is an interest in changing the current membership. On the screen we have a summary of the recent year's landings. Preliminary yellow eel landings from ACCSP indicate the total coastwide landings in 2020 were 225,122 pounds, which is a new time series low. That is going back to when the FMP, the fishery management plan for American Eel was initiated in the late 1990s.

On the screen the table shows each jurisdiction's landings from 2016 through 2020. As you can see, coastwide landings have continued to decline every year since 2016. Maryland landings, which annually comprise more than 60 percent of the coastwide total during this time period, saw an approximate 60 percent decline in landings for 2019 to 2020.

New Jersey, which annually from 2016 to 2020 reported the second or the third highest total for a jurisdiction, saw an approximate 70 percent decline in landings from 2019 to 2020. While not every jurisdiction had landings in 2020, those that did saw their landings decrease from last year to this year, or excuse me from 2019 to 2020.

To protect confidentiality for 2020 landings from Maine, New Hampshire, South Carolina, and Georgia are not presented in this table. We don't have state compliance reports yet for the 2020 fishing season, as Lynn indicated, this information is provided through ACCSP, but compliance reports and review of the fishing year on a whole will take place later in the fall, when compliance reports are due then. With that I'll take any questions at this point.

CHAIR FEGLEY: Any hands, Toni?

MS. KERNS: Pat Keliher has his hand up.

CHAIR FEGLEY: Okay, Pat Keliher, go right ahead.

MR. PATRICK C. KELIHER: Thank you, Madam Chair. I'm just wondering with the pandemic, and all the agencies dealing with COVID, if any of the declines may be related to any reporting discrepancies that might have come about based on the pandemic.

CHAIR FEGLEY: Yes, I'm not sure who is best equipped to answer that question. You know certainly, each state is different. I guess I would suggest maybe we listen to Mari-Beth DeLucia's report a little bit, because I think it brings into sort of a bright light what is going on with eels, and it is not reporting. Maybe if it's okay, Pat, maybe we'll do that, and Kirby, thanks for that presentation, and I think if we can go on to Mari-Beth that would help.

ADVISORY PANEL REPORT

MS. MARI-BETH DeLUCIA: Great, thank you, Madam Chair. Good morning everybody. I'm just going to give a short presentation on the feedback we received from our Advisory Panel meeting in late April that Kirby mentioned. As Kirby eluded, there was only a few participants on the AP, myself, Mitch Feigenbaum, Lawrence Voss, and Jimmy Trossbach from Maryland, who provided comments by phone.

I do want to note that we did get comments provided by watermen in Maryland, who are not on the AP, and the following slides and comments and summary, those comments are summarized together. The AP basically gave feedback on hearing the questions regarding the recent landings and the markets for yellow eel, and I'm going to talk about those next.

I think there was a general consensus from the AP and the Maryland watermen that the current changes in landings, or the low landings I should say, are really driven by market

conditions and not changes to the eel population. One AP member felt that there was not any real change in catch per unit, and that any increase in that was probably due to less effort.

Maryland watermen reported increasing availability in yellow eels, and that they appear abundant. There is less effort and more eels. There is an increase in catch per pot, compared to past years. You know the primary markets for yellow eel generally in the past have been the international market, the European market for frozen eels, and grocery stores and restaurants.

That has been, I think about almost 80 percent of the entire market. The domestic market really is driven by the bait market to wholesalers for the recreational fishery for striped bass, blue catfish and cobia. There is a smaller, limited domestic Asian market for grocery stores and restaurants here in the United States, but that is pretty limited, and probably not driving a lot of what we're seeing at the market.

Both the European food market demand and the U.S. domestic bait demand have decreased, and there are multiple factors for this. There have been over the last two decades and increasing reliance on the eel that are developed in the European aquaculture farms, changing preferences for these eels versus the wild eels.

Due to the conservation concerns in regards to the European eel in particular, there has been a decrease in demands for wild caught eels in Europe. For example, Aldi grocery stores have stopped carrying smoked eels. Obviously COVID-19 has significantly impacted almost everything, both the European markets and the recreational bait fisheries, especially last year. Markets in general just have been shrinking over the past decade. There seems to be a decrease in individuals still active in the eel fishery, and a lot of fishermen are moving to more lucrative fishery species. Farm raised eels from Asia have also taken over the restaurant markets in the United States. Just kind of the overall message was there was a lot of things factoring into why the landings have decreased so much, but not necessarily because of any change in the population.

The AP felt there was lots of uncertainty going into a future fishery. The performance, we probably will see a small increase for landings, due to an increase in bait landings. There is a lot of pent-up demand for recreational fisheries right now, so you know since most folks couldn't fish last spring and summer.

There is probably going to be very little change to the European markets, due to ongoing COVID issues and restrictions. But there is some optimism for future markets with wild eels in Europe. There is still demand for those eels versus your farm raised eels. I think that's about it, questions?

CHAIR FEGLEY: Thank you so much, Mari-Beth, any questions for Mari-Beth? I think I see John Clark and then Marty Gary. Go ahead, John.

MR. JOHN CLARK: Hey, Mari-Beth, I was just curious. I saw that there was a concern about the cost of bait from one of the fishermen. Is that something else that has come up quite a bit, because I know in Delaware when horseshoe crabs, when the moratorium was put in place in the mid-2000s, we saw our landings just plummet, because you used to be able to get your bait for free, and then you had to pay for it. I was just wondering if that was a concern across the board.

MS. DeLUCIA: Yes, John, that did come up in the conversation that the cost of bait is one of the reasons the fishermen are moving to other species. The high cost of bait, I should say.

CHAIR FEGLEY: Okay, thanks for that. Marty Gary.

MR. MARTIN GARY: Thank you, Madam Chair, and thanks, Mari-Beth for your presentation. I guess a quick comment and then a question for you, Mari-Beth. One metric I think that is not unique to some of the jurisdictions in the Bay region is the increase in fishing license sales during COVID.

Again, I don't know if this is something we've seen up and down the coast or even nationwide. When COVID hit, a lot of people bought fishing licenses. I know our license sales went up dramatically. That would suggest more people fishing, maybe more demand for the bait. But I'm sure it's not that simple, and I remember talking to Jimmy Trossbach a couple years ago, he's a wealth of knowledge.

I would certainly believe him when he says that demand in the bait market dropped. But I was just wondering if that little nuance came out in the discussion, Mari-Beth. You know there might be more people fishing, but for whatever reason, but still there isn't really an increase and a demand for eels. Maybe they shift tactics, or there were different strategies or different baits they used. I don't know. I don't know if that came up in your discussion, but I thought that was interesting.

MS. DeLUCIA: Sure, I'm going to try to answer this, but I'm going to let Kirby jump in if I don't get it right. I believe that most of the wholesale bait for eels for-hire trips, you know taking boats out to fish, and that is what really declined last spring and summer. That is how I interpreted it. Does that make sense?

MR. ROOTES-MURDY: I'll just jump in and add to what Mari-Beth was saying. Our understanding from what we've received feedback from, from eel fishermen, including Jimmy Trossbach, was that because of the COVID restrictions that were put in place last year, that limited people being able to go out on those types of trips, there was a drop in the demand for bait at that point.

With some of those restrictions already being lifted, some individuals think that there could be an increase in the domestic bait demand. But as Mari-Beth noted, I think that's important to understand in the context of the whole pie, so to speak, of bait landings versus food market landings. The domestic bait demand is a much smaller percentage of what the overall landings are annually.

MR. GARY: Thanks Kirby and Mari-Beth for that. That makes perfect sense, if that's the case. You know if it's driven by the for-hire sector, so I appreciate that answer, thank you.

CHAIR FEGLEY: Okay, I've got Russell Dize next, and then Bill Gorham, you're on deck. Russell, go ahead.

MR. RUSSELL DIZE: Lynn, the big problem in the commercial catching of eels in this area, the Chesapeake Bay, the middle area, is market. A good friend of mine, one of the bigger eel fishermen on the Bay, Tommy Ludnum, last fall set his traps and three days later he had to take them right back up, he couldn't sell any eels.

That is mostly to the fresh market that goes overseas. This spring he never even set, and the ones that did set, they worked for a couple weeks and then they could not sell any eels. The problem in this part of the Bay, in Maryland part of the Bay is selling the bigger eels to Europe, and they are just not selling. There is no market at all. Tommy told me that the man told him there was exactly no demand for eels. I think he sells to Delaware Valley Fish Company, and he said that there just was no demand, no sale.

CHAIR FEGLEY: Yes, thanks for that, Russell. That clearly was the resounding chorus from

the Maryland watermen that the markets just weren't there. Bill Gorham, go ahead.

MR. WILLIAM GORHAM: Sorry, that was an accidental hand raise, I apologize.

CHAIR FEGLEY: Yes, I hate it when that happens. Okay, are there any more questions right now for Mari-Beth? Toni, do you see any hands?

MS. KERNS: I do not, Lynn.

CHAIR FEGLEY: Okay, so before we move on, I just want to circle back to Pat Keliher to your question about reporting. Is that something that you want to discuss further, or just kind of put it on the states radars, to check into their reporting rates?

MR. KELIHER: Lynn, that is fine. I think a lot of questions were answered. I was just kind of curious if there were any issues that states may have had during the process of both harvester reporting and dealer reporting. But I think for the sake of today, I would just carry on.

PROGRESS REPORT ON THE 2022 BENCHMARK STOCK ASSESSMENT

CHAIR FEGLEY: Okay, fair enough. With that, the next agenda item them would be going over to Kristen for a Progress Report on the 2022 Benchmark Stock Assessment, so Kristen Anstead, take it away.

DR. KRISTEN ANSTEAD: Today I'm going to give the Board a progress update on the benchmark stock assessment for eels that's currently underway, and scheduled for a peer review and presentation to the Board in 2022. This is a snapshot of our current timeline. We did the data workshop late last year.

We had great participation from all the states, and you know thank you to everyone, this is a coastwide species, and we had a really comprehensive data submission that was on time, and so we have really been working through the submitted data. We've had multiple calls. We've developed abundance indices, and began working on some potential models, so that is sort of where we are now.

We are having kind of regular check ins to go over that progress, and on those calls, we always have Canada DFO representation, although I will note it is not a formal collaboration. We don't have their raw data or stock assessment scientists, but we do always have one to two representatives that do chime in, and give us feedback, and supplement what we know with what they might know, so that's been really great around this process.

We do also have continued participation from our USGS collaborators, and I'll talk a little bit about that in a minute. We haven't quite scheduled our first assessment or modeling workshop, but we were planning on having two this year, and taking this to peer review in about a year from now, and presenting it to you all next year at the annual meeting.

We do have some new datasets submitted for the stock assessment from the previous benchmark in 2012. We asked that indices of abundance have at least 10 years of data, and so now we have some ramp data that has come online. That is exciting. We have developed abundance indices by three stages this time, so the last assessment it was YOY and yellow eel.

This time we differentiated the elvers, so while we had many more datasets than this sent to us, these are the ones that we've accepted for benchmark purposes, so several YOY, a handful of elver surveys, and then 16 yellow eel abundance indices. We also have landings, so from ACCSP we have validated landings from 1998 to 2019, but we do have the 2020 landings, which are considered preliminary. But we have those to work with. I will note that some of the abundance indices don't go through 2020, since as you know that was a

problematic year for data collection. We kind of had a handful that are 2020, some are 2019. We're still kind of working out what a terminal year will be, because it could be problematic to end on 2020, given that we don't have comprehensive data.

We also have historic landings, there are even landings that go back before 1950, so depending on the methods, we already pursue, we do have a way to go back in time, although we are a lot less sure of those, they come with a lot of asterisks next to them. Then we have recreational estimates from MRIP. We've had those in the past, but we always note that there is a lot of error associated with those estimates, and we use them with a lot of caveats.

We also have life history information, either derived from the data submitted, such as growth parameters, or collected from published literature. Here is a list of potential models and analyses that we're trying for the eel stock assessment. Some have already been rejected for not being appropriate for eels, or for us not having the right data to fully develop that model.

Those are indicated with a red X. Some have been developed, and we will use them in the stock assessment, as you can see with the green checkmark, and several are still under development, and they get a little pencil. Of those that are under development, there still could be limited applications for them. For example, the LIME method.

There is enough data in the Mid-Atlantic to pursue that, but it won't get at the coastwide stock status with reference points. I'm not going to go through all of these, but I want to note a couple of them. One is this YOY Survey Analysis, the first one on the list. It has come up in the past, both from the Board and members of the TC that these YOY surveys are really intensive for data collection.

They require a lot of time and personnel, and there is a lot of associated biological data, like pigments, lengths, and so we are having someone on the SAS look at that data, so do the pigment stages change from year to year? Could we reduce that data requirement and get the same quality of data? We are having someone kind of look at these YOY surveys, because we know it's a big effort to get them collected, and see if we can make any recommendations about kind of lessening effort if it's possible.

We also have a collaboration with John Young and his research group at USGS. They are developing a habitat model to examine whether and how GIS-based habitat assessments could aid the stock assessment, particularly if habitat information could inform estimates of eel population, size, sex ratios, biomass.

Because of data availability, this habitat model currently he is developing it for kind of the Delaware Bay, Chesapeake Bay Watershed, and he is also coming against some of the data limitations that we are in some of these other models. It's under development, he participates in all our calls, and we get regular updates from him.

The SAS was reluctant to pursue some of the same trend analysis as we did in the past, such as ARIMA or a traffic light analysis, since the last assessment a peer review panel and the Board did not use those really for management. But if we can't get anything else to work, we might pursue them, so they get a big question mark there. But overall, it has been a challenge to fully develop some of these models that we've been pursuing, to a point where we can get a coastwide quantitative stock status with an overfishing and overfished definition, and you know estimates of biomass and that sort of thing.

We do have some challenges. We do have more data since 2012, but it's a lot of the same

types of data. We don't have a lot of new types of data, and we're just finding that many models are not appropriate for eel. You know we're trying some surplus production models, but they violate almost every one of the assumptions that go along with applying those models for a species.

You know we know that eel is panmictic, and that it is one population. But there is so much variation in the demographic traits. They inhabit different waterbodies, and in those different waterbodies they have different growth rates, different sex ratios. The males and females mature at different times from each other and along the coast, so it's just really challenging to get demographic data that reliably represents American eel across its range.

We decided not to pursue the DBSRA again, and I just wanted to touch on that, because I know it came up during our 2017 update as well, why we didn't make any tweaks to that during the update. It's just that the criticisms from the last peer review can't be resolved at this time, and the same issues remain, which kind of leads us back with the trend analysis question.

We still have those, and we can always run them, but we're having some challenges getting some models to work for this species. We have, as I said, had several calls with the SAS, and on our last call we looked at some preliminary model work, made some recommendations to each other, and we're spending the next month, you know each kind of following up on those tasks that the group gave some feedback on.

We're going to continue to work on those models. We also, because of some of the concerns and challenges we have, hope to consult ASC, so we're lucky they are having a call in a couple weeks, and we would like to kind of take some of these problems to the ASC. What it would mean for an assessment if it can't really move the information forward from the last benchmark, or maybe they have some recommendations about other avenues to explore.

We are going to consult the ASC about some of the challenges we're having. Then we do have a call after the ASC call later this month with the SAS, to kind of look at that model work that had been done over the last month, and kind of discuss the best path forward. We will plan to update the Board at the annual meeting in 2021. With that, on my next slide I can take some questions about our stock assessment.

CHAIR FEGLEY: Okay, thank you very much, Kristen. You know I think we all understand the challenges we have with assessing the species. I remember after the 2017 update we had some discussions around the fact that we were getting in the mid part of the range in the Mid-Atlantic states, we had very stable trends, and there was some discussion about maybe the fact that a trend was just reflected as stable was actually missing some of the increased incidence of higher abundance, it was maybe masking from what was going on. Hopefully, you guys will figure out a way to maybe get a little more clarity, but we sure understand the challenges before you. With that, John Clark, I see you have your hand up. Go right ahead.

MR. CLARK: Thank you for the presentation, Kristen. Just a question about the commercial landings data, which was the basis for the DBSRA model. As you mentioned, unfortunately we have more years of data, but we don't have a greater range of data sources to use. Are the models you are going to be using, do many of them rely on the commercial landings data again, because as we just heard in the AP presentation, we know the market has been terrible, so the landings won't be really reflective of the population out there in recent years. Thanks.

DR. ANSTEAD: Yes, thanks for that. Many of them do have landings as an input, but we also

have all those abundance indices, so we have many ways to kind of look at trends in this population. But yes, it's worth noting that many of them do rely on landings, and that was a comment of the last peer review panel, even outside of these recent declines in catch was that our landings are shaky at best, at least for the past, and so that is a major challenge to the models as well.

CHAIR FEGLEY: Okay, any other questions for Kristen?

MS. KERNS: I don't see any more hands, Lynn.

CHAIR FEGLEY: Well, thank you again for your presentation, and good luck, we know it's a lot of work. All the best on this endeavor. We'll look forward to seeing what you guys come up with.

ELECTION OF VICE-CHAIR

CHAIR FEGLEY: The last item on our agenda is to elect a Vice-Chair**.** I will just put it out to the Board, if there is somebody that would like to make a motion to do this, and I see Eric Reid has his hand up. Mr. Reid, go right ahead.

MR. ERIC REID: Thank you, Madam Chair, I think staff has a motion. If not, it's not a very big motion. **Okay, I move to elect Phil Edwards as Vice-Chair of the American Eel Management Board, and I would appreciate a second**. My rationale is he's extremely qualified, and God bless him.

CHAIR FEGLEY: Thank you, Eric, is there a second?

MS. CHERI PATTERSON: Cheri Patterson, seconds that.

CHAIR FEGLEY: That was an amazing amount of hands that all went up at the same time, so we'll go ahead and give that second to Cheri Patterson.

Okay, is there any discussion on this motion? If you want to discuss this, please raise your hand. Okay, I see no hands raised. With that I'll just ask, is there any opposition to electing Phil Edwards as our Vice-Chair**? Okay, seeing none, it looks like Phil, you are officially our Vice-Chair.** Congratulations! Okay, and I think that just about does it. Kirby, is there any other business that I'm missing?

MR. ROOTES-MURDY: No, not that I'm aware of.

ADJOURNMENT

CHAIR FEGLEY: Awesome, okay so with that I will just see if there are any objections to us adjourning, please raise your hand, and if not, we will consider ourselves adjourned. Thank you everyone very much for your time.

(Whereupon the meeting convened at 11:23 a.m. on Tuesday May 4, 2021.)

Atlantic States Marine Fisheries Commission

ISFMP Policy Board

October 21, 2021
12:45 - 4:30 p.m.
Webinar

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

A portion of this meeting will be held with the Mid-Atlantic Fishery Management Council (MAFMC).

1.	Welcome/Call to Order *(P. Keliher)*	12: 45 p.m.
2.	Board Consent *(P. Keliher)* • Approval of Agenda • Approval of Proceedings from August 2021	12:45 p.m.
3.	Public Comment	12:50 p.m.

The below agenda item will be considered with the MAFMC.

4.	Update on Draft Addendum/Framework on Harvest Control Rule for Bluefish, Summer Flounder, Scup, and Black Sea Bass	1:00 p.m.
5.	Executive Committee Report (*P. Keliher*)	3:00 p.m.
6.	Review Management and Science Committee Tasks to Address Conservation Equivalency Concerns (*T. Kerns*)	3:15 p.m.
7.	Presentation of NOAA Fisheries on Efforts and Next Steps to Reduce Sea Turtle Bycatch in Several Trawl Fisheries in the Greater Atlantic Region, including Summer Flounder, Atlantic Croaker, and Longfin Squid (*M. Pentony*)	3:45 p.m.
8.	Update on East Coast Climate Change Scenario Planning Initiative (*T. Kerns*)	4:15 p.m.
9.	Review Noncompliance Findings (If Necessary) **Action**	4:20 p.m.
10.	Other Business/Adjourn	4:30 p.m.

This meeting will be held via webinar, click here for details.
Sustainable and Cooperative Management of Atlantic Coastal Fisheries

MEETING OVERVIEW

ISFMP Policy Board
Thursday October 21, 2021
12:45 – 4:35 p.m.
Webinar

A portion of this meeting will be held with the Mid-Atlantic Fishery Management Council (MAFMC).

Chair: Pat Keliher (ME) Assumed Chairmanship: 10/19	Vice Chair: Spud Woodward (GA)	Previous Board Meetings: August 5, 2021
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, DC, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 6, 2021

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

The below agenda item (4) will be considered with the MAFMC.

4. Update on Draft Addendum/Framework on Harvest Control Rule for Bluefish, Summer Flounder, Scup, and Black Sea Bass (1:00- 3:00 p.m.)

Background

- After reviewing nine topics that were either recommended by the Recreational Management Reform Initiative Steering Committee or by stakeholders through scoping for two separate ongoing amendments, the Council and Board agreed to initiate a joint framework/addendum and a joint amendment to address several recreational issues. During the February 2021 meeting, the Council and Policy Board prioritized development of the harvest control Rule as the first step in addressing recreational reform.
- A joint Plan Development Team (PDT) and Fishery Management Action Team (FMAT) has been developing the Recreational Harvest Control Rule Framework/Addendum as part of the Recreational Reform Initiative. The PDT/FMAT recommendations for the management options have been incorporated into the Draft Addendum document

(**Briefing Materials)** but have identified additional recommendations for the Board and Council's review in a memo to the Board and Council (**Briefing Materials**). Lastly, the PDT/FMAT requests additional time to fully develop the options and to further develop two statistical models which can be used to inform the recreational measure setting process for the framework/addendum (**Briefing Materials**).

Presentations

- Staff will present progress on the Draft Amendment/Framework

Board/Council discussion at this meeting

- Provide feedback to the PDT regarding recommendations outline in the memo to the Board and Council

5. Executive Committee Report (3:00-3:15 p.m.)

Background

- The Executive Committee will meet on October 20, 2021

Presentations

- P. Keliher will provide an update of the Executive Committee's work

Board action for consideration at this meeting

- none

6. Review Management and Science Committee Tasks to address Conservation Equivalency Concerns (3:15-3:45 p.m.)

Background

- The Executive Committee raised questions and concerns regarding the use of conservation equivalency in Commission FMPs. The Committee tasked a subgroup to create a list of tasks for the Management and Science Committee to address general concerns that have been raised either through the Executive Committee or species management boards, e.g. Atlantic striped bass. The subgroup develop a list of tasks for the MSC to consider (**Supplemental Materials**).

Presentations

- T. Kerns will present the list of tasks for the MSC

Board discussion at this meeting

- Provide feedback on MSC tasks

7. Presentation of NOAA Fisheries Efforts and Next Steps to Reduce Sea Turtle Bycatch in Several Trawl Fisheries in the Greater Atlantic Region, including Summer Flounder, Atlantic Croakers and Longfin Squid (3:45-4:15 p.m.)

Background

- NOAA Fisheries has been considering ways to reduce sea turtle bycatch in several trawl fisheries in the Greater Atlantic Region, including summer flounder, longfin squid, and Atlantic croaker. Research with the industry on various gear modifications that could reduce turtle mortality has been ongoing for several years.

Presentations

- M. Pentony will present NOAA Fisheries efforts and next steps to reduce sea turtle bycatch in the Greater Atlantic Region

Board action for consideration at this meeting

- None

8. Update on East Coast Climate Change Scenario Planning Initiative (4:15-4:20 p.m.)

Background

- In November 2020, the Northeast Region Coordinating Council (NRCC) initiated a region-wide scenario planning initiative. Through this East Coast Climate Change Scenario Planning Initiative, fishery managers and scientists are working collaboratively to explore jurisdictional and governance issues related to climate change and shifting fishery stocks.
- The specific focus of this scenario project is (i) to assess how climate change might affect stock distribution, availability and other aspects of east coast marine fisheries over the next 20 years, and (ii) to identify what this means for effective future governance and fisheries management.
- The Core Team conducted a series of webinars that introduced the East Coast Fisheries Climate Change Scenario Planning Initiative.

Presentations

- T. Kerns will provide an update of the initiative

Board action for consideration at this meeting

- None

9. Review Non-Compliance Findings, if Necessary Action

10. Other Business

11. Adjourn

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

ISFMP POLICY BOARD

Webinar
August 5, 2021

These minutes are draft and subject to approval by the ISFMP Policy Board.
The Board will review the minutes during its next meeting.

Draft Proceedings of the ISFMP Policy Board Webinar
August 2021

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Draft Proceedings of the ISFMP Policy Board Webinar
August 2021

ATTENDANCE

Board Members

Pat Keliher, ME (AA)
Cheri Patterson, NH (AA)
Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Dan McKiernan, MA (AA)
Raymond Kane, MA (GA)
Jason McNamee, RI (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Justin Davis, CT (AA)
Bill Hyatt, CT (GA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Houghtaling (LA)
Kris Kuhn, PA, proxy for T. Schaeffer (AA)
Loren Lustig, PA (GA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Lynn Fegley, MD, proxy for B. Anderson (AA)
Russell Dize, MD (GA)
Pat Geer, VA, proxy for S. Bowman (AA)
Chris Batsavage, NC, proxy for K. Rawls (AA)
Jerry Mannen, NJ (GA)
Bill Gorham, NC, proxy for Rep. Steinberg (LA)
Mel Bell, SC, proxy for P. Maier (AA)
Doug Haymans, GA (AA)
Spud Woodward, GA (GA)
Erika Burgess, FL, proxy for J. McCawley (AA)
Marty Gary, PRFC
Karen Abrams, NMFS
Lowell Whitney, USFWS

(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Staff

Robert Beal
Toni Kerns
Tina Berger
Laura Leach
Lisa Carty
Maya Drzewicki
Pat Campfield
Kristen Anstead
Alex DiJohnson
Emilie Franke
Lisa Havel
Chris Jacobs
Jeff Kipp
Dustin Colson Leaning
Savannah Lewis
Kirby Rootes-Murdy
Sarah Murray
Caitlin Starks
Deke Tompkins
Geoff White

Guests

Dustin Addis, FL FWC
Renee St. Amand, CT DEP
Bill Anderson, MD (AA)
Max Appelman, NOAA
Pat Augustine, Coram, NY
Lauren Benoit
Dierdre Boelke, NEFMC
Bonnie Brady
Jeff Brust, NJ DEP
Mike Celestino, NJ DEP
Richard Cody, NOAA
Heather Corbett, NJ DEP
Judd Curtis, SAFMC
Jessica Daher, NJ DEP
Cynthia Ferrio, NOAA
James Fletcher, Wanchese Fish Co
Dawn Franco, GA DNR
Alexa Galvan, VMRC
Matt Gates, CT DEEP
Lewis Gillingham, VMRC
Zoe Goozner, Pew Trusts
Melanie Griffin, MA DMF
Jay Hermsen, NOAA
Carol Hoffman, NYS DEC
Harry Hornick, MD DNR
Emily Keiley, NOAA
Kathy Knowlton, GA DNR
Ben Landry, Omega Protein
Rob LaFrance, Quinnipiac Univ
Wilson Laney

These minutes are draft and subject to approval by the ISFMP Policy Board.
The Board will review the minutes during its next meeting.

Guests (continued)

Nicole Lengyel, RI DEM
Mike Luisi, MD DNR
Chip Lynch, NOAA
Shanna Madsen, VMRC
Alyson Martin, CBF
Nichola Meserve, MA DMF
Steve Meyers
Mike Millard, US FWS
Chris Moore, MAFMC
Brandon Muffley, MAFMC
Joseph Munyandor, FL FWC
Allison Murphy, CBF
Brian Neilan, NJ DEP
Joe O'Hop
Gerry O'Neill, Cape Seafoods
Michael Plaia, Newton, CT
Nicholas Popoff, FL FWS
Kathy Rawls, NC (AA)
Story Reed, MA DMF
Scott Schaffer, MA DMF
Tara Scott, NOAA
Michael Seeley, MAFMC
Olivia Siegal, VMRC
David Sikorski, CCA MD
Thomas Sminkey, NOAA
Melissa Smith, ME DMF
Somers Smott, VMRC
David Stormer, DE DFW
Kevin Sullivan, NH FGD
Chris Swanson, FL FWC
Douglas Vaughan, Beaufort, NC
Craig Weedon, MD DNR
Kelly Whitmore, MA DMF
Kate Wilke, TNC
Rich Wong, DE DFW
Chris Wright, NOAA
Erik Zlokovitz, MD DNR
Renee Zobel, NH F&G

The ISFMP Policy Board of the Atlantic States Marine Fisheries Commission convened via webinar; Thursday, August 5, 2021, and was called to order at 12:15 p.m. by Chair Patrick C. Keliher.

CALL TO ORDER

CHAIR PATRICK C. KELIHER: All right, it's 12:15; I am going to call the ISFMP Policy Board to order. This is Pat Keliher, Board Chair. We have a fairly lengthy agenda today, so I'm going to try to move through it as efficiently as we can. It is noon hour, so probably a lot of people are going to use this as a working lunch.

Just remind yourself to mind your mute button on this great rainy day. It's raining up here too, Spud, so it's a long storm here.

APPROVAL OF AGENDA

CHAIR KELIHER: I want to just first bring your attention to the first item, which is the approval of the agenda. Does anybody have any comments on the agenda? Are there any new additions to the agenda? Adam Nowalsky.

MR. ADAM NOWALSKY: I was just hoping for a few minutes this afternoon under Other Business to talk about a couple of issues that came to my attention about the appeals process, as Chair of the Summer Flounder, Scup, and Black Sea Bass Board, as we worked through the New York issue.

CHAIR KELIHER: Great, thanks, Adam. We'll add that to Other Business. Is there anybody else? Seeing no other hands, is there any objection to adding that to the existing agenda? Hearing no objections, we have consent for the approval of the agenda.

APPROVAL OF PROCEEDINGS

CHAIR KELIHER: Moving along to the approval of the proceedings from May, 2021. Does anybody have any comments on the minutes from that meeting? Seeing no hands, we have consent on the approval.

PUBLIC COMMENT

CHAIR KELIHER: That brings us to public comment. I have one person signed up for public comment today on items not on the agenda, and that is Ben Landry. Is there anybody else that has an item that they would like to bring to the Policy Board that is not on the agenda? Not seeing any hands, so with that, Mr. Landry, are you on with us?

MR. BEN LANDRY: I am, thank you.

CHAIR KELIHER: We do have a pretty lengthy agenda today, so I'm going to try to keep you to three minutes, if I could, Ben.

MR. BEN LANDRY: No, that's fine, thank you, Mr. Chairman, and members. My name is Ben Landry, I represent Omega Protein and Omega harvesters a menhaden fishing operation out of Greenville, Virginia. For what it's worth, I mean you guys have likely heard of Omega Protein understands the regulatory process that seems to be ever present about this fishery. My comment today, or more to urge the Commission to review its public comment process. You know I've been to these meetings somewhere in the neighborhood of 15, 16 years, and it is increasingly getting a little bit more outrageous, in terms of the public comment.

You know this is not an effort to sensor anyone's views or to ensure that someone can't share their personal thoughts, but these have to be rooted in fact. My company particularly goes extra hard, to ensure that anything that we say in the public domain is accurate. We oftentimes present citations, particularly in our written communication to that statement that we make.

That doesn't appear to be occurring with a number of people that are making public comment. You know opinions are one thing, but they have to be rooted in fact. The species in particular of menhaden, I do not think is getting that right now,

in terms of the public comment. You know for instance yesterday, and for several meetings leading up to it.

We've heard a couple of gentlemen, particularly from the state of Maryland, you know constantly repeat overfishing of menhaden, overfishing of menhaden in the Bay. You know the BAM model and the ERP model that this Commission is extraordinarily proud of. We had recently put out a press release explaining the ERP process and how it is a great success.

None of those documents indicated that it is overfishing. Yet, when the public makes those comments, it just falls flat. There is no one there to correct it. There is no one there to say, well listen, actually this species is very healthy, and we've taken precautionary measures over a decade to ensure that it's healthy.

I would like to see the Commission look inward, and see if there is some policy that could be developed or some committee that can be formed, even if the individual TC Chairman from that specific species, step up and correct some of the more egregious things during the public comment process.

I see that I'm running up against my three minutes, but it's a big deal to us, particularly a company like Omega Protein that is always seen under the gun. Let's kind of clean out this public comment process, and make sure that accurate information is being shared, and not misstatements. Thank you for your time, and if there is anything that you guys ever need from Omega Protein, please don't hesitate to ask.

CHAIR KELIHER: Thank you, Ben, I appreciate those comments. Is there anybody else from the public that would like to make a comment today? Not seeing any other hands, so we'll move right along on the agenda.

UPDATE ON THE MARINE RECREATIONAL INFORMATION PROGRAM

CHAIR KELIHER: The next item on the agenda is the Update on the Marine Recreational Information Program, and I believe Richard Cody is presenting. Richard, are you on?

DR. RICHARD CODY: Yes, I'm on.

CHAIR KELIHER: Great, the floor is yours.

DR. CODY: All right, I have two back-to-back presentations here, so if it's okay, Mr. Chair, at the end of the first one we can allow time for questions, or we can keep them for the end. It's whatever your call is on that one.

CHAIR KELIHER: No, Richard, I think it's fine. Let's pause at the end of the first presentation, take a few questions, then we'll go right into the second one.

2020 CATCH ESTIMATE METHODOLOGY REVIEW

DR. CODY: All right, well thank you. The title of the talk today is an Overview of the Methodology of Use for the 2020 Estimation Process. Basically, as you all know, we had some challenges last year, in terms of data collection in light of COVID. I have a few points that I wanted to make up front, and try to guide the presentation as I complete it.

The main point is that for 2020 Catch and Effort Estimates, in general there were no really, what I would call extreme or unexpected results, as a result of the methodology that we used, 2020 is typically in line with the prior years or recent trends, so 2018 or 2019 in particular. The impact of the data gaps and imputation was variable, of course.

But as you increased the resolution of the estimates, you know it tends to be more variable. But at the state level, not the regional level the impacts were fairly minimal. What I'll do today is I'll review the data gaps from COVID-19, to try and give

you a picture of some of the challenges to the MRIP surveys, and other state led surveys as well.

I'll provide a brief overview of the data imputation and estimation methods. I don't have particularly detailed descriptions of these, because basically, our methodology for 2020, with the exception of including the imputation process, a simple imputation process, didn't vary that much. We tried to keep it as consistent as we could with previous years, just so that the information would be comparable.

Then lastly, I have a presentation of the Catch and Effort Estimates, starting out with catch, looking at recent time series, 2018 through 2020. Then a comparison of estimates with and without imputed records included. Then there is a little piece on next steps. As far as 2020 data gaps were concerned, the main impacts were to the access point angler intercept survey.

That is the source of our catch rate information, but it's also used to supply some supplemental effort information. It accounts for fishing effort made by out of state or noncoastal anglers. It also is how MRIP allocates effort to fishing areas, so it's a state and federal in inland waters. The largest data gaps, or the main data gaps, I should say, were primarily focused in Wave 2, so March and April, although it did extend into May and into later months as well.

But the main point here is that most states had resumed sampling at some level in May, or by the end of May. There were a couple of exceptions, Connecticut, New Jersey, and Virginia. These states didn't resume until later, and that was largely because of state mandated safety protocols. Headboat mode, no state had resumed by the end of 2020 their headboat sampling.

A couple of attempts were made, but social distancing was very difficult to maintain, as you can imagine on a headboat. Then the point here is that the APAIS sampling for those headboats occurs at sea, as ride-along trips or observer trips. Then, and this is largely limited to the Mid-Atlantic and New England Regions. In the Southeast, North Carolina south, we had the Southeast Regional Headboat Survey. Biological sampling by that survey was suspended, but samplers were able to continue their validation and quality assurance visits, so just to verify trips made, things like that, but no biological data were collected.

These are a little busy, so I'm going to spend a little bit of time on this first slide, because the next few are basically the same, but refer to lengths and weights information as well. But what you have here is a heat map of assignments or intercepts, so our intercept tallies. What we've done here is we've compared 2020, we'll call it sampler productivity or the numbers of intercepts, with the previous three years, 2017 through 2019.

They are compared to the average of those previous three years, so where you have a green box that means that sampling was at a level of 75 percent or above the average for the previous three years. Then it cascades down to zero, so the gray boxes refer to an absence of sampling. You'll see at the top there the various states included in the different regions.

We have Region 4, 5, 6, and 7; Region 4 being the North Atlantic, Region 5 the Mid, 6 South Atlantic, and then 7 the Gulf of Mexico. I'm going to focus largely on the Atlantic Coast and I won't be providing any catch examples from the Gulf. What the main point of this graph, you see that there are weeks and months on the vertical axis, and you have a number of different boxes, depending on the state.

The boxes really refer to a mode and a region within the state. Some states may have more than others. But the main point here is that you can see that most of the gaps occurred earlier in the year, starting in March, where sampling had initiated, and continuing through August in some states. But largely by August sampling had resumed, and was

approaching levels that we have seen for the previous three years.

But you can see for April in particular, there is almost a complete absence of sampling, with just a few states, Rhode Island being one, that were able to maintain their sample levels. What we have here are the collection of lengths associated with those intercepts. One of the main concerns that we had when we were evaluating the data throughout the year, was the impact that social distancing might have on the collection of lengths and weights from fish.

Obviously, you have to get close to a fisherman and to his cooler, or her cooler, to get the weight and lengths of the fish that are landed. We do see, I would say less weights, once we resumed sampling throughout the year than we have in the previous three years, in some cases. There are some blocks here where you will see the gray boxes extend to the end of the year, basically. That is something that did concern us, because we do use an imputation process for length and weight information.

This is just the equivalent of the weight's measurements. For our intercepts, generally samplers will try to get a weight and a length, and priority is given to a weight, although that is not always possible, depending on the amount of time that an angler has available. But you can see it's a similar pattern to what we've seen with the length information, and also with the intercept information. You see some difficulties were had, and some differences between the states existed, in their ability to collect weights through the end of the year. As far as data imputation and estimation is concerned, as you've seen, the sampling suspensions and resulting data gaps for the states varied. But they are known, so that does help us identify where the data gaps are.

We had a lot of help in doing this, and I have to commend the states and state directors. I was able to participate in Mike Pentony's monthly, or regular meetings with state directors, and this was very beneficial to us, in terms of assessing where states were in their recovery process, when it comes to sampling.

I'm grateful for the chance to hear from the states at that venue. As I said, we used a simple imputation approach to fill gaps. Basically, what that means is that where our gaps were identified, and you saw them in the first few slides. That is where we included imputed data. We looked at 2018 and 2019, the two most proximate years that were available to fill those data gaps.

One thing that I will mention is that because we used two years of data, we down weighted each year by a factor of 2, to take into consideration that we were using two years of data. We did have input from statistical consultants Jean Opsomer, Mike Brick and others on the reliability or the ability approach that we looked at.

As far as estimation is concerned, standard MRIP methodology, as I said, we continued to use that for both catch and effort estimates. For 2020, even though we didn't produce the wave level estimates during the year, wave level estimates are available at this point, along with the final annual estimates. Just to give you some context for the decision on imputation, we did look at other more complex methods, modeling approaches, et cetera.

The decision was made because of the urgency with the need for the data, that this would be a rather resource intensive approach. I mean we could look into it at a later point, but in the interest of getting data out as quickly as possible, and then also in trying to maintain a level of fidelity with our current estimation methods. We went with the simpler approach, which we felt would be more reproduceable and less subject to variation, and keep us basically at a level of comparability that we wouldn't have had if we had gone the modeling approach.

The other thing about looking at more complex methods is that they do require some sources of axillary information. You know part of our decision process there was that during the year we did

approach the White House Office of Management and Budget for TRA clearance on modifications to the APAIS questionnaire.

Those were not approved, and we felt that since that was our vehicle for obtaining additional information, it would be difficult for us to entertain standalone surveys in addition to the MRIP APAIS surveys. We were forced really, to abandon any modifications to the APAIS questionnaire.

Then the last thing I'll mention here also, is that we do plan to revisit the 2020 estimates when complete data are available for 2021. One of the suggestions that has been made to us, and I think it's really a responsibility of ours to look at the two shoulder years, rather than the two most recent proximate, or previous years, to see if there were any differences between using 2019 and 2021 versus 2018 and 2019 data. That is something we plan to do, once 2021 data become available. There are still some questions regarding the integrity of the 2021 data.

You know we're part way through the year, we haven't had what I would call any interruptions of sampling so far. But we will monitor that as the year continues. The next few slides I'm going to basically categorize them as two different kinds. The first set will sort of concentrate on 2018 to 2020 time series.

I'll have annual landings by state and region, just for a select few species as examples. Then the second set will look at 2020 estimates in particular, with and without imputed records for comparison. But we'll do a similar type of comparison. I apologize about the amount of detail that is in this slide. Obviously, if you're looking at a laptop, this is going to be hard to see.

The take home here is that we have three years of data side by side, represented in the various bars. I'll present this for the South Atlantic, Mid-Atlantic and North Atlantic Regions. Basically, you have three years of data represented by the blue, sort of red and green bars, 2018, 2019, and 2020 data, or estimates.

The 2020 estimates are the imputed estimates. For South Atlantic we have black sea bass, scup and gray snapper, gray triggerfish, king mackerel, red drum, Spanish mackerel and spotted sea trout. You can see for the most part there were not real large deviations from the previous years. I do highlight one here, Spanish mackerel, and if we go to the next slide, I can show you what we have here is a comparison of estimates with and without the imputed data included.

For instance, the blue bars refer to the estimates with imputed data included, and then the red bars are without imputed data. You can see for the Spanish mackerel example that the two data, the two versions, are similar. The relative effect of the imputed data on the estimate is low. It wasn't due to the imputation methodology in this case, that we saw a spike in the Spanish mackerel landings.

I can't say with 100 percent certainty that that would be the case for all comparisons, it would depend on the species, and on the data that were available, and the level of sampling that occurred as well. There were a number of different factors that would come into play. But in general, what you see here is that at this regional level we don't see very much in the way of variation, or differences between imputed and non-imputed estimates, for which the non-imputed estimates are available.

This is a similar set of graphs for New England and Mid-Atlantic. For New England I have Atlantic cod, mackerel, black sea bass, bluefish, haddock, and you can see the estimates, well hopefully you can see, for total landings here are fairly similar between the three years, in most cases. Then for the Mid-Atlantic we have Atlantic croaker, black sea bass and bluefish, again.

In the case of New York, we see that for bluefish, 2019, is the spike here. When you combine the imputed data for 2018 and 2019, and down weight them based on the fact that there are two years of

data being used of imputation. It doesn't, at least it's not terribly obvious from the data, or from the estimate in 2020 that it had an impact, you know a large impact on the estimate. Again, this is the same set of species, and we're looking at imputed versus non-imputed estimates. You can see fairly good agreement between the two.

There are some situations such as Atlantic croaker, where there is quite a bit of a difference between the imputed versus the non-imputed estimate. We recognize that using imputed data is not an ideal situation, when it comes to providing catch information or advice, at least in terms of predicting or estimating landings.

To give managers at least some tools to at least evaluate the data, based on the contribution of the imputed data to the overall estimate. What we did for the query tool is we provided for each of the different catch components, Type A, Type B-1, Type B-2, and then harvest versus release catches. We provided an evaluation, or at least a metric for looking at the relative weighted contribution of the imputed data to the overall estimate.

This gives you an idea of the amount, we'll say, of the contribution to the estimate from the imputed data. For instance, with shore mode in the North Atlantic at the top row there. For shore we have 38 percent of the catch rate information came from imputed data. That's the way to interpret that information. We hope that that will at least provide managers and assessors with some kind of a metric that will allow them to assess the overall contribution of imputed data.

The next slide is really a similar slide to the last one, but for black sea bass. You can see for party boat mode, obviously there is a high amount of imputed data used in that estimate, largely because there were very few trips being made, and then also the amount of information that was possible on an absence of APAIS information.

That would mean that largely the estimates would be based on 2018/2019 data. This is sort of a similar presentation on the effort estimates, and again we're looking at 2018 through 2020 annual effort by region, and then annual effort by charter and headboat modes as well, broken out. Then the second set will be the estimates with or without imputed records.

I've got the four different MRIP regions here. You have New England, Mid-Atlantic, South Atlantic and Gulf of Mexico. Overall, the annual effort estimates were in line with previous years. We didn't see the huge reductions that were predicted early on, at least not for the private boat and shore modes.

Then in fact, you know there was plenty of anecdotal information that suggests that fishing picked up in certain areas, as a way to get outside and do something, or you could socially distance and still take advantage of the outdoors. In these slides here we have the imputed estimates. As I said, the effort survey continued largely uninterrupted throughout the year.

For the charterboat mode, we did stop conducting telephone calls for a short period. I think it was New York shut down the sector, but resumed it just to confirm zero trip reporting from the fleet. In this graph here you can see that in some cases, the Mid-Atlantic and the Gulf of Mexico, you had increases in effort in 2020, relative to the previous years. In this slide we have it broken out for charter and headboat effort, and it's a different picture really for the for-hire sector. If you look at New England you can see there is a fairly marked drop in effort for charter and headboats from 2019 to 2020. We see a similar trend in the Mid-Atlantic as well, and to a lesser extent in the Gulf of Mexico.

But the trend stayed pretty consistent for the South Atlantic for 2019 and 2020 were similar in the level of headboat or for-hire effort. As far as 2020 effort estimates are concerned, in the New England and Mid-Atlantic Regions, we did have, as I said,

domains or estimation domains that had zero trips reported.

We were interested in seeing how these might have affected the overall effort estimates, if we included those in the imputation process. In this case here you can see the red bar compared to the green bar and the blue bar. You have imputation, you have imputation excluding the zero trips, or you don't have corresponding catch rate information for trips that were zeros, basically.

Then you have the full complement of imputed information. You can see for the Mid-Atlantic and New England, where that occurred, those values are consistent, so there is little or no impact due to the inclusion of zeros. In the South Atlantic and the Gulf of Mexico, we didn't experience that data gap to that extent, so you don't see a red bar in either of those two regions.

As far as next steps are concerned, we did release the estimates in April, on schedule for our normal annual release, and along with that release we did also include the wave level estimates as well. Those are available on the website right now through the query tool. The complete data are also available for download, included the imputed data as well.

We are continuing our communications efforts with the regions to try and keep our finger on the pulse, basically, of sampling efforts. You know this has been sort of a roller coaster ride for many people. You know we're trying to keep up abreast as much as we can with any changes that might occur in sampling efforts.

With that, you know we are continuing to monitor the sampling, as we had in 2020 throughout 2021. Part of the reason for that too, is if we do revisit or when we do revisit the estimates at the end of early 2022, and we plan to look at the 2021 estimates. Any information that we have that can inform the use of those data, will hopefully help us in evaluating whether they provide any benefit relative to the 2018/2019 imputed estimates.

I think that is the last slide in the estimation process, and I know I kind of threw a lot of data at people, and the slides were maybe a little bit hard to follow. Ahead of asking any questions, I will offer, my e-mail is on the first slide, so if you need to reach out to me after this meeting or anytime, please do. But if it's okay with you, Mr. Chair, I could take questions now, if you would like.

CHAIR KELIHER: Yes, let's do that, Richard. Does any member of the Policy Board have any questions for Richard on the 2020 Catch Estimates? I've got a couple hands up; we're going to go with Jason McNamee and then Lynn Fegley. Jason.

DR. JASON McNAMEE: Thank you, Richard for that really good presentation. In particular, I liked seeing those comparisons. It's really helpful to kind of see it in that way. Two quick, I guess I'll call them comments more than questions, if you don't mind. The first is, I think it is important to think ahead a little bit to the use of this data in stock assessments.

The main thing I think could use some thought is, how to characterize the uncertainty for that year, so you have kind of a standard method to encountering uncertainty in the normal survey, and I imagine it's different, or will be different for that year. That may or may not matter, but I think it could become an important factor, as folks are kind of working through various stock assessments.

If your team is able to provide some information on what you think is best, you know that would be I think helpful to the analytical teams. Then the other quick thing I wanted to offer is, I really like this idea of kind of revisiting. You know you used an imputation method that kind of patched your through leaning on the preceding two years.

I like this idea of now kind of looking, okay now we can use a year before and a year after. I think it's good and smart idea to continue to investigate the best process for patching in that 2020 number, with limits. I think at some point, a year, or maybe two

years from now, we should call it good and move on. You know, so it doesn't get recreated forever off into the future. Just a couple of comments, thank you, Mr. Chair.

DR. CODY: Thank you, Jay.

CHAIR KELIHER: Richard, if you have a response, feel free to jump in.

DR. CODY: I will mention that we are looking at using a similar approach that we used for 2020, and evaluating the 2021 data to look at if there were any, it looks like there is a drop in productivity, because you know there are still some concerns about the ability of samplers to do their jobs safely in the field.

We'll be trying to look at that throughout the year. I think that that will be important, I think in any consideration of using 2021 as a shoulder year, you know to compare with the previous imputation method. Jay, I do take to heart your advice there to look at what we have, and try to at least provide the context that is needed for management and assessment, to treat the data appropriately.

CHAIR KELIHER: Great, thank you, Richard. I had Lynn Fegley's hand up, but Lynn, it's down now. Lynn, did you have a comment?

MS. LYNN FEGLEY: I did. I just had a quick question. I wonder, Maya, if you could go back to the screen that showed the query, the screenshot of the query for the catch. Yes, that's it. My question really is, because I can see constituents jumping on this a little bit, and I'm just trying to figure out what a good answer might be. For black sea bass in the Mid-Atlantic on your party boat, you've got 100 percent imputed data, yet the PSE for that estimate is quite low. Then above that you've got black sea bass onshore at the very low imputed data, but a very high PSE. Clearly there is no impact of the amount of contribution of imputed data on the PSE. But I just wondered, especially given the criteria that are coming forward about not publishing the data whose PSE is greater than a certain amount, I forget what it is. I just wondered if you had any comment on that sort of relationship between the estimate that is almost 100 percent imputed, and to Jay Mac's point, you know how to characterize the uncertainty, and is it explainable that an imputed estimate has a very low PSE. If that makes sense, I think.

DR. CODY: No, no, that makes perfect sense. What you pointed out is exactly right, is that the variance estimation process makes no distinction between different years of data. The only thing it takes into consideration is the weighting applied to the data. There are some things possibly that we can do to better tie the contribution of the imputed data to the variance estimate.

That will be something that we can look at this year, to see if there is a better metric that we can apply. I mean our concern was really, if people see that all of the data comes from the 2020, 2018, 2019 year, regardless of the PSE, then it should be treated with some caution. But I think that you're right, there might be a need for at least some other metric that might frame the variance estimate a little better.

MS. FEGLEY: Thank you so much.

CHAIR KELIHER: The next hand up is Chris Batsavage. Chris, the floor is yours.

MR. CHRIS BATSAVAGE: Thank you, Mr. Chair, and thank you Dr. Cody, you learn something new every time I see this presentation, so I appreciate you giving it again. On the heat maps, where you showed the different sampling by state over the course of 2020, and how to compare to the other years.

I think you mentioned that some of that was due to limitations of what the samplers were able to do, as far as sampling in the different states. Did refusal rate fishermen play a role in getting fewer samples, due to their concerns with social distancing and the pandemic, and if so, has that refusal rate by anglers improved in 2021?

DR. CODY: Yes, I don't have the actual numbers for the refusal rates, or at least mid-interview refusals. But we could look at that for certain. My guess is, and this is a guess, is that it is a mix of different things. We know for instance, in the conversations that I had with some of the state directors, that there were concerns in some regions and some states, with the ability of samplers to conduct their surveys safely.

It wasn't so much based on whether an angler would participate or not, or hostile or not. It had a lot to do with the amount of anglers that were present on a site, and how crowded a site was. You know that, I think, played a role, probably more so than I think refusals did. But we can certainly look at the refusal rates across the different modes, to see if that was the case.

CHAIR KELIHER: Thank you, Richard, I don't have any more hands up at this time. Why don't we move right along into your second presentation?

MRIP SURVEY DATA STANDARDS AND FUTURE PRESENTATION CHANGES

DR. CODY: All right, thank you. In December of 2020, MRIP unveiled their Survey and Data Standards. The whole idea, or the focus of the data standards were to guide the design and improvement, and quality of information produced by the various surveys participating in MRIP, and also to provide guidance for state level surveys, in terms of precision levels, compatibility, and some of the parameters that would be important, in terms of their comparability of information to other surveys.

Why did we do this? Well, probably the most important driver for it was advice that came from the 2017 National Academies Review. Their message was that we establish performance standards and guidance for regional surveys. That was really a recommendation that NOAA provides some leadership, in terms of guidance for development of surveys.

Following up on that, and we just got the 2021 National Academies Review of data management and strategies, with respect to ACLs. There is information in there that would probably modify, or at least be added to some of the recommendations that were provided earlier by the National Academies, in terms of the components that we have identified as different standards, such as transitioning surveys, and development of surveys.

We're looking at those right now, and it's going to take a while to, I think, nail down the different recommendations, and our responses to it, but I can provide people with the length of this report, if you're so interested. The guidance and the recommendations are largely summarized in the final two chapters of that report. Lastly, the main reason, or the other reasons why we developed these standards, is to support our strategic goals, to provide quality products and ensure sound science.

Those are the two main drivers, as I said, for the development of these standards. I'm not going to go into an awful lot of detail right now on what the specifics are for the standards, but I will summarize what the basic categories of the different standards, and we'll focus a little bit of attention to the publication standard, which I think is the main concern of this group.

Some of the building blocks or the framework used to develop these standards, largely come from existing federal guidelines and best practices, in terms of the dissemination of statistical information. We noted that most surveys have precision standards that they maintain for the publication of data, and we felt that we needed to be consistent with those surveys, in terms of the standard of information that we provide.

Some of the sources that we looked at were the National Academies themselves. They have a report on Principals and Practices for Federal Agencies. There is also an OMB guideline or document for standards and guidelines for statistical surveys, and then also there are various other survey documentation available.

Surveys themselves that have information available on their practices, such as the CDC, the Census Bureau, United Nations, and then various collaborative, I call it international types of surveys that are conducted, sort of collaboratively with different country and state entities. Then we have the Australian Bureau of Statistics, so those are some of the sources that we used to come up with the standards. As I mentioned, there were seven standards in all, and they have various components to them, and I won't get too much into the details here. But the whole idea here is to provide our partners and our stakeholders with a single set of guidelines, with respect to those seven standards, focusing on recreational data collection and estimation. Sorry for breezing through these.

But I'm going to pump the standards three per slide, and then focus on the last one separately. The first one pertains to survey concepts and justification, and really this is about identifying the need for the survey, whether it be a legislative mandate or a data need within a region that is not being met.

Also, how the survey plans to produce the key statistics that are needed, that and provide information on precision or uncertainty with the survey. Then of course, from the federal perspective, if there are some legislative mandates, there may be a need to look at adherence to OMB guidelines for a paper or report production, and reducing responsibility on surveys as well.

The second one is largely a documentation standard, and basically what it tries to do is to provide some guidance, so that when multiple sources of data are provided, say for stock assessment purposes or for management purposes, they have comparable information of sufficient quality, to be able to compare those survey designs, and those survey designs are adequately described within those.

Then an important aspect of that would be the tie in between the survey design and the actual estimation that they match up accordingly. Then the third one here is data quality, and that describes some procedures for data processing and handling things like item nonresponse and weighting of data, things like that that help with evaluating the responses that are received for a given survey, and also providing some guidance on where these adjustments are made within the process for estimation.

These next three slides, and I think the last two standards, really refer to developing implementing surveys, and transitioning between surveys. Also, the quality control that is needed for the improvement process. Number 4 here talks about transition planning. As part of our certification process, one of the things that surveys or sponsors for surveys are supposed to have, is a transition plan for the survey.

If it's replacing another source of data, or it's augmenting other source of data, there should be a plan in place to handle the transition. That might mean developing calibrations for that survey, if needed, and taking into consideration any breaks that might occur in a time series. I will point out that for a lot of surveys, they don't produce a calibrated continuation of a time series, or calibrations going back in time.

Many times, what is done is a break in the survey that timelines indicate, and a disclaimer is put in there that data before and after the break can't be compared directly. They leave it up to the data user to find ways to do that. The review procedures, some of you here, Jay McNamee in particular, is familiar with some of the review processes that we have in place for the calibration that we use for the APAIS and the FES surveys. It's important that there is a comparable level of review, and that the review methods are meaningful and consistent. We put some emphasis there on that, and tie it into the existing certification requirements that we have developed through our Policy and Procedure Directives. Then 6, the process for improvement. One thing that is important with surveys is that, you

know it is a constant quest for improvement, so it is to be expected that surveys are not static into these, that they respond to the populations that they are trying to monitor.

There may be improvements or changes made to the surveys over time, and it's important that those are documented, and at least accounted for in comparisons of data, where there have been survey changes made. Then lastly, I would say, you know for the first six standards that we rolled out, we didn't get much in the way of, I would say negative feedback.

For this seventh standard here we did receive some concerns from stakeholders and data users, that this would restrict access to data. We do recognize that that is an issue. What this standard does is, you know we currently we publish all PSEs or all estimates with PSEs of all levels. Now we do flag the ones that occur above 50 percent.

But it's common practice among most of the statistical surveys to provide a cut off for a reasonable estimate, or for a valid estimate with a PSE of around 30 percent. You will see some variation among the survey. Our plan is to, realizing that we do have data needs, and we do have users that may have a need to examine the data.

We're not being as restrictive, or as conservative in our PSE standard. We are pushing that to 50 percent, so instead of flagging values that are above 50 percent, we will now be adhering to that standard of 50 percent that those estimates above that will not be published on the wave level. We have tried to put into effect some ways to mitigate the data loss, or concerns over the data.

One being that we would produce estimates that are cumulative. At some point during the year for most estimates, those values would reach the 50 percent threshold and be published. Obviously, for some species at some domain levels, we won't be able to reach that. That said, we're not planning to leave people just to fend for themselves.

The intent of the standards was to really, to use practices that were already in use largely, and to remove some of the ambiguities over whether something is a practice or a recommendation, and provide some clear guidance on that. We realize that there are some impacts that are expected from the rollout of these standards, and in particular the last one, the publication standards.

Ultimately, the goal here is to promote data quality consistency and comparability. The standards we hope will improve our ability to ensure integrity in the quality of our statistics. But also, put our money where our mouth is, in terms of our standing behind an estimate that we publish on our website.

What we plan to do is not just flip a switch at some point, and the queries won't be available. We plan to do this is a phased approach, and as I mentioned earlier, we do expect some input from the current National Academies Review, which will take some time to assess. Realistically, we had looked at the standards for data access and publication being implemented no sooner than 2022. But I think that that date is probably pushed out, possibly a year at this point, because there were some things that we would like to do before we get to that stage. One is to produce a data user manual, which we're in the process of doing right now. We also plan to hold some data user workshops, which will provide guidance and tools on how to do custom estimates for the data that are available.

The difference being that those estimates that would have been available, now would have to be produced by the data user, or with our help, but not be published on our website. Then the idea also would be, in this data user workshop, that we would preview some of the anticipated changes to the query tool, and have input from data users on what that might look like, and if there are improvements that could be made that would still be consistent with the standard, we would be able to do that.

But as I said, you know the idea isn't to just flip a switch and remove people's ability to get to estimates at a wave level that are somewhat imprecise or highly imprecise. We will provide tools and guidance on how to do custom estimates. There is some information on the website regarding the standards.

As I said, we're in the early stage of development here. We're in the process of producing the Data Users Guide, and that is going to take some time to happen. As I said, this is a phased approach, so we will be working with our state partners, to make sure that people have the tools they need to get the information they need. I think that's it; I can take any questions.

CHAIR KELIHER: Thank you, Richard. We do have one hand up, Bill Hyatt.

MR. WILLIAM HYATT: I have kind of a general question, it's not specific to the data standards, but more general in nature. If the state had a desire or a need to increase the precisions of estimates of catch and effort vs a specific fishery or specific area, presumably by increasing their sample size by some amount.

Could you talk for a minute about the possibilities of doing that, you know figuring out what is needed to achieve what those objectives of increased precision, what the process and the timing might be? I'm just curious if there are any states that are doing that for specific fisheries or areas.

DR. CODY: Thanks for the question. There is flexibility within the APAIS draw to add samples, and to actually even target samples to say an offshore mode or to state waters or federal waters. There are some ways that sampling can be targeted that way. That said, we were able to get some funding through the Modern Fish Act, where we would try to address the primary regional implementation plan priority for advantaged states, and that was improving precision and sample size., 900K sounds like a lot of money.

But it only goes so far. I think from my perspective, we do need the standards to help us identify where the gaps are, in terms of possibly improving sample sizes, or the coverage of the different surveys. It does set ourselves up for some criticism, but in the long run, I think it does provide us with some way to assess improvements as they occur. The only thing I would say is that we'll work with ACCSP and the states to allot the funding that we have available to us, to try to address the primary precision concerns the best we can, you know within the constraints of the survey. But there are some things, I think, that can be done, in terms of the flexibility of the draw, to incorporate sample that might improve precision of some species. That's probably a roundabout way of saying it. Yes, go ahead.

MR. HYATT: Yes, so just wondering if a specific state wanted to allocate funding, for example, to increase sampling. Is there the option of doing that, and are say federal statisticians available to work with state folks, to figure out what actually needs to be done?

DR. CODY: Yes, we already do that to some extent with some of the other states, particularly in the Gulf, where we coordinate our sample draws. We have in the past had state add-ons in North Carolina and other states that add sample to what's available through MRIP. In some cases, the states will identify how much personnel that they may have available.

The draw is flexible enough to account for the addition of personnel, or the addition of assignments to the draw. For instance, if a state for instance wants to, say double their sample size, that is a fairly easy undertaking to do. It's just a matter of refining the draw so that it knows there are more samplers available, and that sample draw can be increased.

MR. GEOFF WHITE: Mr. Chairman, this is Geoff White with ACCSP. I have my hand up when you want to get there.

CHAIR KELIHER: Thanks, Geoff, your hand does not show on my screen. First up is Erika Burgess.

MS. ERIKA BURGESS: Thank you, Mr. Chairman, I just want to take this opportunity to respond to that last question, by highlighting the Florida State Reef Fish Survey, which we're very proud of in Florida. We worked with the MRIP folks to develop this supplemental survey to MRIP. First to improve estimates of recreational catch and harvest of reef fish on the Gulf Coast, and our state legislature appropriated continuing funding for it, to extend throughout our state.

I know Richard was very closely involved in the development of that program when he was with FWC, and as he transitioned over to NOAA. I don't have the exact numbers for how it improved precision with me right now, but if anyone would like to know more about how we're approaching it in Florida, I would be happy to talk with you after the meeting.

CHAIR KELIHER: Erika, thanks for offering that up, Erika. Do we have any other members of the Policy Board that have questions for Richard? I don't see any other hands. Geoff, do you want to go ahead?

MR. WHITE: Yes, thank you very much. As organizer from the last meeting, I wasn't able to raise my hand. Richard, thank you again for the presentation, and the opportunity to discuss this. ACCSP has a role in state conduct, and for the rest of the Policy Board, states that have already been doing state funded add-ons include Massachusetts, Rhode Island, Delaware, and North Carolina. When that is organized and done with state staff or other staff, it's actually a very open process to say, if you want more additional sample, and to request that through ACCSP, and MRIP in the process says to add those samples. I do think Tom Sminkey and the rest of the MRIP team have been able to help guide what would make the most impact on PSE for particular fisheries. One of the things with the Modern Fish Act $900,000.00, that resulted in about 2,000 additional six-hour site assignments for the calendar year 2021.

That was spread across all of the states, and is in process of occurring. That is going on, and if there is desire to do additional sampling from Maine through Georgia, Florida is handled through the Gulf Commission, then please let us know. On a different tact. Of course, ACCSP is also kind of a data user and stakeholder.

I want to offer that we've been in contact with MRIP a lot about the Survey Data Standards and presentation, and we'll be attending the user workshops, and we're looking forward to ways that we can help with kind of standardized data access to more detailed domain estimates, which is the smaller scale, the wave-based estimates or other things, to help the management process along the Atlantic coast. I don't know exactly what that will look like yet, but we are certainly participating in the process to help that out. Thank you, Mr. Chairman for the time to comment.

CHAIR KELIHER: Thanks, Geoff. Are there any other additional questions from the Policy Board? Seeing no hands, and hearing nobody jumping in, Richard, thank you very much for those presentations. We appreciate the thoroughness of them, and unless you have any closing comments, we're going to move right along.

DR. CODY: The only think I would mention is that my e-mail is on the first slide, so if anybody has any follow up questions, you know please feel free to contact me. I appreciate the opportunity to talk to this group. Thank you.

CHAIR KELIHER: You bet, thank you, Richard, thank you very much, appreciate that. We're going to move right along on the agenda.

REPORTS FROM THE EXECUTIVE COMMITTEE AND STATE DIRECTOR'S MEETING

CHAIR KELIHER: Next up are the reports from both the Executive Committee and the State Director's meeting**,** and I'm going to jump right into those.

This past Monday morning, the State Director's had an opportunity to get together with NOAA leadership.

It included the new Assistant Administrator for Fisheries Janet Coit, along with Sam Rauch, Paul Doremus. There were a lot of folks from the Agency on the webinar. We did have leadership from the Science Centers and the Regional Offices as well. I'm not going to go into all the names, but you folks know who they are.

It was really good to have an opportunity to have Janet be part of the meeting. She stayed on for the entire meeting, which was appreciated, gave us an overview of what she sees the big priorities, as she's coming into her new role. I know I for one am excited to have somebody with a state background coming into this.

I think she'll come at it with a perspective of understanding the concerns that we raise as a Commission, and as states. I think that's good news for us. In particular, her comments were focused around climate change, offshore wind, a diversity, North Atlantic Right whales, bycatch and seafood marketing, a pretty good discussion about all those issues. It's clear that she's going to remain personally engaged with the Commission. Her former role as Secretary of Environmental Agency for the state of Rhode Island certainly gives her a lot of background on all of those particular issues. It's nice to have someone that's coming in with that fishery perspective, again from the state level.

We also had a presentation from Paul Doremus on the federal budget. Paul gave a very high-level overview. There are a lot of pieces to this. I think the take home is that there was some good news in these particular budgets, and I think some of that good news will spread down to benefiting the state and the Commission.

Immediately following that, our Executive Director gave an overview of the Commission's budget priorities, and you could definitely see some overlap between these two, which was good to see. In particular, the top items were the Atlantic Coastal Act, NEAMAP, SEAMAP, ACCSP and FINS, as well as the Interjurisdictional Fisheries Act and Recreational Data Collection.

Again, a lot of overlap between our priorities and what we heard within the federal budget, so some additional good news. Jennifer Anderson from GARFO also did an update on the Right Whale conservation framework that was included in the most recent bi-op for right whales. As a reminder, that's a 10-year rebuilding plan, and it is going to touch us all now.

I'm sure you all participated in the presentation by GARFO beyond the trap pot fisheries for lobster. Certainly, gillnets and other trap pot fisheries up and down the east coast are going to come into play now, so we can all enjoy the discussions on this, instead of just the northeast now.

Brian McManus from Florida did a presentation on Fisheries Disaster Assistance, the process and the improvements that were needed. He went over some of the improvements. We've had some of these conversations at the Executive Committee. It was good to be able to elevate it to the Agency directly, with Janet being involved.

No additional information there, but certainly it was good to get that in front of them. Then lastly is this issue, which is a high priority for the Biden administration, which is diversity within the regional fisheries management councils, along with the appointments that are going to be made. Both Janet and Sam led the discussion on this, and raised the issue of expanding diversity on the Councils.

A lot of very good input from the states. I think a lot of us that have advisory panels within our agencies certainly use those as a stepping stone into coming up and getting more involved in fisheries management issues. There was a lot of conversation around that, and around the use of committees as well. It's something that we commented on from a Commission perspective that

we may need to take a look at as we move forward, and especially with our advisory panels.

That concludes the big items from the State Director's meeting, and I'm not even going to pause there, I'm going to go right into the Executive Committee meeting that was held yesterday morning. I'll leave some room at the end to take a few questions, if there are any. The Executive Committee met yesterday morning. The Executive Director did a Cares Act update, gave us a quick update on Cares Act 2.0, as I call it. About half of the states have filed spend plans with the Commission. Bob did remind us all to not panic too much, because there is a September 30th deadline within the federal statute around spending the money. That is not a hard deadline, there is a lot of flexibility around that.

The good news is we have the money in-hand, and we will have time beyond that to spend it. Some of us may not even get finalized until right up until that deadline, as far as our spend plans are concerned. That flexibility and that report out on that was certainly appreciated. Next up on the agenda was the report from the Administrative Oversight Committee, and it was a very quick report, because the committee didn't have an opportunity to meet.

The AOC was schedule to meet to address an issue of the investments that we have within our finite side of the business around the Commission, and we'll be doing so between now and the annual meeting, and we'll report out to the Policy Board at that time. The next item on the agenda was to discuss the meeting attendance and future meeting formats.

Again, our Executive Director reported out on the results of the survey that was sent out to everybody. Around 34 people filled out the survey. All did state that they were going to attend the in-person annual meeting, but they also had a caveat to say, you know except things change within the pandemic, then that may change their thinking of where we're going.

Now, immediately following the release of the survey, and as we're gathering information back at the office, we started hearing the concerns around the Delta variants. We started to see an uptick in the infection rates around the country, and some of the high-level infection rates. You're all watching the news, I don't need to go into that.

But it does leave a question mark going forward, in particular looking at the annual meeting this October. The Executive Committee leadership will continue to report to the Executive Committee during these interim meetings between now and the annual meeting. If we see that we need to make any kind of change between now and then, we will obviously report out to the Full Commission.

Bob and I did discuss this particular issue this morning, and we would encourage you at this time not to start buying plane tickets for the annual meeting. Just put a hold on those, we'll continue to communicate around that. Right now, Joe Cimino is keeping us up to date on any issues going into New Jersey.

Right now, he reported out that it is status quo there right now, but as we all know, things can change and can change quickly. I would also ask the State Directors, if you have any policy changes in the coming weeks that would impact your travel, to please let Bob or I know as soon as possible.

I know here in Maine we had a meeting earlier this week. It was reported out that we may see some additional travel restrictions, depending on what goes on with the rest of the country. I'm sure all of our agencies are going to be hearing from our own respective governor's offices on things like that, so any information you have that could give us a heads up on would be very much appreciated. We also had a discussion on pending shark finning legislation. There are several bills in Congress. Deke and Bob gave us an update on where those are. Deke gave a thorough update of the conversations that have been happening with our Legislative Committee. In particular, there are a

few different processes that each bill looks at from a banning of sale of fins, to more of a fisheries management approach.

No action was taken by the Executive Committee, other than to ask the Legislative Committee to continue to remain fully engaged in that topic, and to report out to the Executive Committee if there is any change. That leads us into other new business that was brought up to the Executive Committee.

The first item was the Recovering America's Wildlife Act or RAWA. For those of you that don't know, it's a bill that provides funding for the conservation and restoration of wildlife from plant species to the greatest conservation in need or listed species. The Wildlife Conservation strategies of states, Indian tribes or territories and wildlife conservation education and recreational projects.

The Commission has had some conversations with AFWA on this particular issue, and we've engaged our Legislative Committee. Earlier this summer the Executive Committee approved a letter to support RAWA, and sent that letter to House leadership, and at yesterday's Executive Committee meeting, approved sending a second letter that will be sent to Senate Leadership as the bill moves in that direction.

This particular bill with a little bit finer point on it. This is money that would come in through other federal funds, and then if the bill passes it would be money that would be directed back out to the states to work on those species of the greatest need. It certainly would be much needed money for the states, as we work on issues related to ESA.

Then lastly, Dennis Abbott raised the issue of conservation equivalencies. There has been a lot of focus on this as a management tool as of late, especially as it related to the striped bass addendum. Because the question was asked by Dennis, his thinking was, should we be having a Commission-wide conversation around this particular issue.

There was good discussion at the Executive Committee, and there was a recommendation that maybe the Management and Science Committee look at this. It was felt as the conversation continued that it probably wouldn't be a good idea to just send it to him broadly and say, hey look at our policy around conservation equivalencies, let us know what you think.

A small workgroup is going to be established. That workgroup will look at the existing policy, look more broadly at some of their most recent conversations, and then make some recommendations on whether we should make some recommendations on what the focus of a conversation with the Management Science Committee would be.

That is going to move forward, and then if obviously any actions that come up through the Committee process will come back to the Policy Board for further conversations. That concludes the business of the Executive Committee. At this point in time, I would be happy to, that's a lot of information between the two State Directors and Executive Committee meetings, but I would be happy to answer any questions or take any comments on those items. I am not seeing any hands. Bob, did I miss anything, just before I move on to the next agenda item?

EXECUTIVE DIRECTOR ROBER E. BEAL: No, I don't think you missed anything, just one thing to add to it, and a segue for your next agenda item is, when Janet Coit was giving her presentation, and sort of the important issues that she'll be working on. One of the things she brought up was governance along the East Coast, and noted the difficulties of climate change, and how quickly things are changing, and the relationship between the three councils and ASMFC and the 15 states.

It's just a really complex structure, and she was looking sort of within the existing laws and what could be done to streamline governance, or have governance be more responsive to climate change.

One of the things she brought up was the very next agenda item, which is the Scenario Planning Initiative along the east coast, which will bring together all three councils and the Commission, and Toni will explain that better. But I think, you know governance along the East Coast is on Janet's radar, and that was interesting to hear for me.

CHAIR KELIHER: Great, it certainly was. I'm glad you reminded me of that, because when that issue did come up, I came back around to it with her, because governance, when you hear government is broadly, and she's focusing on the East Coast, I was wondering if that was going to include the Commission and the Commission process.

The example she gave certainly didn't at this time, but that will be interesting to see how things move forward, especially with reauthorization of Magnuson, if that gets any traction in the future. It's obviously something our Legislative Committee is going to have to keep a really close eye on. That was an excellent pivot town. Before I do pivot all the way over to Toni, just looking for any hands, if there are any comments.

UPDATE ON EAST COAST CLIMATE CHANGE SCENARIO PLANNING

CHAIR KELIHER: Seeing no hands, let's segue right into the next item then, the Update on East Coast Climate Change Scenario Planning, Toni.

MS. TONI KERNS: Thank you, Mr. Chairman, and thank you, Maya for pulling the presentation up. As a reminder, this East Coast Climate Change Scenario Planning is an initiative that we are working on with NOAA Fisheries and the three Atlantic Coastal Fishery Management Councils, so it is a cooperative effort.

Just a quick reminder of what this Scenario Planning Initiative is. This initiative is a way of exploring how fishery management might have to evolve in the next couple of decades, as climate change becomes a bigger issue. We don't know exactly how climate change will play out and the precise effects it will have, so we're using scenario planning to explore what might happen, and think through what we need to do, in order to adapt to those potential changes.

Scenarios are stories about possible future development. We create different scenarios, thinking of things like a rain shift here, warm waters over there, wind farms are over here, to imagine the worlds that we can face in the decades ahead, and we use these worlds to think about the changes we as managers need to make now, to be better prepared for the future. In this case we're thinking broadly about the implications of climate change for the East Coast fishery management and governance process. But we expect that the conversations could take us into other territories as well. More than anything else, these scenarios are structured in an engaging way, to bring a variety of people together with different perspectives, to discuss complex issues, and in this case it's all about how we as fishery managers and stakeholders prepare for the future of climate change.

For our specific process, the project objectives hope to explore how fisheries governance and management issues will be affected by climate change in fisheries, particularly shifting stock availability and distributions on the East Coast, and second, to develop a set of tools and processes, which provide flexible and resilient fisheries management strategies that will effectively address uncertainty in an era of climate change.

Our draft project focal question is how might climate change affect stock distribution, availability, and other aspects of east coast marine fisheries over the next 20 years, and what does it mean for the future of governance and management across multiple jurisdictions? Some of the expected outcomes that we are thinking we are going to get is a set of scenarios.

These are a few stories that describe in qualitative terms different ways the changing climate might affect the future of fisheries. We'll have a better understanding of the challenges and opportunities facing fishery management. We'll look at a set of near-term and long-term management priorities that help achieve fishery management objectives under different future conditions.

We'll have policy recommendations for broader governance changes that could improve our ability to adapt to these future scenarios. We'll have a list of data gaps and research needs, and monitoring needs for changing conditions, and a framework for ongoing conversations and idea generations for all stakeholders to use.

This is just a quick timeline for process steps that we're going to be using. Currently, we are about to be in the scoping stage. The core group, which includes members from each of the participating organizations, for the last couple of months have been busy putting together draft objectives and expected outcomes, and working on presentations that we're going to use with stakeholders for scoping.

After we scope, we'll go through the exploration stage, where we analyze different forces driving climate change in greater detail, through the analysis of the scoping. Then we will conduct a series of workshops to construct and discuss different scenarios. Then we'll use the scenarios to identify actions and recommendations to the management bodies.

Then from there, we'll identify key indicators to monitor change and outline the next step. As I just said, we are stepping into the scoping stage. In the next couple weeks, you'll see press releases from each of the participating organizations, announcing kick-off webinars to introduce the initiative.

You see on the screen here the dates of those webinars. This is really to introduce climate change and scenario planning to both managers and stakeholders, and we're looking for all different kinds of stakeholders to come and learn about this process, and to start to gather some information. Following the webinars, we will put out a questionnaire to gather information from the public on these driving forces. That is all I have, Mr. Chairman. I can take any questions.

CHAIR KELIHER: Thank you, Toni, any questions for Toni? John Clark.

MR. JOHN CLARK: Yes, Toni, I was just curious. Thanks for the presentation. I was curious if one of the scenarios being discussed will cover situations such as black sea bass, where the stock is still abundant in its original range, but has expanded greatly into a new range, because as we saw that definitely leads to a very difficult situation to manage.

MS. KERNS: John, the scenarios are not predefined, so through the scoping process we'll hear all different types of ideas. That is something that you can bring to the process. I can't imagine that range shifts and abundance shifts wouldn't be part of those discussions, but anything is fair game. We don't predetermine what the scenarios will be.

CHAIR KELIHER: Thanks for the question, John, any other hands? I am not seeing any hands. Toni, thank you for that update.

UPDATE ON THE MID-ATLANTIC FISHERIES MANAGEMENT COUNCIL'S RESEARCH STEERING COMMITTEE TO EVALUATE RESTARTING THE RESEARCH SET-ASIDE PROGRAM

CHAIR KELIHER: Moving right along on the agenda, the next item is Update on the Mid-Atlantic Fisheries Management Council's Research Steering Committee to evaluate Restarting the Research Set-Aside Program, and I've got Adam Nowalsky up for this one. Adam, are you there?

MR. NOWALSKY: Yes, good afternoon, I am. I appreciate the opportunity. I am Chair of the Mid-Atlantic Council's Research Steering Committee.

The Research Steering Committee has been spearheading the Council's effort with these RSA Workshops. Research Set-Aside is something that has been a collaborative effort between a lot of organizations, including the ASMFC.

When the program was suspended a number of years ago, there was discussion last year, well prior to last year, about how best to consider restarting the program, and what would need to change. These workshops were developed with the goal to develop recommendations regarding whether and how the RSA Program should be redeveloped.

It's just important to note that restarting of the program itself is not a foregone conclusion as part of this process. That is one of the questions that we intend to answer. Regionally, we had planned to do a couple of in-person workshops last year during 2020. COVID put a hold on that. We had at the Council and Committee level considered whether to delay the in-person workshops until after the health emergency had completely passed, and we could definitely meet in person.

The decision was made, due to the uncertainty, to try to get a jump start on things, so the Committee went with a hybrid approach, where we're hosting three webinars with one planned in-person workshop later this year. Our first workshop was held on July 15. We had approximately 40 participants, in addition to members of the public. Those participants came from a number of states and different groups at the federal and state level, with experience either n administering the program or taking part of it, including fishermen that have been part of the program, a number of people that had participated as principal investigators on projects as well. Again, that first workshop from July 15, was focused on a research aspect. Next steps for the process are to hold our second workshop, which will center around funding concerns. That is scheduled for August 31.

The third workshop will center discussion around enforcement concerns. That is scheduled for October 14, and the in-person workshop is presently scheduled to be held in Baltimore on November 16. Again, we're hoping to be able to do that in-person, but as the Executive Committee discussion went about in-person meetings.

We'll play it by ear, see how things go, and hope for the best. I'll extend a word of thanks for all those people from the Commission who did participate in the first workshop, look forward to their continued contributions, and I would be happy to take any other questions. Thank you again for the time.

CHAIR KELIHER: Great, thanks, Adam, for that report. Any questions from the Policy Board for Adam? Not seeing any hands going up, Adam, you're off the hook.

COMMITTEE REPORTS

CHAIR KELIHER: Perfect, let's move right along to the next item, which are committee reports, starting off with the Assessment Science Committee. Who is up for that one, Sara?

ASSESSMENT SCIENCE COMMITTEE

MS. SARA MURRAY: Yes, thank you, Mr. Chair. I'll just give a brief report from the Assessment Science Committee. The Committee met on May 13 to address several agenda items, including assessment report streamlining, 2020 data challenges, and revising the stock assessment schedule.

The schedule proposed by the ASC is available in meeting materials. However, I will also briefly review the changes that have been made to the schedule since the Board last approved it at the 2020 summer meeting. First the update of the ecological reference point assessment that was on the schedule for 2022, was removed per the ERP Workgroup's recommendation to only update the single-species assessment and the BAM model before the next benchmark.

For striped bass, the assessment update was shifted from 2021 to 2022, to allow time for management

changes to take effect, and also to avoid challenges that could result from having a 2020 terminal year for the assessment. The 2023 assessment for striped bass, the assessment update was also shifted to 2024, to maintain the two-year assessment update schedule.

A benchmark assessment for black drum was scheduled for 2022, per the Black Drum Technical Committee's recommendation. The assessment schedule was revised for river herring, there was just an error that indicated it was an update, when in fact it will be a benchmark assessment. Then finally, the Spanish mackerel assessment has been shifted from 2021 to a 2022 expected completion, and with that I'm happy to take any questions on the proposed schedule.

CHAIR KELIHER: Thank you, let's see we've got one hand up with questions. Chris Batsavage.

MR. BATSAVAGE: Thank you for presenting the schedule, because it's pretty busy for the next few years. I noticed that weakfish and cobia aren't on the list just for the next few years. Are those on the horizon for say 2025 onward? I don't know if the Assessment Science Committee has talked about future plans for those two species.

MS. MURRAY: Yes, I don't have the schedule in front of me for the NRCC. Katie or others may have better recollection of that. My thought is that yes, they are on the horizon. If anyone has that off the top of your head, feel free to chime in.

CHAIR KELIHER: Not hearing anybody else chime in.

MS. KERNS: Cobia would be on the SEDAR, Sara, and weakfish would just be something that we would do.

MS. MURRAY: Oh sorry, I heard winter flounder.

MS. KERNS: Cobia and weakfish, and I don't remember weakfish off the top of my head, what the TC recommended last year.

MS. MURRAY: Yes, I know that last time around we sort of pushed for an update to align with the ERP assessment, so I would hope and guess that that may be the case as well. In which case that would be an update in 2022. But I can't promise things for the weakfish.

MS. KERNS: Sara, Pat's got his hand up. He might be able to help us out.

MR. PATRICK A. CAMPFIELD: Thanks Toni, thanks, Mr. Chairman. For cobia specifically, I'm digging for the SEDAR schedule right now. But we'll have to get back to you, as it shows on the schedule here, cobia was assessed a couple years ago, and that was a multiyear effort to evaluate cobia stock structure, as well as follow that with a benchmark assessment.

I think it will be several years, and perhaps beyond this 2024 horizon, in terms of what the SEDAR crowd is considering. But I might pitch the question back to you, Chris. If there is a preference or an urgency to the next cobia assessment, please let us know what that is, and at least for Bob and my part and participating on the SEDAR Steering Committee, we can put a request in formally, to get that on the schedule for an out year.

CHAIR KELIHER: Thanks, Pat, and Chris can chime in with you offline if he needs to on that. Lynn Fegley.

MS. FEGLEY: I have similar questions, spot and croaker, I should probably know the answer to this. But I was under the impression that those would go through another benchmark, and I'm just curious what that means in 2024 that if the trigger date/potential review. Would they be doing a benchmark, or what are we doing there?

MS. MURRAY: Yes, the trigger is just that it hasn't been formally scheduled yet. I believe you are correct that it's a benchmark though. I can't remember if it is for both of them. I'm trying to pull up our last go around we had shifted them back to

account for the bottleneck that was occurring in 2022, I believe it was. Give me a moment, I can try to pull that up though, or if one of the stock assessment scientists knows off the top of their head.

DR. KRISTEN ANSTEAD: Yes, this is Kristen. Those are supposed to be benchmarks, croaker and spot in 2024.

MS. FEGLEY: Awesome, thank you so much.

CHAIR KELIHER: Thank you, I appreciate that. I don't see any other hands. We have a proposed update to the assessment schedule. Is there any opposition to the changes in the schedule? If there is, if you could raise your hand.

MS. KERNS: Mr. Chairman, before you ask for that, can I just ask one more clarification from Sara?

CHAIR KELIHER: Absolutely, go ahead.

MS. KERNS: I apologize, I just want to make sure we have it right on the record. The slide says an update in 2024 for striped bass here, and I thought your other slide said benchmark for 2024 for striped bass. I just want to be clear of what it is.

MS. MURRAY: I believe update is correct. I don't know if the previous slide had the wrong information.

DR. KATIE DREW: This is Katie.

MS. MURRAY: Yes, it's update.

DR. DREW: I think 2024 would be the five-year trigger for striped bass, but it has not been officially scheduled or added to the SARC schedule yet. I think we have an update, because we would be doing at least an update to support the ERP benchmark process, as well as management. But it hasn't been formally scheduled either way, and I think that is something that the TC needs to weigh in on, to figure out if we'll be ready for a benchmark or not in 2024.

MS. KERNS: Thanks, Katie.

CHAIR KELIHER: Great, and thank you for that clarification, so back to the Policy Board. We have an updated assessment schedule in front of you. Are there any objections to the updated schedule? Seeing no hands going up, hearing nobody chiming in, then we'll consider the assessment schedule updated by consensus. Thank you very much, and let's move right along with the reports, and we'll go to the Habitat Committee. Lisa.

ATLANTIC COASTAL FISH HABITAT PARTNERSHIP STEERING COMMITTEE

DR. LISA HAVEL: I'm going to start with the ACFHP one. The ACFHP Steering Committee met virtually June 29 to 30. We discussed the progress made on the National Fish Habitat Conservation Through Partnership Act, which was passed back in October of 2020. The Steering Committee also received an update on current on the ground projects, and I'll go into some of those in the next couple slides. I gave an update on the progress on our fundraising development strategy. The Steering Committee approved the 2021 Melissa Laser Fish Habitat Conservation Award recipient, and hopefully we'll be able to present that award in October in New Jersey at the annual meeting, but of course we'll be keeping an eye on Delta, as Mr. Chair already mentioned.

We welcome Restore America's Estuaries as the newest ACFHP partner. For fiscal year 2021, National Fish Habitat funding, we received funding for three on the ground projects plus operational support for ACFHP, and the amount of funding was considered Level 3, which is the highest amount of funding available to a fish habitat partnership, and this is based on performance in previous years. We're excited to be getting this level of funding.

The first project that we'll be funding for 2021 is titled Living with Water-USS Battleship North

Carolina Habitat Restoration. This is in the Cape Fear River, Wilmington, North Carolina. They'll be receiving $50,000.00 from NFHAP funding, and the total cost of the project is 3 million dollars, led by Battleship, North Carolina, and the goal is to connect hydrologic function and services to the Cape Fear River, to restore 800 linear feet of inner tidal shoreline, and establish two acres of tidal wetland.

Here is an aerial view of the project site. The second project that will be funded is Armstrong Dam Removal on the Monatiquot River in Braintree, Massachusetts. Hopefully I pronounced that correctly. They'll be receiving $50,000.00 of NFHAP funding. Total cost of the project is 3.34 million.

This project is led by the town of Braintree, and will restore 36 miles of upstream access for river herring and American eel, and it's part of a multi-barrier removal project on the river. Here is a picture of the Armstrong Dam, as well as an aerial view of the project site. The third project that will be funded with NFHAP funding is ecological restoration of 39 salt marsh acres at Great Meadows Marsh.

This is at the Stewart B. McKinney National Wildlife Refuge in Stratford, Connecticut. They'll be receiving $47,333.00, and the total cost of the project is 1.57 million. This is led by Audubon Connecticut, and the goal is to remove invasive plants and dredged fill soils, in order to restore marsh elevation, to reconnect a pond to the tidal channel, and remove two defunct culverts.

Here is an image of the degraded marsh, as well as an aerial view. ACFHP also received funding from NOAA Recreational Fisheries through a grant called Increasing Recreational Fisheries Engagement through the Fish Habitat Partnership. This funding will go towards Bill Burton Pier in Cambridge, Maryland.

We received $65,968.00, and the funding will go to CCA Maryland, in order to improve outreach, both in Spanish and English about the 350 reef balls that are located under the pier. The outreach will include a live camera, as well as reef ball building activities. A video about the project and signage along the peer about the project and the species that it's benefiting. Here is a map/aerial view of where the live cams will be, as well as where the restoration site is. ACFHP also endorsed four projects since the last time I provided an update. Two of these are proposals that are led by universities, and two of them are on the ground projects. As far as the two on the ground projects, the first on is Carysfort Estuarine and Rockland Hammock Restoration on Key Largo. This project is led by Florida Department of Environmental Protection and Dagny Johnson Key Largo Hammock Botanical State Park, which is quite a mouthful.

It will restore over two acres of mangrove, tidal flat, and rockland hammock. The second project endorsement is also in Florida, it is Cape Sable Coastal Wetland Restoration Project in the Everglades, led by Florida Fish and Wildlife Conservation Commission. It will restore 50,000 acres of salt marsh, mangrove and loose fine sediment.

ACFHP as always, would like to thank ASMFC for your continued operational support, and I'm going to jump into the other updates, and then I'll be happy to take any questions at the end, if that's okay. Next up is the Habitat Committee report, and this one will be much more brief. The Habitat Committee met virtually on June 24, and they received updates on the documents in progress, Acoustic Impacts to Fish and Fish Habitat, as well as the Habitat Hotline. The topic of this year's Habitat Hotline will be Coastal Fish Habitats as Climate Change Buffers.

We also continued working on the Fish Habitats of Concern, which is very close to going out to the Technical Committee's for review. I'm happy to say I just have a couple species left to go on that one. We had a discussion on dredge window elimination proposal in the U.S. Army Corp of Engineer Savannah District, and the Habitat Committee has a draft letter in process.

This letter is very similar to the letter that was sent by the Commission earlier this year to the Army Corp Wilmington District, in regards to concerns around the Army Corps proposal to eliminate dredging windows, and how the elimination of those dredging windows will affect Commission managed species, as well as set precedent for other districts along the coast. But this letter to the Savannah District will also include additional information on protected species.

HABITAT COMMITTEE

DR. HAVEL: The Habitat Committee is hoping to get right now from the Policy Board, consensus to send the letter to the Corp, and staff has discussed with leadership to have the Commission Chair, Vice-Chair and Doug Haymans sign off on the letter, in order to get this out in a timely fashion. I might stop right here, Mr. Chair, if that is okay with you, and see if we can get consensus from the Policy Board, to just have the Chair, Vice Chair, and Doug Haymans sign off on the letter once it's ready.

CHAIR KELIHER: Sure, thanks, Lisa. I did see a draft of the letter, and I do know it's still a work in progress at this time. Does the Policy Board have any objections of leadership working with Doug, to finalize this letter? I am seeing no hands, so I will take that as consensus of the Policy Board to advance the letter to leadership to be finalized. With that, you can continue on, Lisa.

DR. HAVEL: Great, thank you, Mr. Chair. Finally, with the Habitat Committee, we have a couple of new members since the last update, Alexa Fournier from New York, David Dippold from Pennsylvania, and Randy Owen from Virginia.

ARTIFICIAL REEF COMMITTEE

DR. HAVEL: Finally, the Artificial Reef Committee report, which I have just one slide to put on here. The Artificial Reef Committee released an update to the ASMFC Profiles of State Artificial Reef Programs and Projects, and this original publication was from 1988, and the update was released in July, and highlights some of the accomplishments over the last 30 plus years.

The Policy Board approved the language of this update, I believe back in the winter. The publication summarizes the number of permitted sites, mitigation rates and average annual budget along the coast. Has information for each state with an artificial reef program, and the publication is available on the ASMFC website. As always, the Habitat Committee and Artificial Reef Committee welcome any suggestions for action items that you would like to have us work on. With that I'm happy to take any questions.

CHAIR KELIHER: Thanks, Lisa, any questions for Lisa on any of these issues? Adam Nowalsky.

MR. NOWALSKY: Thanks very much for that report. Could you provide some further detail about the scope of the acoustic impacts work that you're doing and reporting out on through the Habitat Committee? Specifically, what I would be interested in knowing, if any of that would be doing any research related to offshore energy development, wind in particular.

We at the Mid-Atlantic Council have had some discussion about concerns and potential impacts that have been reported with angler interactions with sub-acoustic bottom profiling, for example. Was wondering if the acoustic impacts work that you're doing right now would include something like that, and if not what the scope of it would be that might be relevant to wind development.

DR. HAVEL: Sure, a lot of the acoustics draft right now is completed, except for, I would say the impacts to fish habitat sections. We have a lot of information right now ready to go on the introduction, Impacts to Fish, and we're still trying to compile the literature on how it might impact the habitat portion.

We are considering wind as part of that, and I would assume one of the recommendations would

be to research more, because as we saw earlier today, you know there are impacts on the fish, but the studies are few and far between. I think we're limited right now, in terms of the literature and the case studies on this. But we do want to include wind in the report.

MR. NOWALSKY: Just one follow up if I may, Mr. Chairman.

CHAIR KELIHER: Absolutely.

MR. NOWALSKY: Would you agree that impacts of sub-acoustic bottom profiling gear would be appropriate for inclusion in the report, at least as to whether or not you can find any literature that may be relevant to those impacts? Would I expect to see that in this report, or would I not expect to see that in this?

DR. HAVEL: If we can find the literature on sub-acoustic bottom profiling gear, and if you have any to send me, I'm happy to share that with those preparing the report. Any literature that you have on that, I'm happy to review, and then the Habitat Committee is happy to consider putting it into the report.

MR. NOWALSKY: Thank you very much.

CHAIR KELIHER: Thanks, Adam, do we have any members of the Policy Board that have any questions for Lisa? We do have one member of the public. Mr. Fletcher, we're starting to run into some time constraints, so I'll give you three minutes, please.

MR. JAMES FLETCHER: The National Coastal Conditions Report put out by EPA lists a number of chemicals, man-made chemicals in all of the coastal waters. When will the Habitat and stuff address the man-made chemicals and plastics in the coastal waters? Will that ever be addressed by the Habitat Committee? Will water conditions be addressed by Habitat Committee? Thank you.

CHAIR KELIHER: Thank you, Mr. Fletcher. Lisa, do you have any comment on that?

DR. HAVEL: If that is of interest for the Policy Board or a specific management board for the Habitat Committee to take on and discuss, we're very happy to do that. Water quality is definitely an issue, and the water column is obviously a habitat for fish. If that is something that the Commission is concerned with, we are happy to take that on.

CHAIR KELIHER: Great, thank you, Lisa. Before I switch, I'm going to give the Policy Board one more bite at the apple here for any last questions, before we go to the next item. Seeing no hands, that concludes the committee reports. I want to thank Sara and Lisa for those excellent reports. The next item is Review of Noncompliance, and happy to report that we have no noncompliance finding at this time.

OTHER BUSINESS

With that we will move on to Other Business, and I have Adam Nowalsky regarding the appeals process. Adam.

NEW YORK APPEAL OF ADDENDUM XXXIII TO THE SUMMER FLOUNDER, SCUP, AND BLACK SEA BASS FISHERY MANAGEMENT PLAN

MR. NOWALSKY: Thank you very much, Mr. Chairman. As I'm sure probably everyone has heard by now, the Summer Flounder, Scup and Black Sea Bass Management Board did complete its deliberations yesterday in working with the Mid-Atlantic Council. As a result of the appeal, New York was given a 1 percent increase to the baseline allocation.

Let me just start off by thanking everybody that was involved in that process. It was a lengthy meeting yesterday. Thankfully, it didn't seem to impact the Menhaden Board by us taking up too much time, so thanks again to everybody for their working on that. During the course of getting ready for that meeting, there were two items relevant to the appeal that

came to my attention that I wanted to bring before the Policy Board today.

I've passed these notes along to you already, Mr. Chairman, so you have seen them earlier today. The first one is that the appeals process as it was last modified and approved back in 2019, is essentially silent on what happens after the Policy Board makes a directive to a species management board. What we're left with in the document right now is, upon receipt of the Policy Board recommendation, the management board will discuss the findings and make the necessary changes. The management board is obligated to make changes that respond to the finding of the Policy Board. Specifically, what's come up is the question of, should a management board not be able to come to a decision that is within the findings of the Policy Board, what happens at that point?

Some possible scenarios that have been discussed between myself and staff was that the Policy Board may take ultimate action. What is also missing here is any type of timeline. There was some discussion that perhaps a management board might benefit from some work by a technical committee or a PDT potentially.

The timeline that will be required, I think the assumption was that the management board would take action at its next meeting. But I think there might be some room for discussion. I'm not saying that decision has to be made here today, but I just wanted to raise that issue of what happens after the topic goes back to the management board. I think the appeals process is somewhat lacking in further detail in that.

The other item to bring up, and this came up during the discussion yesterday, as well as some management board members have brought it up today, and I don't know if you want to entertain any input from some of them who may be on. There is concern about, is there a potential precedent setting by a Policy Board being drawn into an appeals process that results in a change to an allocation decision.

There was talk about whether perhaps this might be appropriate to bounce back to the Allocation Working Group. There was talk about the management board itself possibly trying to dive deeper into this and discuss it. We did not have time yesterday, but possibly at a future meeting. But I certainly think it would be helpful for the Policy Board to at least provide some direction to those that were interested in that concern, about what you may be doing to address it. Thank you for giving me the opportunity to bring those issues forward.

CHAIR KELIHER: Thanks, Adam, I appreciate you bringing those forward. I think on the first point, well let me back up. I did have a conversation with our Executive Director around these particular issues. I think we were both in agreement that the appeal process, as it pertained to black sea bass, and the appeal from the state of New York.

Certainly, the process worked, and we carried it right out through to the very end, with the result of the 1 percent change in the allocations, as you suggested, Adam. I think from that standpoint things worked. This question of what happens if the species board did not act. To me the natural thing would be that it would have to then go back to the Policy Board and be addressed.

With that in mind though, I think it's clear that the document is silent on that. What I would suggest is that staff takes a look at that document, makes potentially some corrected changes in a draft format, and then brings it to the Executive Committee, and then ultimately back to the Policy Board for a final vote on any changes that are needed in that document. Then, regarding the deliberations. I mean I felt like we were really consistent with the issue at hand yesterday, with both leaderships finding that the appeal was warranted, and the fact that the Policy Board then stayed very focused on that one particular issue, and trying not to broaden it. I think the fact that we didn't broaden it has raised some level of criticism.

I wouldn't necessarily agree with it, but I am just one of many of us. I would be happy to entertain a few comments around the particular issues that Adam has raised at this time.

Maybe if there is agreement by the Policy Board that we have staff take a look at this and bring it back up through. We'll use the Executive Committee again, as kind of a workgroup on this matter, and then we can bring it back to the Policy Board for any final adoptions, if that is the case. I'm going to go back to the Policy Board at this time. I've got one hand up, Pat Geer.

MR. PAT GEER: First I would like to thank Mr. Nowalsky for bringing this up. I don't sit on the Summer Flounder, Black Sea Bass and Scup Board, but I was listening in. The entire Virginia delegation from both the Council and the Commission expressed concerns about this. We would greatly appreciate the Executive Board looking into this, and exploring it further. I just want to again thank you for the consideration on this, and hopefully we can straighten this out so we don't have the problem moving forward in the future.

CHAIR KELIHER: Great, thanks for that comment, Pat. John Clark.

MR. CLARK: I'm glad these points came up. I think the process was, depends on your perspective. I don't think it worked very well, mainly because I think the Policy Board, what they sent back to the management board were options that were not in the Addendum. I know we're not as restricted as we are, like in a regulatory process, where you have to follow the Administrative Procedures Act, I know every state has one, federal government has one.

But at the same time, we ended up being told to do an option that wasn't even in the plan. I've heard that went out to the public for comment. You know in those cases, I think we need to be a little more careful with the Policy Board, that if they are going to remand something back to the management board, that they need to remand something that is based on what went out to the public, and was seen by the public.

I mean this came as a rebuke, in my estimation, to the states that had voted legitimately for the options that went into what was then the approved Addendum XXXIII, and then to have it come back, you know I get it, with the appeal, fine. But to be told to then cobble together some options that weren't even in the Addendum that went out to the public. I think that is something else we have to look at. I mean if there is going to be remand, I think it has to be something that is in the actual Addendum that goes out for public comment. Thank you.

CHAIR KELIHER: Thanks, John. I believe some of that was in the document that went out and was discussed at the Board meeting back in February, but not to debate the point. The level of flexibility.

MR. CLARK: Pat, I don't want to debate it, I'm just saying that you kind of have to look at the Draft Addendum cross eyed and sideways to come up with that option. I mean it really was not a straight up option that was reviewed by the public. I mean I know we often do things that are between two options when it is in a single option, as we did with Connecticut. You know, instead of 5 percent they were given 2 percent. But this was really cobbled together from several different options there, and that was never discussed in the Draft Addendum that the public saw. I'll just leave it at that, but you know again, if this happens again let's just be a little more careful.

CHAIR KELIHER: Pat, I see your hand is back up. Was it left up, or do you have another comment?

MR. GEER: I apologize, Sir.

CHAIR KELIHER: No need to apologize, thank you. Any other questions or comments from the Policy Board? I'm not seeing any additional hands. I do want to thank Adam for bringing this particular issue up. Similar to the conservation equivalency

conversations that were had at the Executive Committee, we have a Policy Document on this.

These policy documents are meant to be adaptive and meant to change as we come up with or run into issues that hadn't been thought of, right? This is the case here. With no objection, we'll have staff go back, review the document, review the comments here today, and then bring any potential changes to the Executive Committee for further discussion, use the Executive Committee, as I said, as a workgroup, and then we'll advance it back to the Policy Board for the October meeting. Any objections to that approach?

ADJOURNMENT

CHAIR KELIHER: Seeing no hands and hearing no objections, then we'll move forward in that direction. That concludes our business of the ISFMP Policy Board, unless there are any additional items that people would like to bring up under Other Business. Seeing no hands, I will adjourn the Policy Board meeting at this time.

The Business Session is scheduled to begin at 2:45, and let's just stick with that schedule. We've all been here sitting in our chairs for quite some time. We'll take a 15-minute break, and then we'll come back at 2:45, where we've got some quick business to deal with. Well, thank you very much for your time on this particular item, and we'll talk to you in about 15 minutes. Thank you.

(Whereupon the meeting adjourned on Thursday, August 5, 2021 at 2:30 p.m.)

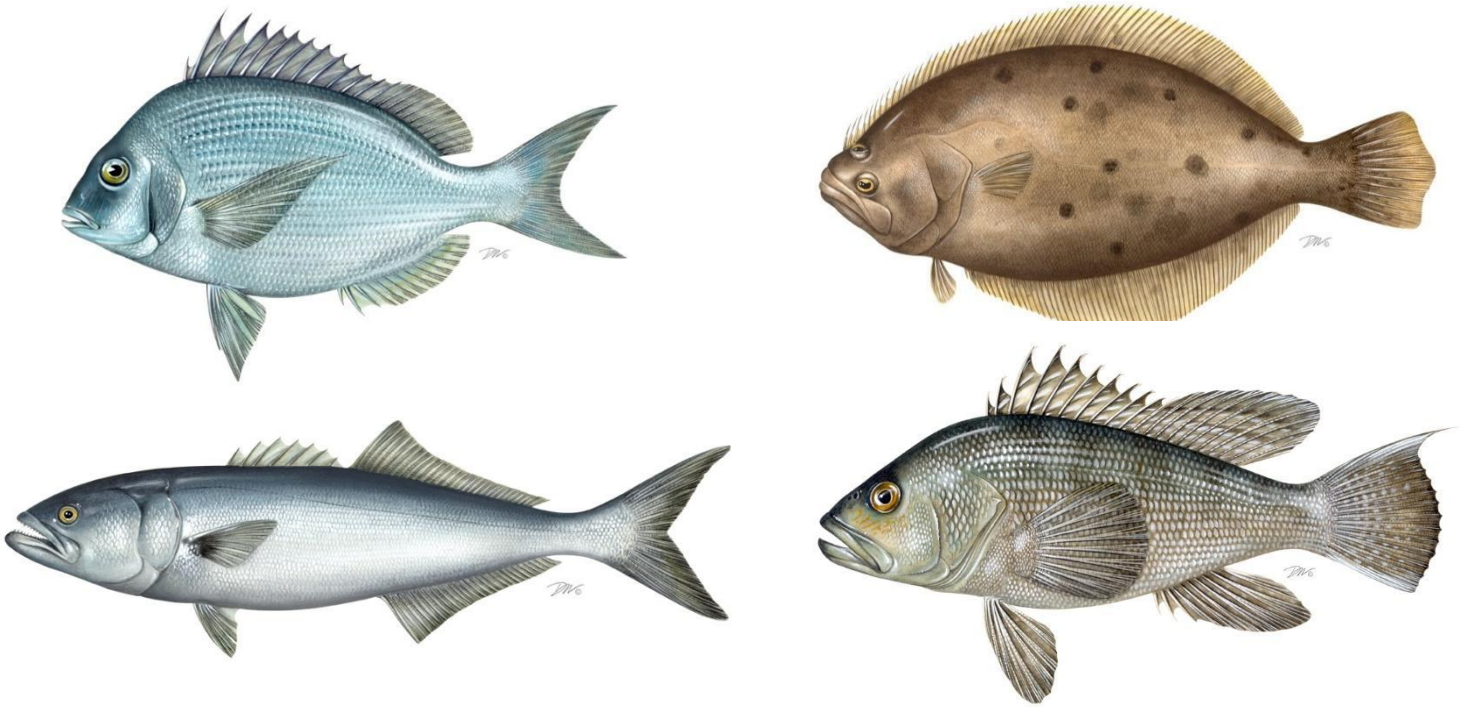
Draft Addendum for Public Comment

Atlantic States Marine Fisheries Commission

DRAFT OMNIBUS ADDENDUM TO THE FISHERY MANAGEMENT PLANS FOR SUMMER FLOUNDER, SCUP, AND BLACK SEA BASS, AND BLUEFISH FOR PUBLIC COMMENT

Harvest Control Rule for Recreational Management

This action is being developed with the Mid-Atlantic Fishery Management Council.



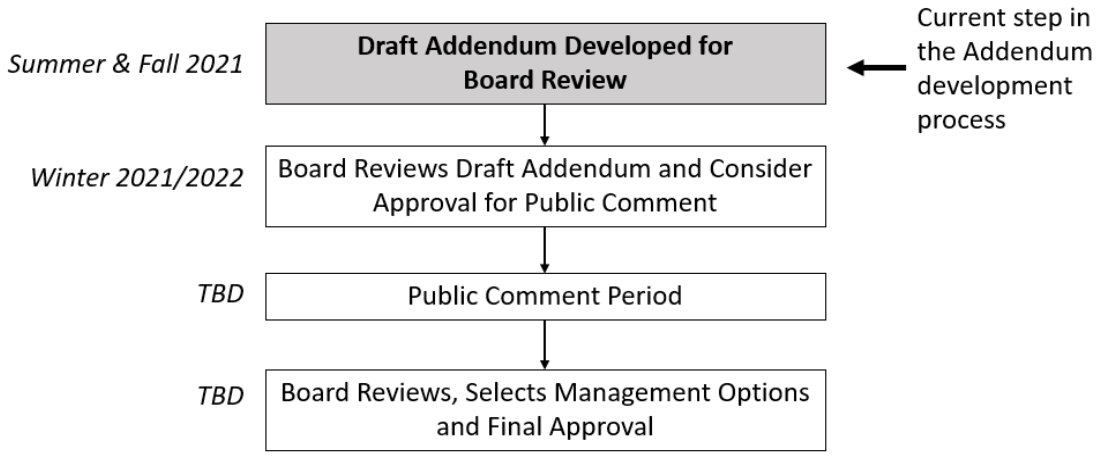
This draft document was developed for Policy Board review and discussion. This document is not intended to solicit public comments. Comments on this draft document may be given at the appropriate time on the agenda during the scheduled Policy Board and Council meeting. If approved, a public comment period will be established to solicit input on the issues contained in the document.

October 2021

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Public Comment Process and Proposed Timeline

In October 2020, the Atlantic States Marine Fisheries Commission's (Commission's) Summer Flounder, Scup, and Black Sea Bass Management Board (Board) and the Mid-Atlantic Fishery Management Council (Council) initiated a draft addendum (for the Commission) and framework action (for the Council) to address management of the recreational summer flounder, scup, black sea bass, and bluefish fisheries. This Draft Addendum and the Council's framework considers modifications to the process for setting recreational bag, size, and season limits (i.e., "recreational measures") for all four species. The Draft Addendum and the Council's framework action will consider an identical set of options. This document presents background on recreational management for these species and a range of options to set recreational measures for public consideration and comment. The addendum process and expected timeline are below.



The public is encouraged to submit comments regarding this document at any time during the public comment period. The final date comments will be accepted is DATE TBD at 11:59 p.m. Comments may be submitted at state public hearings or by mail, email, or fax. If you have any questions or would like to submit a comment, please use the contact information below. **All comments will be made available to both the Commission and Council for consideration; duplicate comments do not need to be submitted to both bodies.**

Mail: Dustin Colson Leaning, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland Street, Suite 200 A-N
Arlington, VA 22201

Email: comments@asmfc.org
(Subject: Draft Addendum XXXIV)
Phone: 703.842.0740
FAX: 703.842.0741

Tips for Providing Public Comment

We value your input, and to be most effective we request that your comment include specific details as to why you support or oppose a particular proposed management option. Specifically, address the following:

- Which proposed options/sub-options do you support, and which options/sub-options do you oppose?
- Why do you support or oppose the option(s)?
- Is there any additional information you think should be considered?

Table of Contents

1.0 Introduction

Summer flounder, scup, black sea bass, and bluefish fisheries are managed cooperatively by the Commission in state waters (0-3 miles), and by the Council and NOAA Fisheries in Federal waters (3-200 miles). The management unit for summer flounder in US waters is the western Atlantic Ocean from the southern border of North Carolina northward to the US-Canadian border. The management unit for scup and black sea bass in US waters is the western Atlantic Ocean from Cape Hatteras, North Carolina north to the Canadian border. Bluefish are managed in US waters along the entire eastern US coast, from Maine to Florida.

The Council and Commission jointly agree to recreational annual catch limits (ACLs) and recreational harvest limits (RHLs) for all four species. They also jointly agreed to the overall approach to setting recreational bag, size, and season limits (i.e., recreational measures). Recreational measures in state waters are determined through the Commission process. The current process for setting recreational measures in state waters for summer flounder and black sea bass was established in 2018 through Addendum XXXII to the Summer Flounder, Scup, and Black Sea Bass FMP. Amendment 1 to the Bluefish FMP established a process for setting recreational measures for bluefish.

In October 2020, the Commission's Policy Board and the Mid-Atlantic Fishery Management Council approved the following motion:

> *Move to initiate a joint framework/addendum to address the following topics for summer flounder, scup, black sea bass, and bluefish, as discussed today:*
>
> - *Better incorporate MRIP uncertainty into management*
> - *Develop guidelines for maintaining status quo measures*
> - *Develop a process for setting multi-year measures*
> - *Consider changes to the timing of federal waters measures recommendations*
> - *Harvest control rule*
>
> *and to also initiate an amendment to address recreational sector separation and recreational catch accounting such that scoping for the amendment would be conducted during the development of the framework/addendum.*

During their February 2021 meeting, the Council and Policy Board prioritized development of the harvest control Rule referenced in the motion above prior to further development of the other topics. This Draft Addendum and the Council's framework address only the harvest control Rule; however, as described in more detail in later sections of this document, considerations related to uncertainty in the MRIP data, guidelines for status quo measures, and multi-year measures are incorporated into many of the options.

The Draft Addendum and the Council's framework propose different options for setting recreational measures for summer flounder, scup, black sea bass, and bluefish.

> **The goal of this Draft Addendum and the Council's framework is to establish a process for setting recreational bag, size, and season limits for summer flounder, scup, black**

sea bass, and bluefish such that measures aim to prevent overfishing, are reflective of stock status, appropriately account for uncertainty in the recreational data, take into consideration angler preferences, and provide an appropriate level of stability and predictability in changes from year to year.

2.0 Overview

2.1 Statement of Problem

The Commission and Council face a number of challenges with regard to setting recreational management measures for summer flounder, scup, black sea bass, and bluefish. As described in more detail in section 2.2, recent challenges have included concerns related to uncertainty and variability in the recreational fishery data and the need to change measures, sometimes annually, based on those data, as well as the perception that measures are not reflective of current stock status. In addition, management measures have not always had their intended effect on overall harvest.

The purpose of this document is to consider a management approach called a harvest control rule to establish a process for setting recreational bag, size, and season limits for summer flounder, scup, black sea bass, and bluefish such that measures aim to prevent overfishing, are reflective of stock status, appropriately account for uncertainty in the recreational data, take into consideration angler preferences, and provide an appropriate level of stability and predictability in changes from year to year. A harvest control rule relies less on expected fishery performance and instead uses a more holistic approach with greater emphasis on traditional and non-traditional stock status indicators and trends.

Addendum XXXII established an interim management approach that addressed several key management objectives and served as a foundation for broad-based, long-term management reform. The Policy Board and Council are addressing ongoing management challenges and objectives via comprehensive, long-term management reforms over the next several years starting with this document. Those actions will draw upon improved recreational fishery data[1], new stock assessments, and innovative management tools.

2.2 Background

For all four species, recreational ACLs are set under the joint management program with the Council. The ACL accounts for landings and dead discards. An RHL for each species is set equal to the ACL minus expected dead discards. Recreational measures (i.e., bag, size, and season limits) are set with the goal of preventing RHL overages. In preventing RHL overages, these measures also aim to prevent ACL overages.

[1] MRIP is an evolving program with ongoing improvements to its methods. Several recent advancements including the transition from a telephone survey to a mail survey to estimate fishing effort have resulted in the need to calibrate estimates of recreational catch and effort for 1981–2017 for comparison to newer estimates. In addition, the MRIP harvest estimates for 2018 need to be "back-calibrated" for comparison to the 2018 and interim 2019 RHLs, because these RHLs were based on stock assessment using the pre-calibrated MRIP harvest estimates.

The ACLs and RHLs are revised each time new stock assessment information becomes available and are based on stock assessment projections, considerations related to scientific uncertainty, and commercial/recreational allocations. The RHLs also account for management uncertainty and assumptions about dead discards. Assumptions about discards also impact the ACLs for summer flounder and black sea bass due to the landings-based commercial/recreational allocations for those species, as opposed to the catch-based allocations for scup and bluefish.

The methods used to determine which measures will prevent RHL overages are not specified in the FMPs and can be modified based on annual recommendations from the Council's Monitoring Committees and the Commission's Technical Committees. Marine Recreational Information Program (MRIP) harvest data from one or more recent years are typically used to predict the impacts of changes in bag, size, or season limits on harvest. For summer flounder, scup, and black sea bass, this analysis has typically relied heavily on preliminary, incomplete current year data and assumptions based on trends in MRIP data from one or more previous years. For bluefish, this analysis typically considered multi-year averages of final, full-year MRIP data. The bluefish measures remained unchanged for many years and RHL overages through 2019 were rare. Measures for summer flounder, scup, and black sea bass changed much more frequently. In addition, summer flounder and black sea bass harvest approached or exceeded the RHL more frequently than for the other species. For these reasons, the Monitoring and Technical Committees felt it was appropriate to rely on the most recent MRIP data, including preliminary current-year data for summer flounder, scup, and black sea bass and to use a multi-year average of final, full-year data for bluefish.

The analysis for all four species typically relied on the assumption that if the recreational measures remained unchanged, then next year's harvest would be similar to harvest in the current year or a recent year average. If unchanged measures were expected to result in harvest notably above or below the RHL, then the measures were adjusted to achieve a desired percent liberalization or reduction in harvest based on an analysis of trends shown in previous years' MRIP data.

Because the bluefish specification process typically did not use preliminary current year data, and because measures remained unchanged for several years, decisions on bluefish recreational measures were typically made in August, when the Board and Council usually jointly approve the recreational ACL and RHL for the upcoming year. However, in recent years, the bluefish RHL has been more constraining and recreational measure setting has begun to follow the approach taken for summer flounder, scup, and black sea bass.

The summer flounder, scup, and black sea bass ACLs and RHLs for the upcoming year are also typically approved in August; however, the approach for setting recreational measures is usually not recommended until December to allow for consideration of preliminary current year data though August. In December, the Council and Board typically agree to the overall approach for recreational measures for summer flounder, scup, and black sea bass (e.g., status quo or an overall percentage liberalization or reduction), as well as the federal waters measures. State waters measures are typically approved by the Board in February of the following year.

This process has resulted in management challenges for several reasons. As previously stated, for all four species, the RHLs changed each time new stock assessment information became available. For recreational fisheries that tend to harvest close to, and sometimes more than, their RHL (primarily summer flounder and black sea bass), this resulted in a frequent need to change the recreational bag, size, and season limits to prevent future RHL overages. This was sometimes exacerbated by the reliance on a single year of MRIP data in the analysis of management measures as MRIP data can show variable harvest from one year to the next, even under the same management measures. The required changes in management measures sometimes felt more like a response to variability and uncertainty in the MRIP data than a clear conservation need. This challenge has been referred to as "chasing the RHL." In addition, many recreational stakeholders expressed frustration that the black sea bass measures did not seem reflective of stock status as they have generally been more restrictive in recent years than when the stock was under a rebuilding plan, despite the stock currently being more than double the target level and highly available to anglers.

Although the scup and bluefish recreational measures were able to remain largely unchanged for many years (prior to 2020 for bluefish), the Policy Board and Council agreed that solutions to these challenges should be developed in such a way that they could apply to all four jointly managed species to allow for consistency in management approaches.

The bluefish stock was declared overfished in 2019, triggering the development of a rebuilding plan and a need for more restrictive management measures than had previously been in place. The options in this document include special considerations for stocks in a rebuilding plan. The options in this document are not meant to replace the bluefish rebuilding measures. Any measures implemented for bluefish must comply with the rebuilding plan.

2.3 Status of the Stocks

2.3.1 Summer Flounder

The most recent summer flounder management track stock assessment was completed in June 2021, using data through 2019 (NEFSC 2021a). The assessment approach is a complex statistical catch-at-age model incorporating a broad array of fishery and survey data. Results from the 2021 assessment indicate that the summer flounder stock was not overfished, but was 14% below the biomass target, and overfishing was not occurring, in 2019 (**Figure 1**). Fishing mortality was 20% below the threshold level defining overfishing. More detail on the assessment can be found in the draft report provided to the SSC.

The 2021 management track stock assessment provided the basis for setting fishery specifications for 2022–2023.

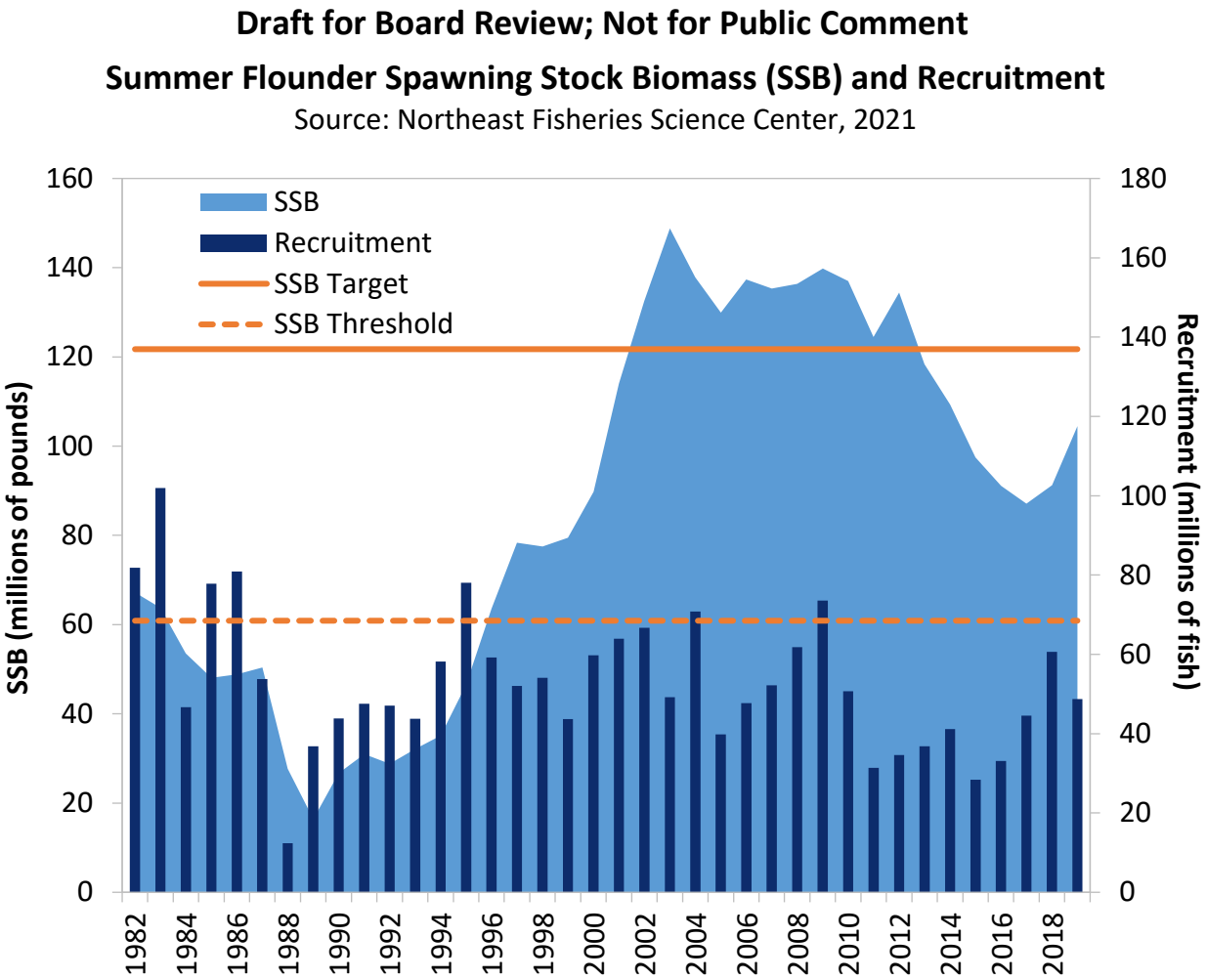


Figure 1. Summer flounder spawning stock biomass and recruitment. Source: 2021 Operational Assessment Prepublication Report, Northeast Fishery Science Center.

2.3.2 Scup

The most recent scup management track stock assessment was completed in June 2021, using data through 2019 (NEFSC 2021b). The assessment approach is a complex statistical catch-at-age model incorporating a broad array of fishery and survey data. Results from the 2021 assessment indicate that the scup stock was not overfished and was about two times the biomass target, and overfishing was not occurring, in 2019 (**Figure 2**). Fishing mortality was 32% below the threshold level defining overfishing. More detail on the assessment can be found in the draft report provided to the SCC.

The 2021 management track stock assessment provided the basis for setting fishery specifications for 2022–2023.

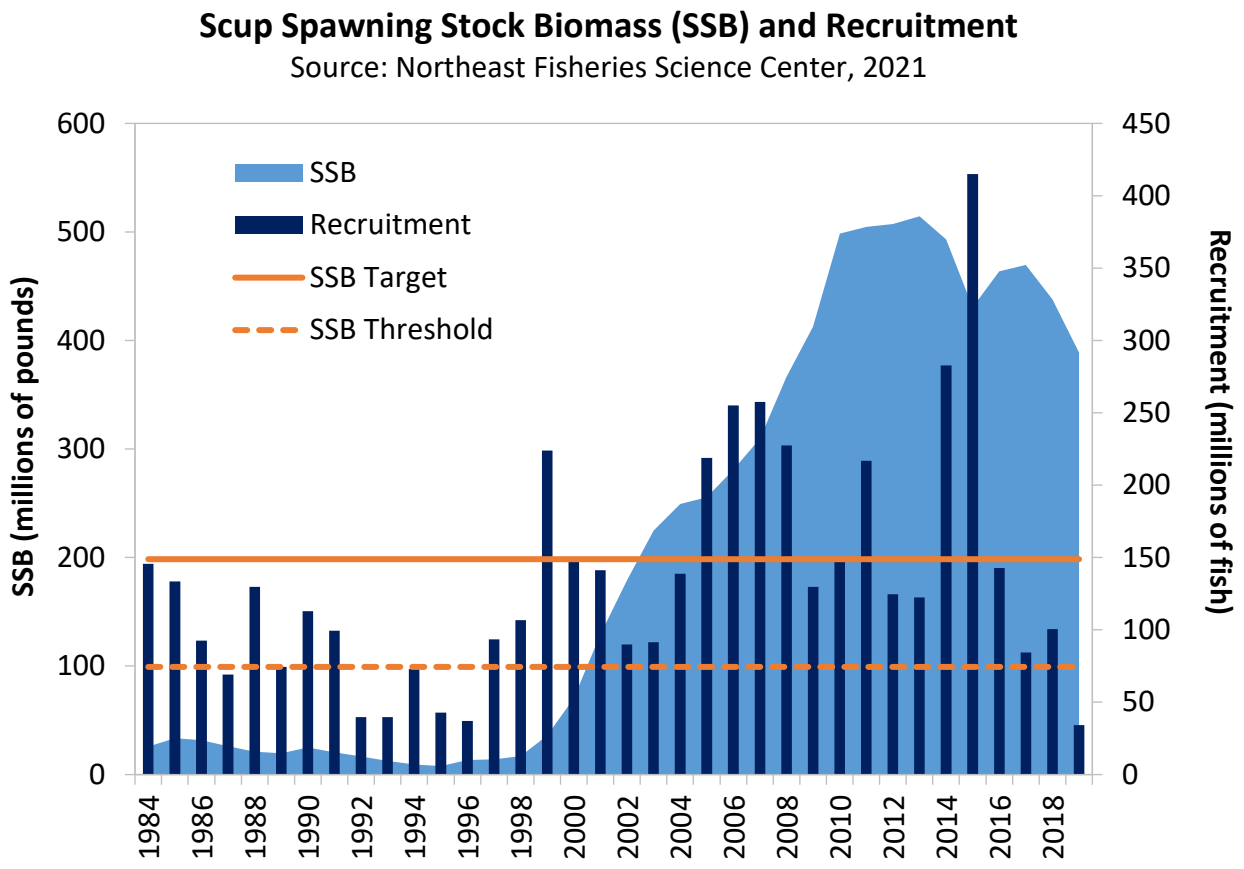


Figure 2. Scup spawning stock biomass and recruitment. Source: 2021 Operational Assessment Prepublication Report, Northeast Fishery Science Center.

2.3.3 Black Sea Bass

The most recent black sea bass stock assessment update was completed in July 2021, using data through 2019 (NEFSC 2021c). The assessment used a combined-sex, age-structured assessment model. The assessment modeled black sea bass as two separate sub-units (North and South) divided approximately at Hudson Canyon, from which results were combined for the coastwide stock status determination. Results from the 2021 assessment indicate that the black sea bass stock was not overfished and was about 2.2 times the target level, nor was overfishing occurring, in 2019 (**Figure 3**). Fishing mortality was 15% below the threshold level defining overfishing. The assessment required an adjustment to account for the significant retrospective pattern. This adjustment was only applied to the terminal year of the assessment and the adjusted values are used for management. Of the four species considered in this action, only black sea bass required a retrospective adjustment in the assessment. More detail can be found in the draft report provided to the SSC.

The 2021 management track stock assessment provided the basis for setting fishery specifications for 2022–2023.

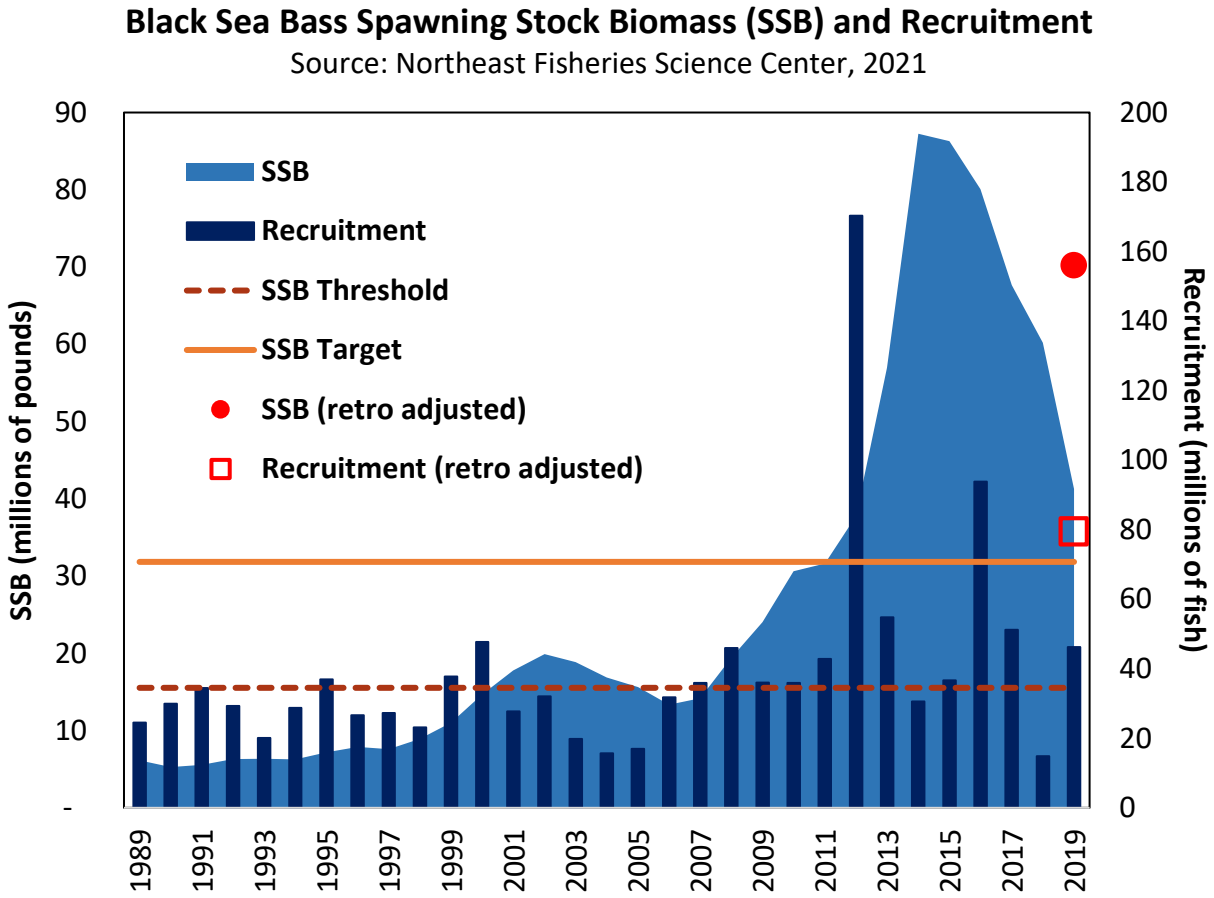


Figure 3. Black sea bass spawning stock biomass and recruitment with retrospective adjusted values to account for internal error. Source: 2021 Operational Assessment Prepublication Report, Northeast Fishery Science Center.

2.3.4 Bluefish

The most recent bluefish management track stock assessment was completed in June 2021, using data through 2019 (NEFSC 2021d). The assessment approach is a complex statistical catch-at-age model incorporating a broad array of fishery and survey data. Results from the 2021 assessment indicate that the bluefish stock was overfished and was 5% below the overfished threshold, but overfishing was not occurring in 2019 (**Figure 4**). Fishing mortality was 5% below the threshold level defining overfishing. More detail on the assessment can be found in the draft report provided to the SCC.

The 2021 management track stock assessment along with the preferred rebuilding plan selected jointly by the Board and Council at their June meeting in 2021 provided the basis for setting fishery specifications for 2022–2023.

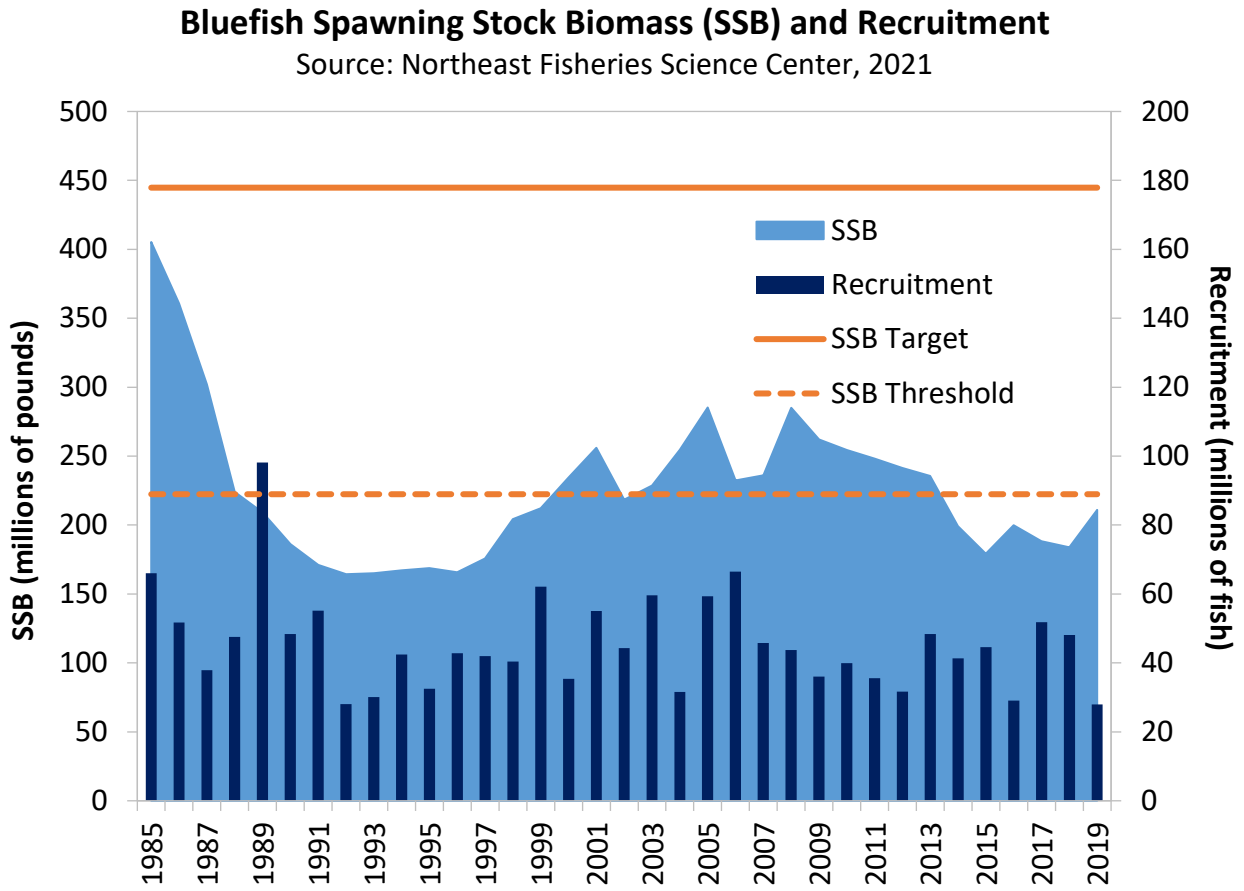


Figure 4. Bluefish spawning stock biomass and recruitment. Source: 2021 Operational Assessment Prepublication Report, Northeast Fishery Science Center.

2.4 Status of the Fishery

2.4.1 Summer Flounder

Recreational harvest peaked in 1983 at 36.74 million pounds, and declined to a time series low of 5.66 million pounds in 1989. A more recent review of recreational fishery performance from 2011 to present reveals an average of 12.59 million pounds with a high of 19.41 million pounds in 2013 and a low of 7.60 million pounds in 2018. Recreational harvest in 2020 was 10.06 million pounds, a 29% increase from the prior year's harvest of 7.80 million pounds. The total recreational catch (harvest plus live and dead releases) of summer flounder in 2020 was 33.32 million fish, slightly lower than the time series average of 34.46 million fish. The assumed discard mortality rate in the recreational fishery is 10%. In 2020, an estimated 80% of the harvest (in numbers of fish) originated from private/rental boats, while shore-based anglers and party/charter boats accounted for an average of 18% and 2% of the harvest, respectively. In addition, 61% of summer flounder harvested by recreational fishermen (in numbers of fish) were caught in state waters and about 39% in federal waters.

2.4.2 Scup

Most recreational scup catches are taken in states of Massachusetts through New York. From 2011 to 2020, recreational harvest has ranged from 8.27 million pounds in 2012 to 14.12 million pounds in 2019. In 2020, recreational harvest was 12.91 million pounds. The total catch (harvest plus releases) of scup in 2020 were 27.27 million fish, slightly higher than the ten year average of 27.07 million fish. The assumed discard mortality rate in the recreational fishery is 15%. In 2020, an estimated 62% of the harvest (in numbers of fish) originated from private/rental boats, while shore-based anglers and party/charter boats accounted for an average of 28% and 10% of the harvest, respectively. In addition, 90% of scup harvested by recreational fishermen (in numbers of fish) were caught in state waters and about 10% in federal waters.

2.4.3 Black Sea Bass

After a drastic peak in 1986 at 11.19 million pounds, recreational harvest averaged 5.02 million pounds annually from 1987 to 1997. Recreational harvest limits were put in place in 1998 and harvest generally increased from 1.92 million pounds in 1998 to 9.06 million pounds in 2015. In 2016 and 2017 harvest jumped up to 12.05 and 11.48 million pounds, respectively; however the 2016 and 2017 estimates are regarded as implausibly high outliers by the Technical Committee. In 2020, recreational harvest was estimated at 9.12 million pounds with recreational live discards from Maine to Virginia estimated to be 29.79 million fish. Assuming 15% hook and release mortality, estimated recreational dead discards are 4.47 million fish, equal to 51% of the total recreational removals (harvest plus dead discards).

2.4.4 Bluefish

From 2011-2020, recreational catch (harvest plus fish caught and released) of bluefish in U.S. waters of the Atlantic coast averaged 44.46 million fish annually. In 2020, recreational catch was estimated at 30.68 million fish. In 2020, recreational anglers harvested an estimated 9.34 million fish weighing 13.58 million pounds (6,160 metric tons). Harvest during 2018-2020 was exceptionally low compared to the ten year average of 25.69 million lbs. The 2020 average weight of landed fish is 1.45 pounds, which is also lower than the ten year average of 1.65 pounds. This lower average weight is due to the regional distribution of state landings in 2020. The majority of the recreational harvest (pounds) came from Florida (42%), North Carolina (16%), New Jersey (13%), and New York (11%). Fish from southern states (NC-FL) made up 59% of the landings and are typically smaller on average than fish caught in northern states (ME-VA). In 2020, recreational dead releases (15% of released alive fish) were estimated at 3.20 million fish.

3.0 Proposed Management Program

As a step towards broad-based management reform, the Board and Council are considering changing the process of how recreational management measures are set. The Board and Council are seeking public comment on each of the options included in this Draft Addendum. As previously stated, the Council is considering the same options through a framework action.

These management changes are considered through the management programs of the Commission and the Council. The Council is bound by the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including requirements for ACLs, accountability measures, and prevention of overfishing. NOAA Fisheries will not approve measures that are inconsistent with the MSA. NOAA Fisheries provides guidance throughout development of Council actions to ensure that the preferred options selected for implementation are consistent with the MSA and other applicable laws.

As proposed, a single option would be selected for all four species. It is not intended that one harvest control rule option would be used for some species and a different option for others. All harvest control rule approaches involve various combinations of input metrics, flexibilities, and accountability measures with the goal of standardizing management measure setting and providing stability to these recreational fisheries. A table for comparison across all options can be found in Appendix 1 ***[to be included with supplemental briefing materials for Oct 21 Policy Board and Council meeting]***.

Stocks under an approved rebuilding plan are subject to the measures of that rebuilding plan, which may differ from the measures under the options below. None of the options in this document are meant to replace rebuilding plan measures. In some instances, measures implemented through the options below may be used as temporary measures until a rebuilding plan is implemented, which can take up to two years after the stock is declared overfished. Once a stock is no longer in a rebuilding plan, measures may be set using the options below.

3.1 Management Options to Set Recreational Management Measures

A. Status Quo (Current Recreational Measures Setting Process)

Section 2.2 describes the process used in recent years to set recreational measures. The details of this process are not defined in the FMPs and can be modified without an addendum or other change to the FMPs. For example, it is not required that preliminary current year MRIP data be used for summer flounder, scup, and black sea bass and that a multi-year average of final full-year data be used for bluefish. The Monitoring and Technical Committees have considerable flexibility in how they use the data to recommend measures aimed at preventing RHL and ACL overages. The following sections summarize the language currently in the Commission's FMPs regarding recreational measures for each species. Under the no action option, these sections of the FMPs could remain unchanged[2].

[2] Under the no action option, predicted harvest under any combination of measures could continue to rely on the methods described above, or option methods could be used if deemed appropriate. For example the Council and Commission are supporting the development of statistical models for predicting harvest based on management measures and other factors. These models could be used under the no action option.

1. **Summer Flounder**

As outlined in section 3.1 of Addendum XXXII, management measures are set annually through a specification process. The process involves the following steps:

- At the joint meeting with the Council typically in December, the Board and Council will decide whether to specify coastwide measures to achieve the coastwide RHL or conservation equivalent management measures using guidelines agreed upon by both management authorities. If the latter, the Board will then be responsible for establishing recreational measures to constrain harvest to the RHL.
- The Technical Committee (TC) will continue to evaluate harvest estimates as they are released, and project how suites of possession limits, size limits and seasons might impact recreational landings in each region. In recommending adjustments to measures (reductions, liberalizations or no change), the TC will examine several factors and suggest a set of regional regulations, which when combined, would not exceed the RHL. These factors could include but are not limited to stock status, resource availability (based on survey and assessment data), and fishery performance (harvest, discards, effort, estimate uncertainty, inter-annual variability), as well as the standards and guiding principles set forth below. The Board will use information provided by the TC to approve a methodology for the states to use in developing regional proposals, typically at the Commission's Winter Meeting.
- The states will collaborate to develop regional proposals for the current year's recreational measures that include possession limits, size limits and season length pursuant to the Board-approved methodology. These proposals will be reviewed by the TC to ensure the data and analysis are technically sound.
- **The Board will review proposals, TC recommendations, and establish final measures at the Commission's winter meeting.** Once the Board has approved the measures and the states have promulgated them, the Commission will send a letter to the Regional Administrator certifying the Board approved measures, in combination, will achieve but not exceed the RHL.

The Board also uses a set of standards and guiding principles to structure the development of measures during specification setting (Addendum XXXII Section 3.1.1).

2. **Scup**

Management measures are set annually through a specifications process. The process typically involves the following steps:

- At the joint meeting with the Council typically in December, the Board and Council will determine whether to maintain status quo coastwide measures

or a liberalization or reduction in measures are needed to achieve the coastwide RHL.

- States will then proceed to develop proposals, typically the states MA-NY, but other states could have adjustments, for the upcoming year's recreational measures that include possession limits, size limits and season length. These proposals will be reviewed by the TC to ensure the data and analysis are technically sound.
- The Board will review state proposals, TC recommendations, and establish final measures at the Commission's winter meeting.

3. Black Sea Bass

As outlined in section 3.2 of Addendum XXXII, management measures are set annually through a specification process. The process involves the following steps:

- At the joint meeting with the Council typically in December, the Board and Council will decide whether to adopt coastwide measures or if the states will implement measures to constrain harvest to the RHL. If the latter, the Board will then be responsible for establishing recreational measures to be implemented in state waters to constrain harvest to the RHL.
- The TC will continue to evaluate harvest estimates as they are released, and project how suites of possession limits, size limits and seasons might impact recreational landings in each region. In recommending adjustments to measures (reductions, liberalizations or no change), the TC will examine several factors and suggest a set of regulations for regions, which when combined, would not exceed the RHL. These factors can include but are not limited to stock status, resource availability (based on survey and assessment data), and fishery performance (harvest, discards, effort, estimate uncertainty, inter-annual variability), as well as the standards and guiding principles set forth below. The Board will use information provided by the TC to approve a methodology for the states to use in developing regional proposals, typically at the Commission's Winter Meeting.
- The states will collaborate to develop regional proposals for the current year's recreational measures that include possession limits, size limits and season length pursuant to the Board-approved methodology. These proposals will be reviewed by the TC to ensure the data and analysis are technically sound
- **The Board will review state proposals, TC recommendations, and establish final measures at the Commission's winter meeting.** Once the Board has approved the measures and the states have promulgated them, the Commission will send a letter to the Regional Administrator certifying the Board approved measures in combination will achieve but not exceed the RHL.

The Board also uses a set of standards and guiding principles to structure the development of measures during specification setting (Addendum XXXII Section 3.2.1).

4. Bluefish

As outlined in section 5.1.4.1.3 of Amendment 1, management measures are set annually through a specifications process. The process typically involves the following steps:

- At the joint meeting with the Council typically in December, the Board will determine whether to maintain status quo coastwide measures or a liberalization or reduction in measures are needed to achieve the coastwide RHL.
- In order to achieve the annual RHL, recreational fisheries will be constrained by a coastwide regime of coastwide size limits, bag limits, and seasons. Once a basic regime for these limits is established, typically at the joint meeting with the Council in December, states will be given the opportunity to vary these measures in accordance with the Commission's Conservation Equivalency process[3].
- A state may submit a proposal for a change to its regulatory program to the Commission. Such changes shall be submitted to the ASMFC staff, which will distribute the proposal to the Management Board, the Plan Review Team, the Technical Committee, the Stock Assessment Subcommittee, and the Advisory Panel.
- States must submit proposals at least two weeks prior to a planned meeting of the Technical Committee.
- The ASMFC staff is responsible for gathering the comments of the Technical Committee, the Stock Assessment Subcommittee, and the Advisory Panel and presenting these comments to the Management Board at the Commission's winter meeting.
- The Management Board will decide whether to approve the state proposal for an option management program if it determines that it is consistent with the harvest target and the goals and objectives of the FMP.

5. Current Accountability Measures for Summer Flounder, Scup, Black Sea Bass, and Bluefish

The Magnuson-Stevens Fishery Conservation and Management Act requires Council FMPs to contain provisions for ACLs and "measures to ensure accountability." The National Standards Guidelines state that accountability measures (AMs) "are management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur. AMs should address and minimize both the frequency and magnitude of overages

[3] http://www.asmfc.org/files/pub/ConservationEquivalencyGuidance_2016.pdf

and correct the problems that caused the overage in as short a time as possible." (50 CFR 600.310 (g)).

The current recreational AMs were established through an omnibus amendment in 2013 (Amendment 19 to the Summer Flounder, Scup, and Black Sea Bass FMP and Amendment 4 to the Bluefish FMP). The AMs are included in the Council's FMP. They are not included in the Commission's FMP; however, any changes to the AMs considered through this action will be considered by both the Council and Commission.

Proactive AMs include adjustments to the management measures for the upcoming fishing year (as described in previous sections), if necessary, to prevent the RHL and ACL from being exceeded. Measures to prevent the RHL from being exceeded are ultimately intended to also prevent ACL overages, which in turn prevents overfishing.

Given the timing of MRIP data availability, the regulations do not allow for in-season closure of the recreational fishery if the RHL or ACL is expected to be exceeded. Therefore, measures must be set in a manner that is reasonably expected to constrain harvest to the RHL.

Reactive recreational AMs include a set of possible responses to exceeding the recreational ACL, depending on stock status and which limits are exceeded. Paybacks of ACL overages may be required in a subsequent fishing year, depending on stock status and the scale of the overage, as described below. ACL overages in the summer flounder, scup, and black sea bass recreational fisheries are evaluated by comparing the most recent 3-year average recreational ACL against the most recent 3-year average of recreational catch (i.e., landings and dead discards). If average catch exceeds the average ACL, then the appropriate AM is determined based on the following criteria:

1. If the stock is overfished ($B < ½ B_{MSY}$), under a rebuilding plan, or the stock status is unknown:

    The exact amount, in pounds, by which the most recent year's recreational ACL has been exceeded will be deducted in the following fishing year, or as soon as possible once catch data are available.

2. If biomass is above the threshold, but below the target ($½ B_{MSY} < B < B_{MSY}$), and the stock is not under a rebuilding plan:

    a. If only the recreational ACL has been exceeded, then adjustments to the recreational management measures (bag, size, and seasonal limits) would be made in the following year, or as soon as possible once catch data are available. These adjustments would take into account the performance of the measures and conditions that precipitated the overage.

b. If the ABC is exceeded in addition to the recreational ACL, then a single year deduction will be made as a payback, scaled based on stock biomass. The calculation for the payback amount is: *(overage amount) * (B_{MSY}-B)/½ B_{MSY}*.

3. If biomass is above the target (B > B_{MSY}):

Adjustments to the recreational management measures (bag, size, and seasonal limits) would be considered for the following year, or as soon as possible once catch data are available. These adjustments would take into account the performance of the measures and conditions that precipitated the overage.

Reactive recreational AMs for the bluefish recreational fishery are very similar to the process described above with a few key differences. First, ACL overages are evaluated on a 1-year basis as opposed to a 3-year average. Second, if a transfer between the commercial and recreational sectors caused the transferring sector to register an ACL overage, then instead of applying an overage payback to the transferring sector, a transfer in a subsequent year would be reduced by the amount of the ACL overage.

B. Percent Change Approach

This option proposes a mechanism for providing more stability and predictability of measures while better incorporating stock status into the measures setting process. Recreational measures would be considered every other year to align with the anticipated schedule of stock assessment updates.

This option differs from the no action option (status quo) in that it includes an explicit consideration of biomass compared to the target level (B/B_{MSY}) derived from the latest stock assessment when determining if the recreational management measures should be liberalized, reduced, or remain unchanged. The amount of change varies based on the magnitude of the difference between the average MRIP estimate from the two preceding years, including a confidence interval (CI) around that estimate, and the average RHL for the upcoming two years, as well as considerations related to B/B_{MSY}.

Table 1 displays the resulting pre-defined management responses associated with each outcome. Starting with the first column, the RHL for the upcoming two-year specifications period is compared to the CI[4] of the most recent two years of MRIP estimates, or an alternative predictor of harvest based on a statistical methodology, with an associated CI. The MRIP estimates are intended as a proxy for expected harvest in the upcoming years under status quo measures. Depending on whether the average RHL is above the upper bound of the CI, within the CI, or below the lower bound of the CI, the management responses are narrowed down to rows A, B, and C, respectively. The second column narrows down the suite of management responses further by taking into consideration the B/B_{MSY} ratio. The third column displays the resulting

[4] When developing a CI from two years of MRIP data, the PDT/FMAT recommends the use of a joint distribution 80% confidence interval that takes into consideration the PSE of each individual years' MRIP estimate and the variability of the estimates between years. This recommendation is based on an analysis of several years of MRIP data for each species.

percent change in measures required for the upcoming two years. The percent change in measures is mirrored up and down to provide similar consideration of the need for reductions and opportunities for liberalization.

As shown in Table 1, when the RHL is within the CI under status quo measures, this approach allows for an incremental liberalization when stock status is greater than 150% of the target or an incremental reduction for stocks below the target. When the RHL is above the CI, this approach allows for liberalizations that scale in proportion to stock health. Conversely, when the RHL is below the CI, this approach requires reductions that scale with the health of the stock.

This option considers changes from a starting point. The current management measures may not be the appropriate starting point for a variety of reasons (e.g., widespread angler dissatisfaction with some measures and the potential for continued significant overages under the current allocations for some species). The FMAT/PDT is considering ways to define the appropriate starting point for each species by using statistical models and other methods. Additional time is needed to further develop these ideas, and updates will be provided at a future Council and Policy Board meeting.

Table 1. Approach to enacting changes in measures under the percent change approach. [1,5]

Future RHL vs MRIP Estimate		B/B_{MSY}	Change in Measures	
Row A	Future 2-YR avg. RHL greater than upper bound of 2-YR MRIP estimate CI	> 1.5	40% Liberalization[3]	
		1 - 1.5	20% Liberalization[3]	
		< 1	0% (Status Quo)	
Row B	Future 2-YR avg. RHL within CI of 2-YR MRIP estimate	> 1.5	10% Liberalization	
		1-1.5	0% (Status Quo)	
		< 1	10% Reduction	
Row C	Future 2-YR avg. RHL less than lower bound of 2-YR MRIP estimate CI	> 1.5	0% (Status Quo)[2]	10% Reduction[2]
		1-1.5	20% Reduction[3]	
		< 1	40% Reduction[3]	

[1] The proposed B/B_{MSY} inflection points are based on the Council's Risk Policy. Future changes to the Council risk policy may warrant reconsideration of this proposed process.
[2] The PDT/FMAT has not yet reached consensus on a recommendation for assigning the appropriate management response when the RHL is lower than the CI and biomass is higher than 150% of the target. Two options discussed by the FMAT/PDT are listed here.
[3] The PDT/FMAT is still in the process of determining whether the change in measures be capped such that the percentage change in measures does not exceed the percentage difference between the two-year average RHL and the two-year average MRIP point estimate.

[5] The two year average MRIP estimate with associated CI is intended as a predictor of future harvest under status quo measures. This may be replaced with statistical model based approaches for predicting harvest.

Accountability Measures under the Percent Change Approach

Under this option, measures will be more restrictive when stock status is poor and more liberal when stock status is good. This could be considered a proactive AM. In addition, when the upcoming RHL is below the lower bound of the CI of the expected harvest estimate (either a 2 year MRIP estimate or a model-based estimate), measures will be proactively reduced by a predetermined percent when the stock is less than 150% of the target level. Reductions will also be taken if the stock is below the target even when the RHL is within the CI, helping to rebuild the stock back to the target.

This option requires minimal changes from the current reactive AMs described in section 3.1-A-5. The current reactive AMs would be modified such that when paybacks are required, the payback could be spread evenly across two years to help facilitate the use of constant measures across two years. When a payback is applied, the percent change would be determined based on the reduced ACL.

Consideration could also be given to options 6 and 7 listed in section 3.2. These options consider modifications to the metrics considered when biomass is above the threshold but below the target and a scaled payback of a past overage may be needed.

C. Fishery Score Approach

The fishery score is a simple formulaic method that combines multiple metrics into one easy to interpret value. Based on the score, the stock would be placed into one of four bins with corresponding management measures. A new fishery score would be calculated every two years to align with the anticipated schedule of management track stock assessments for these species. The fishery score would be based on four metrics: Biomass (B) relative to the target (B_{MSY}), Recruitment (R), Fishing Mortality (F), and Fishery Performance, as described in more detail below. Each metric has a weight assigned to it, determined by the Monitoring Committee such that metrics with a stronger relationship to harvest would have more weight in the fishery score while still accounting for metrics that impact harvest but may not drive harvest. Additional metrics may be added and weighting schemes adjusted as more data become, based on the recommendations of the Monitoring/Technical Committees.

The fishery score is calculated using the following formula:

$$F/F_{MSY}(W_F) + B/B_{MSY}(W_B) + R\ Trend(W_R) + Fishery\ performance\ (W_{FP}) = Fishery\ Score$$

Where W refers to the weight of each factor. The fishery score value would correspond to a predetermined bin. For the purpose of explanation of the methodology, the fishery score will range from 1 to 5. The bins are defined as displayed in (**Error! Reference ource not found.**).

Bin	Fishery Score	Level of Concern	Stock Status and Fishery Performance Outlook	Measures
1	4-5	Low Risk	Good	Most Liberal
2	3-3.99	Medium Risk	Moderate	Liberal
3	2-2.99	High Risk	Poor	Restrictive
4	1-1.99	Highest Risk	Very Poor	Most Restrictive

Table 2. Fishery score bins and the associated level of concern, stock status, and measures that are associated with each bin.

Weights will have a minimum and maximum range (e.g., a minimum of 0.1 and a maximum of 0.5) to prevent any one metric from being weighed too heavily in relation to the others. The intent is to allow the Monitoring and Technical Committees to recommend changes to the weights through the specifications process based on their expert judgement and empirical methods when possible. Changes should be limited to provide stability in comparisons over time.

A declining fishery score over time could indicate negative trends in stock status. An examination of the individual fishery score metrics can provide insight into why the overall score is declining. This can also serve as an early warning of the need to use more restrictive measures in the future if the trend continues.

Measures associated with each of the four bins would aim to achieve a range of harvest that is appropriate for the stock conditions associated with each bin. The measures in each bin would be anticipated to produce a range of possible harvest values, given uncertainty and variability in the harvest data. Considerations related to confidence intervals and other statistical metrics and models could be used to define the appropriate range of expected harvest and the measures associated with each bin. Although the fishery score is calculated based on multiple factors, the measures associated with each bin could be defined based on four categories of biomass and the associated level of harvest deemed appropriate for that biomass level. The most liberal bin (bin 1, fishery score of 4-5 in the example above) could be associated with biomass greater than 150% of the target level. The next most liberal bin (bin 2, fishery score of 3-3.99) could be associated with biomass above the target, but less than 150% of the target. The next lowest bin (bin 3, fishery score of 2-2.99) could be associated with biomass below the target and above the threshold. The most restrictive bin (bin 4, fishery score less than 2) could be associated with biomass below the threshold (however; if the stock is under a rebuilding plan, the most restrictive fishery score measures may be temporary until replaced by rebuilding plan measures). Although the measures associated with each bin would be based on biomass compared to the target,

placement of a year's measures within one of the four bins would be driven by multiple factors. For example, if the recruitment and fishery performance metrics have low scores, then the stock may be placed in a more restrictive bin with more restrictive measures than would occur based on biomass considerations alone. The opposite could occur if multiple metrics have high scores. In this way, the measures would be reflective of a combination of biomass relative to the target and assumed future conditions (e.g., high recruitment assumed to result in higher biomass in the future, allowing for more liberal measures).

Determining Metric Values

The following section provides an example of how the metrics listed above could be used to generate a fishery score value ranging from 1 to 5.

$$B/B_{MSY}(W_B)$$

Biomass from the most recent stock assessment would be given a value of 1-5 based on the following criteria, which are loosely based on other aspects of the management program (e.g., the Council's risk policy).

- 5: Biomass is equal to or greater than 150% of the target
- 4: Biomass is less than 150% of the target, and equal to or greater than the target
- 3: Biomass is below the target, and equal to or greater than 75% of the target
- 2: Biomass is below 75% of the target, and equal to or above the threshold (which is ½ the target and defines an overfished state)
- 1: Biomass is below the threshold

$$F/F_{MSY}(W_F)$$

The proposed categories for fishing mortality consider whether the most recent fishing mortality estimate is at, above, or below the threshold level. Only three increments were selected for fishing mortality as other aspects of the management program consider only whether F is at, above, or below the target.

- 5: F/F_{MSY} is at least 5% less than 1
- 3: F/F_{MSY} within 5% of 1
- 1: F/F_{MSY} is at least 5% greater than 1

$$Recruitment(W_R)$$

To determine the recruitment metric, the most recent estimate of recruitment will be compared to the 20th, 40th, 60th, 80th, and 100th percentiles of the distribution of the time series of recruitment used in stock projections. This percentile categorization of the relative strength of an incoming year class was deemed more informative than measuring trends in recruitment, especially given the highly variable nature of recruitment from year to year. Assessing where recruitment fell in the percentile

distribution was determined a more appropriate measure of recruitment's impact on future levels of biomass.

- 5: terminal year R in the 81-100 percentile
- 4: terminal year R in the 61-80 percentile
- 3: terminal year R in the 41-60 percentile
- 2: terminal year R in the 21-40 percentile
- 1: terminal year R is in the 0-20 percentile

Fishery performance (W_{FP})

Fishery performance is evaluated by comparing the confidence interval derived from the most recent two-years of MRIP harvest estimates to the two-year average RHL. The score is determined by where the average RHL appears in relation to the 2 year MRIP CI.[6] The following three categories are used for this metric:

- 5: 2-yr avg. RHL above upper bound of CI
- 3: 2-yr avg. RHL within CI
- 1: 2-yr avg. RHL below lower bound of CI

Accountability Measures under the Fishery Score Approach

Under this option, measures are set based on a variety of factors such that they are more restrictive when stock status is poor and more liberal when stock status is healthy. This is considered a proactive AM. In addition, as described above, this method can also provide an early warning of deteriorating stock conditions which can inform the setting of measures.

As under the no action option, ACL overages would be evaluated by comparing the most recent 3-year average recreational ACL against the most recent 3-year average of recreational catch (i.e., landings and dead discards). If average catch exceeds the average ACL, then the appropriate AM is determined based on the following criteria:

1. If the stock is overfished ($B < ½ B_{MSY}$), under a rebuilding plan, or the stock status is unknown:

    a. The stock is placed in the most restrictive bin. These may be temporary measures until replaced by measures required by a rebuilding plan, which can take up to two years to implement.

    b. If the stock was already in the most restrictive bin or the measures in the most restrictive bin are otherwise expected to continue to result in overages,

[6] When developing a CI from two years of MRIP data, the PDT/FMAT recommends the use of a joint distribution 80% confidence interval that takes into consideration the PSE of each individual years' MRIP estimate and the variability of the estimates between years. This recommendation is based on an analysis of several years of MRIP data for each species. The use of MRIP data in this context is intended as a proxy for expected future harvest under status quo measures. This may be replaced with statistical modelling approaches for predicting harvest, with associated CIs, if such approaches are available in the future.

then those measures must be modified as soon as possible following the determination of the overage such that they are reasonably expected to prevent future overages.

2. If biomass is above the threshold, but below the target (½ B_{MSY} < B < B_{MSY}), and the stock is not under a rebuilding plan:

a. If only the recreational ACL has been exceeded, then the stock would remain in its current bin, but the measures associated with that bin and all other bins, will be re-evaluated with the goal of preventing future ACL overages.

b. If the ABC or F_{MSY} (as determined through section 3.2) is exceeded in addition to the recreational ACL, then the stock must drop down a bin and a re-evaluation of measures in all bins is triggered.

3. If biomass is above the target (B > B_{MSY}):

Consideration should be given to adjusting the management measures associated with each bin, taking into account the performance of the measures and the conditions that precipitated the overage.

D. Biological Reference Point Approach

Under this option, the primary metrics of terminal year B/B_{MSY} and F/F_{MSY} from the most recent stock assessment would be used to guide selection of management measures. Management measures would be grouped into seven bins, as illustrated in Table 3. Each bin would have a set of default measures which would be implemented the first time the stock is placed in that bin.

To define the bins under this option, fishing mortality (F) would be considered in two states (i.e., overfishing: above the threshold or not overfishing: equal to or below the threshold) while B/B_{MSY} would be further divided to provide managers and anglers with more responsive levels of access. The following categories of B/B_{MSY} are proposed.

- Biomass is greater than or equal to 150% of the target.
- Biomass is greater than or equal to the target but less than 150% of the target.
- Biomass is less than the target, but greater than or equal to the threshold (the threshold is ½ the target).
- Biomass is less than the threshold (the stock is overfished).

Recruitment and trends in biomass are secondary metrics under this option which are used to fine tune default measures only when stock conditions (F/F_{MSY} and B/B_{MSY}) relative to the categories above have not changed between the prior and most recent assessments. In this case, biomass and recruitment trends can be used to further relax, restrict, or re-evaluate measures. As such, trends in biomass and recruitment would impact the management measures, but to a lesser extent than F/F_{MSY} and B/B_{MSY}.

Changes to the measures would be considered based on the following process when updated stock assessment information is available (anticipated to be every other year). The first time a stock is in a new bin, the fishery would be subject to the default measures. If the bin remains unchanged after a subsequent stock assessment update, then trends in recruitment and biomass would be considered to determine if measures remain unchanged or if limited liberalizations or reductions can be permitted. As described below, liberalizations within a bin are only allowed in bins 1 and 2, which are associated with a healthy stock status. Restrictions and/or re-evaluation within a bin can be required based on secondary metrics for bin 3-6. This allows for relative stability if stock status is unchanged, but also room for tuning of measures if biomass and/or recruitment trends warrant it. It is intended that the changes within a bin would be based on predetermined guidelines.

Liberalizations within a bin are not permitted when biomass is below the target level or when F exceeds F_{MSY}. For example, if a stock in bin 2 (F below F_{MSY} and biomass above B_{MSY}, but below 150% of B_{MSY}) remains in bin 2 based on an updated stock assessment, then measures may be liberalized to preset measures if recruitment and/or biomass are trending upwards. If either of those trends are down, then measures would stay status quo. If the updated stock assessment information indicates biomass exceeds 150% of B_{MSY}, then the stock would move into bin 1, triggering a new set of default measures more relaxed than those from bin 2. Alternatively, if biomass is below the target, then the stock would move to a more restrictive bin (bins 3-6).

Stocks in bin 3 are not subject to overfishing and are not overfished, but are below their target biomass level. Stocks in bins 4-6 are experiencing overfishing. The goal of the management measures in bins 3-6 is to improve stock status by ending overfishing and/or increasing biomass. If the initial default measures do not accomplish this, but the primary metrics of F/F_{MSY} and B/B_{MSY} do not change, then secondary measures can inform how to better adjust regulations to reach the target through additional restrictions. This differs from stocks in bins 1-2, where measures would not be adjusted in this circumstance. Additionally, when a stock is in bins 4-6 (F exceeds F_{MSY}) and the current measures produce catch or harvest that exceed the ACL or RHL (e.g., based on a multi-year average), then the default measures should be re-evaluated.

Any overfished stock (biomass below ½ B/B_{MSY}) would automatically fall into bin 7 until an approved rebuilding plan is implemented. Stocks under a rebuilding plan must comply with the requirements of the rebuilding plan, and the rebuilding plan measures may differ from the pre-defined measures in this option.

Measures for bins 1-7 would aim to achieve a range of harvest that is appropriate for the stock conditions associated with each bin. The measures in each bin would be anticipated to produce a range of possible harvest values, given uncertainty and variability in the harvest data. Considerations related to confidence intervals and other statistical metrics and models could be used to define the appropriate range of expected harvest and the measures associated with each bin. Measures within each bin will take into consideration small changes to allow for liberalizations or reduction to allow for the flexibility to fine tune measures based on both recruitment and biomass trends in addition to the current biomass and fishing mortality levels[7].

	F ≤ Fmsy	F > Fmsy
150%Btarget ≤ B	R↑ R↓ B↑ liberal liberal B↓ default default 1	R↑ R↓ MRIP ≤ RHL/ACL B↑ default restrictive B↓ restrictive restrictive MRIP > RHL/ACL B↑ B↓ restrictive; re-evaluate measures 4
Btarget ≤ B < 150%Btarget	R↑ R↓ B↑ liberal liberal B↓ default default 2	R↑ R↓ MRIP ≤ RHL/ACL B↑ default restrictive B↓ restrictive restrictive MRIP > RHL/ACL B↑ B↓ restrictive; re-evaluate measures 5
Bthreshold ≤ B < Btarget	R↑ R↓ B↑ default restrictive B↓ restrictive restrictive 3	R↑ R↓ MRIP ≤ RHL/ACL B↑ default restrictive B↓ restrictive restrictive MRIP > RHL/ACL B↑ B↓ restrictive; re-evaluate measures 6
B < Bthreshold	MOST RESTRICTIVE/REBUILDING PLAN 7	

Table 3. Biological Reference Point table showing bins as a result of different combinations of stock conditions. The < refers to 'greater than' and the > refers to 'less than'. A line present underneath the symbol means 'equal to'.

[7] The PDT/FMAT has not yet reached consensus on a recommendation for assigning the appropriate management measures for each bin. Proposed options will be related to biomass levels, but the exact methodology that is appropriate is still under development.

Accountability Measures under the Biological Reference Point Approach

Under this option, measures are set based on a variety of factors such that they are more restrictive when stock status is poor and more liberal when stock status is healthy. Each bin has two sets of measures associated with it: a default set and either a more liberal or more restrictive set of measures. This is considered a proactive AM due to the auto-regulatory movement of a stock among bins based on stock status.

As under the no action option, ACL overages would be evaluated by comparing the most recent 3-year average recreational ACL against the most recent 3-year average of recreational catch (i.e., landings and dead discards). When average catch exceeds the average ACL, then the appropriate AM is determined based on the following criteria:

1. If the stock is overfished ($B < ½ B_{MSY}$), under a rebuilding plan, or the stock status is unknown:

    a. The stock is placed in the most restrictive bin. These may be temporary measures until replaced by measures required by a rebuilding plan, which can take up to two years to implement. This is incorporated into the option as described above and will occur regardless of whether a reactive AM has been triggered.

    b. If the stock was already in the most restrictive bin or the measures in the most restrictive bin are otherwise expected to continue to result in overages, then those measures must be modified as soon as possible following the determination of the overage such that they are reasonably expected to prevent future overages.

2. If biomass is above the threshold, but below the target ($½ B_{MSY} < B < B_{MSY}$), and the stock is not under a rebuilding plan:

    a. If only the recreational ACL has been exceeded, then the stock would remain in its current bin, but the measures associated with that bin and all other bins, will be re-evaluated with the goal of preventing future ACL overages.

    b. If the ABC or F_{MSY} (as determined through section 3.2) is exceeded in addition to the recreational ACL, then the next most restrictive measures would be implemented (i.e., either the more restrictive measures in the current bin, or, if the stock is already at the most restrictive measures in a bin, then the more liberal measures in the next lower bin). A re-evaluation of measures in all bins is also triggered.

3. If biomass is above the target ($B > B_{MSY}$):

   Consideration should be given to adjusting the management measures associated with the current bin (either bin 1 or 2), taking into account the performance of the measures and the conditions that precipitated the overage.

E. Biomass Based Matrix

This option uses a matrix to set recreational measures based on two factors: B/B_{MSY} and the most recent trend in biomass (increasing, stable, or decreasing). Using these two factors and four parameters for each, as described below, provides a three-by-four matrix to determine the appropriate management measure bin. Bin A represents the optimal conditions, while Bin F represents the worst conditions. Certain pairs of conditions (e.g., a healthy stock that is increasing or an abundant stock with any biomass trend) are treated as equivalent to reduce the number of bins to six.

The specific combination of management measures that are appropriate for each bin will be species specific. However, the conditions that drive the bins can be the same across all species.

Definitions:

- Abundant = Stock is at least 150% of the target level (B_{MSY})
- Healthy = Stock is above the target, but less than 150% of the target
- Below Target = Stock is below the target, but above the threshold (the threshold is half of the target and defines an overfished condition)
- Overfished = The stock is below the threshold

When biomass exceeds 150% of the target level, regardless of the biomass trend, bin A measures are selected. This special condition is aimed at providing an opportunity to keep recreational management measures aligned with stock status, which in this case, is significantly above the target. When a stock is fished at F_{MSY} it is expected that stock size will decrease towards the biomass target unless above average recruitment events occur. Thus, it is not necessarily a negative sign if the stock at such high biomass levels experiences a declining trend.

Measures associated with each of the six bins (A-F) would aim to achieve a range of harvest that is appropriate for the stock conditions associated with each bin. Stock condition would be defined based on the biomass categories listed above and whether the biomass trend is stable, increasing, or decreasing. The measures in each bin would be anticipated to produce a range of possible harvest values, given uncertainty and variability in the harvest data. Considerations related to confidence intervals and other statistical metrics and models could be used to define the appropriate range of expected harvest and the measures associated with each bin.

Table 4. Recreational management measure matrix under the biomass based matrix approach.

		Biomass Trend		
		Increasing	**Stable**	**Decreasing**
Stock Status	**Abundant**	Bin A		
	Healthy	Bin A	Bin B	
	Below Target	Bin C	Bin D	
	Overfished	Bin E	Bin F	

Accountability Measures Under the Biomass Based Matrix

Under this option, measures are set based on a variety of factors such that they are more restrictive when stock status is poor and more liberal when stock status is healthy. This is considered a proactive AM.

As under the no action option, ACL overages would be evaluated by comparing the most recent 3-year average recreational ACL against the most recent 3-year average of recreational catch (i.e., landings and dead discards). If average catch exceeds the average ACL, then the appropriate AM is determined based on the following criteria:

1. If the stock is overfished ($B < ½ B_{MSY}$), under a rebuilding plan, or the stock status is unknown:

   a. The most restrictive measures would be implemented. These may be temporary measures until replaced by measures required by a rebuilding plan, which can take up to two years to implement.

   b. If the most restrictive measures were already in place, or are otherwise expected to continue to result in overages, then those measures must be modified for the upcoming fishing year such that they are reasonably expected to prevent future overages.

2. If biomass is above the threshold, but below the target ($½ B_{MSY} < B < B_{MSY}$), and the stock is not under a rebuilding plan:

   a. If only the recreational ACL has been exceeded, then the stock would remain in its current bin, but the measures associated with that bin and all other bins, will be re-evaluated with the goal of preventing future ACL overages.

   b. If the ABC or F_{MSY} (as determined through section 3.2) is exceeded in addition to the recreational ACL, then the measures associated with the next

more restrictive bin would be implemented and a re-evaluation of measures in all bins would be triggered.

3. If biomass is above the target ($B > B_{MSY}$):

   Consideration should be given to adjusting the management measures associated with all bins, taking into account the performance of the measures and the conditions that precipitated the overage.

3.2 Accountability Measures Comparisons

The options in this section consider a change to one component of the reactive AMs. Specifically, they address situations when a reactive AM has been triggered and biomass is above the threshold but below the target level. All other components of the AMs are summarized along with options A-E above. The options described below could be used in combination with any of the other options listed above, including the no action option. These changes are only considered for the recreational AMs. No changes to the commercial AMs are considered through this action.

A. Catch compared to the ABC

Under this option, when a reactive AM has been triggered by a recreational ACL overage and the most recent biomass estimate is between the target and the threshold, catch relative to the ABC would also be considered. The response to the overage would be more restrictive if the ABC was also exceeded (e.g., a payback would be required or the stock would be placed in a more restrictive bin, depending on the option). If only the recreational ACL was exceeded, the response to the overage would be less strict (e.g., measures would be revised but a payback would not be required or the stock would remain in its current bin, depending on the option).

B. Fishing mortality compared to an F threshold

This option maintains ACL evaluations within the AMs, but rather than considering if the ABC was also exceeded, consideration would be given to if the fishing mortality threshold (F_{MSY}) was also exceeded. The intent behind this option is that it considers if total fishery removals negatively impacted the stock based on the most recent information. For example, catch in a past year may have exceeded the ACL, but a subsequent stock assessment update may indicate that the stock did not suffer notable negative impacts if the fishing mortality threshold was also not exceeded. The most recent fishing mortality estimate considers more recent information and relies on less assumptions than the information used to set a previous year's ACL. To set the ACL and ABC, projections must be made that make assumptions about how the fishery may perform. This approach using a fishing mortality comparison would look at data that represents what actually transpired in the fishery or stock during the time being evaluated, according to the most recent stock assessment. If regularly updated estimates of total fishing mortality compared to the threshold are not available, then this comparison would default to the ABC comparison described above.

The FMAT/PDT is still in the process of fully analyzing the potential benefits and challenges with this approach and can provide additional information to the Board and Council at a future meeting.

4.0 Compliance

TBD

5.0 Literature Cited

Northeast Fisheries Science Center (NEFSC). 2019. Operational Stock Assessment Report

NEFSC. 2021a. Summer Flounder Management Track Assessment Report.

NEFSC. 2021b. Scup Management Track Assessment Report.

NEFSC. 2021c. Black Sea Bass Management Track Assessment Report.

NEFSC. 2021d. Atlantic Bluefish Management Track Assessment Report.

MAFMC. 2003. Amendment 13 to the Fishery Management Plan for Black Sea Bass. Available at: http://www.mafmc.org/sf-s-bsb

Appendix 1. Comparison of Options

Will be included in supplemental materials.

Memorandum

Date: October 1, 2021

To: Mid-Atlantic Fishery Council and ASMFC Policy Board

From: Joint PDT/FMAT for Recreational Reform

Subject: Overview of work, major accomplishments, and timeline recommendations.

Since May 2021, a joint Plan Development Team (PDT) and Fishery Management Action Team (FMAT) has been working on the Recreational Harvest Control Rule Framework/Addendum as part of the Recreational Reform Initiative. A Draft Addendum document developed by the PDT/FMAT is included with the briefing materials for the Interstate Fisheries Management Program Policy Board's (Policy Board's) and Mid-Atlantic Fishery Management Council's (Council's) October 2021 meeting. The same options included in the Draft Addendum will be included in the Council's framework action and both the Council and Policy Board will approve the same final range of options and the same preferred alternative.

Through the Commission's addendum process, public comment will be collected via state hearings and a written comment period and will be presented to both the Policy Board and Council. Additional hearings will not be held though the Council process to avoid redundancy, and furthermore, hearings are not typically held for Council framework actions. For this reason, a draft framework document has not been presented. However, as previously stated, both the Council and the Policy Board will approve the same final range of options which will be included in both the Draft Addendum and the framework.

The PDT/FMAT recommendations for the management options have been incorporated into the Draft Addendum document. This memorandum summarizes additional PDT/FMAT recommendations not included in the Draft Addendum.

Postponing Approval of Final Range of Options for Draft Addendum/Framework and Approval of Draft Addendum for Public Comment to December 2021 or February 2022

The Policy Board and Council previously intended to approve a Draft Addendum for public comment and a final range of options for the framework/addendum in October 2021. The PDT/FMAT requests additional time to fully develop the options and to further develop two statistical models which can be used to inform the recreational measure setting process under the framework/addendum options.[1] These two statistical models will be critical for thorough analysis

[1] More information on the models is available here: https://www.mafmc.org/council-events/2021/ssc-peer-review-panel-sept20

of the options and will greatly improve the process for setting management measures under any of the options.

A sub-group of the Council's Science and Statistical Committee (SSC) recently reviewed both models. A final report is expected shortly. It will be provided to the Policy Board and Council and will be reviewed by the PDT/FMAT for consideration regarding further development of the options in the Draft Addendum/Framework. Comments made during the review indicated that additional work on both models will likely be recommended. Depending on further consideration of the SSC recommendations, and any additional work needed to improve these models, the PDT/FMAT may be in a position to present a more complete set of options for the framework/addendum and a Draft Addendum for approval for public comment in December 2021 or February 2022. A revised draft timeline for completion of the framework/addendum is presented below. This timeline is subject to change pending considerations such as the work needed to refine the statistical models, other priority actions, and constraints on staff time.

- October 2021
    - Policy Board and Council provide guidance on further development of the Draft Addendum/Framework during their October 21, 2021 meeting.
    - PDT/FMAT continues to refine the Draft Addendum/Framework options and consider next steps for using the two statistical models reviewed by the SSC.
- December 2021
    - Policy Board and Council consider approval of a final range of options for the framework/addendum and a Draft Addendum document for public hearings. *Pending further refinements of the options by the FMAT/PDT and considerations related to further refinement of the two statistical models, this may need to occur in February 2022 rather than December 2021.*
- Winter 2022
    - Public hearings on the Draft Addendum.
    - Continued development of models for use in measure setting.
    - PDT/FMAT and Advisory Panel meetings to consider input received during public hearings and develop recommendations for final action on the Draft Addendum/Framework.
- Spring 2022
    - Policy Board and Council review public comments, AP input, and PDT/FMAT recommendations, and consider final action on the Addendum/Framework.
    - Completion of Northeast Fisheries Science Center (NEFSC) socioeconomic survey (see section on workshops below).
    - Development of NEPA document for Council framework.
- Summer 2022
    - Data available from NEFSC survey to inform models to begin exploring measures for 2023 based on harvest control rule option selected.
    - Federal rulemaking on Council framework, likely to extend into the fall.
- Fall/Winter 2022
    - Consider recreational management measures for 2023 with the Monitoring Committee and Advisory Panel for final approval by the Council and Policy Board.

Use of Example Measures in Addendum/Framework

The options in the Draft Addendum/Framework do not set or consider specific management measures (bag, size, and season). The options instead focus on the methodology for setting those measures. The PDT/FMAT has determined it would not be appropriate to provide example measures associated with the options in the Draft Addendum/Framework for a number of reasons. One fundamental reason is that it is simply not possible to generate example measures for all options for all species with a robust and consistent methodology at this point in time. As noted above, two statistical models are currently in development which would greatly assist in the ability to generate measures for each of the harvest control rule options. However, these models are currently being refined and are not immediately available for use.

The options in the Draft Addendum/Framework do not require a specific method for setting management measures and instead define a conceptual process. The Monitoring/Technical Committees are then able to refine the methods for developing measures without a management document. This allows for timely incorporation of new data or model updates to develop the most appropriate measures for the recreational fishery.

In addition, if states retain the ability to implement conservationally equivalent measures, there is no guarantee that example measures taken out to public hearings would be the final implemented measures.

Lastly, example measures are misleading to the public as they give the impression that the example measures are expected to be implemented, which would not necessarily be the case.

The PDT/FMAT also noted that the selection of a preferred harvest control rule approach should be based on the merits of the conceptual process of the option, not the final resulting measures.

Stakeholder Workshops

In August 2021, the Policy Board and Council considered a PDT/FMAT recommendation to conduct stakeholder workshops to gather input on preferences regarding recreational management measures. Considering the revised draft timeline presented above, the PDT/FMAT now recommends against holding these workshops as they would not provide additional information of value beyond efforts already planned for 2022 by the NEFSC. The goal of the workshops was to gather input on angler preferences for measures, separate from the options considered in the Draft Addendum/Framework. Public hearings on the options in the Draft Addendum/Framework will still occur.

Based on the draft timeline presented above, recreational measures could be set based on this Draft Addendum/Framework starting in 2023. The NEFSC plans to conduct a survey of anglers' preferences for measures for summer flounder, scup, and black sea bass in early 2022. This survey is based on accepted and statistically robust surveying methodologies that have been peer reviewed and used in this and other regions. The survey will collect similar information as was planned for the stakeholder workshops. This information will be available by late 2022 and can help inform the setting of recreational measures for 2023 for summer flounder, scup, and black sea bass. The PDT/FMAT initially recommended holding workshops in late 2021 or early 2022 to collect this information with the goal of using it to inform 2022 recreational measures. Now that it is no longer recommended to use the harvest control rule for 2022, the PDT/FMAT recommends using the planned NEFSC survey rather than additional smaller-scale workshops to

gather this information. In addition, the considerable staff time to conduct the workshops can now be dedicated to completing the Addendum/Framework and other high priority actions for these species.

The planned NEFSC survey will not address bluefish. However, the bluefish rebuilding plan will be implemented in 2022 with a target rebuild date of 2028 and the harvest control rule options are not meant to replace the rebuilding plan. If there is a desire to hold stakeholder workshops on angler preferences for bluefish, it may be appropriate to do this at a later date after additional progress with rebuilding has been made.

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: October 1, 2021

To: Council and Policy Board

From: Brandon Muffley, Council staff

Subject: SSC Sub-Group Review of Recreational Models

On Monday, September 20, 2021, the Mid-Atlantic Fishery Management Council (Council) convened a panel consisting of members of the Council's Science and Statistical Committee (SSC) to review two recreational management models.

The two models, a recreational fleet dynamics model and an economic recreational demand model, are being considered for use in developing management measures under the alternatives considered through the Recreational Harvest Control Rule Framework/Addendum for summer flounder, scup, black sea bass, and bluefish. These models could also be used under the current process for setting recreational management measures. The peer review panel was tasked with identifying potential benefits, uncertainties, and appropriate approaches and considerations of each model for use in setting recreational management measures.

A final report from the peer review will be posted with the briefing materials for the Council and Policy Board's October 21, 2021 meeting once it is available.

Background materials on the peer review and the two models, including terms of reference for the review, presentations, and overviews of the two models are available here: https://www.mafmc.org/council-events/2021/ssc-peer-review-panel-sept20.