



Public Comment Guidelines

To provide a fair opportunity for public input, the ISFMP Policy Board has approved the following guidelines for use at management board meetings:

For issues that are not on the agenda, management boards will continue to provide opportunity to the public to bring matters of concern to the board's attention at the start of each board meeting. Board chairs will use a speaker sign-up list in deciding 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 three weeks prior to the start of a meeting week (October 17) have been included in the briefing materials.
2. Comments received by **5:00 PM on Tuesday, November 1** will be included in supplemental materials.
3. Comments received by **10:00 AM on Friday, November 4** will be distributed electronically to Commissioners/Board members prior to the meeting.

The submitted comments must clearly indicate the commenter's expectation from the ASMFC staff regarding distribution. As with other public comment, it will be accepted via mail and email.

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. Interested parties should anticipate Boards starting earlier or later than indicated herein.

Sunday, November 6

4:00 – 7:00 p.m. **Registration**

Monday, November 7

7:00 a.m. – 1:00 p.m. **Registration**

9:00 – 9:30 a.m. **Atlantic Herring Management Board**

Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey

Other Members: NEFMC, NMFS

Chair: Ware

Other Participants: Brown, Zobel

Staff: Franke

1. Welcome/Call to Order (*M. Ware*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from August 2022
3. Public Comment
4. Update on New England Fishery Management Council's (NEFMC) 2023-2025 Specifications and NOAA Rulemaking Timeline (*E. Franke*)
5. Set Quota Period for the 2023 Area 1A Fishery (*E. Franke*) **Final Action**
6. Consider Vacant ASMFC Seat on NEFMC's Atlantic Herring Committee (*M. Ware*) **Action**
7. Other Business/Adjourn

9:30 a.m. – Noon **Habitat Committee**

Members: Ayvazian, Babb, Bachman, Boltin, Carloni, Chiarella, Chintala, Coakley, Colarusso, Dippold, Enterline, Fay, Fournier, Hense, Johnson, LaFrance, Laney, McTigue, Medders, Peabody, Rousseau, Schneider, Sherwood, Smith, Topolski, Vanderbilt, Wilber, Wilke

Chair: Johnson; Babb (Vice-Chair) serving as Chair for this meeting

Other Participants: Madley, Yepsen

Staff: Havel

1. Welcome/Call to Order (*R. Babb*)
2. Board Consent
 - Approval of Agenda
 - Approval of Meeting Notes from May 2022
3. Atlantic Coastal Fish Habitat Partnership Update (*L. Havel*)
4. Northeast Regional Habitat Assessment Update (*J. Coakley, M. Bachman*)

5. Bluefish Benchmark Stock Assessment Habitat Section Update (*L. Havel, K. Wilke*)
6. Status Updates (*L. Havel, C. Enterline, R. Babb*)
 - Habitat Management Series: Acoustics
 - *Habitat Hotline Atlantic*
 - Fish Habitats of Concern
7. Recess

9:45 – 11:45 a.m.

American Lobster Management Board

Member States: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia

Other Members: NMFS

Chair: McNamee

Other Participants: Perry, Reardon, Beal

Staff: Starks

1. Welcome/Call to Order (*J. McNamee*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from August 2022
3. Public Comment
4. Update on North Atlantic Right Whale Court Cases
5. Review Annual Data Update of American Lobster Indices (*K. Reardon*)
6. Consider Next Steps on Draft Addendum XXVII on Increasing Protection of Spawning Stock Biomass of the Gulf of Maine/Georges Bank Stock (*C. Starks*) **Possible Action**
7. Update from Work Group on Implementation of Addendum XXIX on Electronic Vessel Tracking for Federal Permit Holders (*C. Starks*)
8. Discuss the Trap Transfer Tax for the American Lobster Fishery (*D. McKiernan*)
9. Progress Update on Jonah Crab Benchmark Stock Assessment (*J. Kipp*)
10. Consider Fishery Management Plan Reviews and State Compliance for American Lobster and Jonah Crab for 2021 Fishing Year (*C. Starks*) **Action**
11. Other Business/Adjourn

11:45 a.m. – 12:45 p.m. Lunch Break (*on your own*)

12:45 – 2:45 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 May 2022

3. Public Comment
4. Consider FY2023 Project and Administrative Proposals for Funding for Approval (*J. Simpson*) **Action**
5. Consider Atlantic Recreational Implementation Plan for Approval (2023-2027) (*G. White*) **Action**
6. Program and Committee Updates
7. Elect Vice-Chair **Action**
8. Other Business/Adjourn

1:15 – 4:00 p.m. Habitat Committee (continued)

8. Reconvene
9. East Coast Climate Change Scenario Planning Update (*T. Kerns*)
10. Species Assignments Check-In (*R. Babb, T. Kerns*)
11. Overview of Climate Resiliency Work in New Jersey (*M. Yepsen*)
12. Aquaculture Update from NOAA Greater Atlantic Regional Fisheries Office (*K. Madley, M. Bachman*)
13. Elect Chair and Vice-Chair **Action**
14. Other Business/Adjourn

2:00 – 5:00 p.m. Registration

3:00 – 5:30 p.m. Atlantic Striped Bass Management Board

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: Gary

Other Participants: Blanchard, Celestino, Nelson

Staff: Franke

1. Welcome/Call to Order (*M. Gary*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from August 2022
3. Public Comment
4. Consider 2022 Atlantic Striped Bass Stock Assessment Update **Possible Action**
 - Presentation of Stock Assessment Report (*G. Nelson*)
 - Consider Management Response (if necessary)
5. Consider Draft Addendum I on Quota Transfers for Public Comment (*E. Franke*) **Action**
6. Review and Populate Advisory Panel Membership (*T. Berger*) **Action**
7. Other Business/Adjourn

6:00 – 8:00 p.m. Welcome Reception

Tuesday, November 8

7:00 a.m. – 1:00 p.m. Registration

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: Neilan, Burrell, German

Chair: Davis

Staff: Boyle

1. Welcome/Call to Order (*J. Davis*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2022
3. Public Comment
4. Consider Approval of American Shad Habitat Plan Update (*B. Neilan*) **Action**
 - Massachusetts Taunton River Addition
5. Consider Approval of River Herring Sustainable Fishery Management Plan (SFMP) Updates (*B. Neilan*) **Final Action**
 - Massachusetts Nemasket River Update and Herring River Addition
 - Maine SFMP Addendum
6. Update on the 2023 River Herring Benchmark Stock Assessment (*K. Drew*) **Action**
 - Approve Draft Terms of Reference
 - Approve Stock Assessment Subcommittee Membership
7. Presentation of NOAA River Herring Habitat Conservation Plan (*B. German*)
8. Review and Populate Advisory Panel Membership (*T. Berger*) **Action**
9. Other Business/Adjourn

9:00 a.m. – Noon Law Enforcement Committee

(A portion of this meeting will be a closed session for Committee members only)

Members: Beal, Blanchard, Brown, Burrell, Cloyd, Couch, Gadomski, Henry, Hettenbach, Hodge, Hogan, King, Marek, Moore, Moran, Noel, Pearce, Rogers, Simmons, Snellbaker, Thomas, Walker, Williams

Chair: Snellbaker

Staff: Kerns

1. Welcome/Call to Order (*J. Snellbaker*)
2. Committee Consent
 - Approval of Agenda
3. Public Comment
4. Introductions
5. Review and Discuss Vessel Tracks Agency Interface (*J. Simpson*)
6. Update on Changes to Enforceability Guidelines (*J. Snellbaker*)
7. Review and Discuss Commission Species (as needed)

8. State Agency Reports
9. Recess

10:45 a.m. – 12:15 p.m. Coastal Pelagics Management Board

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

Other Members: NMFS, PRFC, SAFMC

Other Participants: Giuliano, Hodge

Chair: Cimino

Staff: Franke

1. Welcome/Call to Order (*J. Cimino*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2022
3. Public Comment
4. Update on 2022 Spanish Mackerel Stock Assessment and Peer Review (*J. Carmichael*)
 - Presentation of 2022 Stock Assessment Update to Date
 - Presentation of 2022 Stock Assessment Peer Review Report and Response from the South Atlantic Fishery Management Council
5. Review Differences Between Interstate Fishery Management Plan (FMP) and Federal FMP for Spanish Mackerel (*E. Franke*)
6. Consider Fishery Management Plan Reviews and State Compliance for the 2021 Fishing Year (*E. Franke*) **Action**
 - Spanish Mackerel
 - Atlantic Cobia
7. Other Business/Adjourn

12:15 – 1:30 p.m. Lunch Break (*on your own*)

1:15 – 5:00 p.m. Atlantic Coastal Fish Habitat Partnership (ACFHP) Steering Committee

Members: Babb, Beal, Boltin, Campfield, Carloni, Chiarella, Coakley, DeLucia, Dippold, Duncan, Faulkner, Fornier, Groskin, Johnson, Kornbluth, Laney, McMunigal, Medders, Moore, Powell, Rousseau, Schneider, Smith, Thomas-Blate, Topolski, Tweel

Chair: Smith

Staff: Havel

1. Welcome/Introductions (*K. Smith*)
2. Committee Consent
 - Approval of Agenda
 - Approval of Minutes from July 2022
3. Overview of ACFHP in the Next Few Months (*K. Smith, P. Campfield, L. Havel*)
4. Wrap Up and Overview of Day 2
5. Recess

1:30 – 4:30 p.m.

Law Enforcement Committee (continued)

(A portion of this meeting will be a closed session for Committee members only)

10. Reconvene
11. State Agency Reports (continued)
12. Review and Discuss Ongoing Enforcement Activities (**Closed Session**)
13. Other Business/Adjourn

1:30 – 5:00 p.m.

Climate Change Scenario Planning Initiative Workshop

Facilitator: Jonathan Star, Scenario Insight

1. Introduction, Background, and Purpose of Workshop (*J. Star, T. Kerns*)
2. Description and Discussion by Scenario
 - Do you agree with/recognize the challenges, opportunities, and possible actions for each scenario?
 - What else is important to note about each scenario that is not yet covered? What would you add?
3. Polling Questions
 - Which scenario is closest to describing the situation as you see it today?
 - Which scenario do you believe is most likely to play out by 2042?
4. Public Comment
5. Recurring Ideas and Main Takeaways
 - Looking across all scenarios, what issues emerge that require further discussion?
 - Cover each of the management themes in turn: cross-jurisdictional governance, data and science, alternative ocean uses, adaptability
 - Are there any issues (outside the four theme areas) that we should also include in further conversations (e.g., Summit)?
6. Key Discussion Topics for the Summit
 - What are the big questions that this conversation raises for ASMFC that you would like to see addressed at the Summit?
 - What are the questions this raises for East Coast fishery management in general (i.e., all Councils/Commission) that you'd like to see addressed at the Summit?
 - What specific recommendations would you propose be considered at the Summit?
 - As we prepare for the Summit, what should the Core Team be mindful of?
7. Public Comment
8. Adjourn

2:00 – 5:00 p.m.

Registration

Wednesday, November 9

8:00 – 10:00 a.m.

Executive Committee

Breakfast will be available at 7:30 a.m.

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

Members: Abbott, Bell, Burgess, Cimino, Clark, Davis, Fegley, Geer, Gilmore, Keliher, Kuhn, McKiernan, McNamee, Miller, Patterson, Rawls, Woodward

Chair: Woodward

Staff: Leach

1. Welcome/Call to Order (*S. Woodward*)
2. Committee Consent
 - Approval of Agenda
 - Approval of Meeting Summary from August 2022
3. Public Comment
4. Review and Consider Approval of FY2022 Audit (*J. Cimino*) **Action**
5. CARES Act Update (*R. Beal*)
6. Review Draft *De Minimis* Policy (*T. Kerns*)
7. Review Spending Strategy for North Atlantic Right Whale/Lobster Funding (*R. Beal*)
8. Update on the Review of the Conservations Equivalency Process (*T. Kerns*)
9. Future Annual Meetings Update (*L. Leach*)
10. Other Business/Adjourn

9:00 a.m. - Noon

ACFHP Steering Committee (continued)

6. Reconvene
7. Strategic Plan Discussion (*L. Havel*)
 - Review Current Draft of Strategic Plan
 - Consensus on Objectives, Strategies, Order, and Language
8. Recess

10:15 – 11:15 a.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: Woodward

Staff: Beal

1. Welcome/Call to Order (*S. Woodward*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2022
3. Public Comment
4. Consider Approval of 2023 Action Plan (*S. Woodward*) **Final Action**
5. Elect Chair and Vice-Chair **Action**
6. Other Business/Recess

11:30 a.m. – Noon

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, Thomas

Staff: Colson Leaning

1. Welcome/Call to Order (*M. Bell*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2022
3. Public Comment
4. Set Specifications for 2023 Fishing Year (*D. Colson Leaning*) **Final Action**
5. Consider Fishery Management Plan Review and State Compliance for 2020 Fishing Year (*D. Colson Leaning*) **Action**
6. Other Business/Adjourn

Noon – 1:30 p.m.

Captain David H. Hart Award Luncheon

1:30 – 5:00 p.m.

ACFHP Steering Committee (continued)

9. Reconvene
10. Action Planning 2023-2024 (*K. Smith, L. Havel*)
11. Wrap Up and Overview of Day 3 (*K. Smith*)
12. Recess

1:30 – 5:30 p.m.

Atlantic Menhaden 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: NMFS, PRFC, USFWS

Chair: Bell

Other Participants: Newhard, Kersey, Lapp

Staff: Boyle

1. Welcome/Call to Order (*M. Bell*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from August 2022
3. Public Comment
4. Set Specifications for 2023 Fishing Year **Final Action**
 - Review Technical Committee Report of Stock Projections (*J. Newhard*)

5. Consider Addendum I to Amendment 3 on Commercial Allocations, Episodic Event Set Aside Program, and Incidental Catch/Small-scale Fisheries for Final Approval **Final Action**
 - Review Public Comment Summary (*J. Boyle*)
 - Review Advisory Panel Report (*M. Lapp*)
 - Consider Final Approval of Addendum I
6. Other Business/Adjourn

Thursday, November 10

9:00 – 11:30 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: Clark

Other Participants: Ameral, Couch, Hoffmeister, Sweka

Staff: Starks

1. Welcome/Call to Order (*J. Clark*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from August 2022
3. Public Comment
4. Consider Addendum VIII on Implementation of Recommended Changes from 2021 Adaptive Resource Management (ARM) Revision and Peer Review Report for Final Approval **Final Action**
 - Consider Public Comment Summary (*C. Starks*)
 - Consider Advisory Panel Report (*B. Hoffmeister*)
 - Consider Final Approval on Addendum VIII
5. Set 2023 Delaware Bay Harvest Specifications **Final Action**
 - Review Horseshoe Crab and Red Knot Abundance Estimates and ARM Model Results (*J. Sweka*)
 - Set 2023 Specifications (*C. Starks*)
6. Review and Populate Work Group to Review Best Management Practices for Handling Biomedical Collections (*C. Starks*) **Action**
7. Consider Fishery Management Plan Review and State Compliance for 2021 Fishing Year (*C. Starks*) **Action**
8. Other Business/Adjourn

9:00 a.m. – Noon

ACFHP Steering Committee (continued)

13. Reconvene
14. Action Planning 2023-2024 (continued) (*K. Smith, L. Havel*)
15. Wrap Up and Discuss Next Steps (*K. Smith*)
16. Adjourn

11:45 a.m. – 2:15 p.m. Interstate Fisheries Management Program Policy Board

(Includes a 30-minute lunch break in the hotel)

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: Woodward

Staff: Kerns

1. Welcome/Call to Order (*S. Woodward*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from August 2022
3. Public Comment
4. Executive Committee Report (*S. Woodward*)
5. Review Draft *De Minimis* Policy (*T. Kerns*) **Possible Final Action**
6. Committee Reports
 - Habitat (*L. Havel*) **Possible Final Action**
 - Atlantic Coastal Fish Habitat Partnership (*L. Havel*)
 - Law Enforcement (*T. Kerns*)
7. Progress Update on Ongoing Stock Assessments (*K. Drew, J. Kipp*)
 - Black Drum
 - Black Sea Bass
 - Bluefish
 - Spiny Dogfish
8. Review Noncompliance Findings (if necessary) **Action**
9. Other Business/Adjourn

2:15 – 2:30 p.m. Business Session (continued)

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

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October 29, 2022

ASMFC Atlantic Herring Board

Dear Board Members,

I would like to request that a meeting of the Atlantic Herring Advisory Panel be scheduled in the near future. There are a few important topics that I believe should be addressed.

1. In regard to Area 1A – During trimester 3 (October – December), current rules do not allow for limits on the number of trucks of herring caught per day nor on the number of fishing days before scheduled landing days. This means that vessels can fill up without technically declaring their catch until the first landing day. It is a recipe for disaster – especially with such a tiny available quota and boats participating that can hold close to a third each of the available quota. Additionally, because the fishery is not restricted to purse seiners during the 3rd trimester, the larger, mid-water trawling vessels exponentially increase the likelihood that the catch will exceed the available quota. This year, trimester 3 quota totals approximately 69 trucks. The active herring fleet can land up to about 138 trucks (if all vessels opt in).

These seem to be policies that were instituted during times of large quotas and do not align with the current state of the fishery. The rules that apply during trimester 2 should also have the option to be applied to trimester 3 – *fishing days instead of landing days and daily/weekly catch limits.*

2. Because there are currently different rules and fishing methods between trimester 2 and trimester 3 in Area 1A, any overages should be deducted from the same trimester in subsequent years - not deducted from the entire Area1A TAC.
3. It is my understanding that NEMFC is working to institute spawning restrictions on Georges Bank. This is extremely important to the long-term health of the herring fishery and should be supported by ASMFC.

We need more flexible rules with options that can easily manage the changing fishery and quotas.

Thank you for your consideration.

Sincerely,

Jeanne Fuller
ASMFC Advisory Panel

MEETING OVERVIEW

American Lobster Management Board

November 7, 2022

9:45 – 11:45 a.m.

Chair: Dr. Jason McNamee (RI) Assumed Chairmanship: 02/22	Technical Committee Chair: Kathleen Reardon (ME)	Law Enforcement Committee Representative: Rob Beal
Vice Chair: Pat Keliher (ME)	Advisory Panel Chair: Grant Moore (MA)	Previous Board Meeting: August 2, 2022
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, 2022

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. Update on North Atlantic Right Whale Court Cases (10:00-10:15 a.m.)

Background

- U.S. District Court Judge James E. Boasberg’s ruling in Center for Biological Diversity versus Secretary Raimondo and the Maine Lobstermen’s Association was released in the [July 8, 2022 opinion](#).
- The ruling concluded that aspects of the 2021 Biological Opinion and the 2021 final rule violated federal law: NOAA Fisheries violated the Endangered Species Act by failing to satisfy the Marine Mammal Protection Act’s (MMPA) “negligible impact” requirement before setting the authorized level of lethal take in its incidental take statement, and that NOAA Fisheries breached the time requirements mandated by the MMPA in the 2021 final rule.
- Additional briefing hearings to determine the action(s) the agency must take moving forward have been held in recent months.

Presentations

- Update on North Atlantic Right Whale Court Cases

5. Review Annual Data Update of American Lobster Indices (10:15-10:30 a.m.)

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 updated during this process are generally those that indicate exploitable lobster stock abundance conditions expected in subsequent years and include: young-of-year settlement indicators, trawl survey indicators, and ventless trap survey sex-specific abundance indices.
- This is the second Data Update and provides an update of last year's review with the addition of 2021 data. Indicator status (negative, neutral, or positive) was determined relative to the percentiles of the stock assessment time series (i.e., data set start year through 2018) (**Briefing Materials**).

Presentations

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

6. Consider Next Steps on Draft Addendum XXVII on Increasing Protection of Spawning Stock Biomass of the Gulf of Maine/Georges Bank Stock (10:30-11:00 a.m.) Possible Action

Background

- Draft Addendum XXVII was initially initiated in 2017 to proactively increase protection 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 protection of the GOM/GBK spawning stock if the trigger is reached.
- The Board approved Draft Addendum XXVII for public comment in January 2022. The Addendum considers modifications to the management program with the goal of increasing protection of the GOM/GBK spawning stock. Two issues are included in the addendum. Issue 1 addresses the standardization of a subset of management measures within LCMAs and across the GOM/GBK stock. Issue 2 considers applying either a trigger mechanism or a predetermined schedule for implementing biological management measures that are expected to provide increased protection to the spawning stock biomass and increase the resiliency of the stock (**Briefing Materials**).
- The Board paused development of the Draft Addendum to allow time to better understand other challenges facing the fishery. At its August 2022 meeting the Board discussed concerns regarding the potential implications of the management proposed measures in the Draft Addendum for international trade. The Board tasked the PDT to discuss this issue and suggest possible paths forward and potential impacts.
- The Law Enforcement Committee met on October 31, 2022 to provide recommendations related to the proposed changes in minimum gauge size (**Supplemental Materials**).

Presentations

- Next Steps on Draft Addendum XXVII for Public Comment by C. Starks

Board Actions for Consideration at the Meeting

- Determine next steps for development of Draft Addendum XXVII

7. Update from Work Group on Implementation of Addendum XXIX on Electronic Vessel Tracking for Federal Permit Holders (11:00-11:10 a.m.)

Background

- In March 2022, the Board approved Addendum XXIX to Amendment 3 to the Interstate Fishery Management Plan (FMP) for American Lobster and Addendum IV to the Jonah Crab FMP. The Addenda establish electronic tracking requirements for federally-permitted vessels in the American lobster and Jonah crab fisheries. The addenda address several challenges facing the fishery, including stock assessment limitations, protected species interactions, marine spatial planning efforts, and enforcement in federal waters.
- The Addenda require federally-permitted American lobster and Jonah crab vessels with commercial trap gear area permits for Lobster Conservation Management Areas (LCMAs) 1, 2, 3, 4, 5, and Outer Cape Cod to collect location data via an approved electronic tracking device.
- Since approval of the Addenda, Commission staff formed a Work Group comprised of state and federal partners to develop a request for quotes from vessel tracking device manufacturers. The request for quotes was released in the fall of 2020, and the Work Group is in the process of evaluating the quotes submitted.

Presentations

- Update on Implementation of Addendum XXIX by C. Starks

8. Discuss the Trap Transfer Tax for the American Lobster Fishery (11:10-11:25 a.m.)

Background

- In the early 2000s several Addenda were implemented to establish a 10% conservation tax for trap transfers in the LCMAs within the Southern New England (SNE) as part of a broader effort to reduce exploitation of the SNE lobster stock.
- After significant effort reductions in the SNE fishery, the conservation tax on the trap transfer program only removes a small amount of traps from the system as transactions are very limited.
- Some Board members are concerned that the conservation tax is now resulting in unintended consequences by altering reporting behavior due to a reluctance to transfer trap allocations, and therefore lose traps because of conservation tax.

Presentations

- Review of Trap Transfer Tax in the Lobster Fishery by D. McKiernan

9. Progress Update on Jonah Crab Benchmark Stock Assessment (11:25-11:30 p.m.)

Background

- Work on the first Jonah crab benchmark stock assessment was initiated in early 2022.
- A Data Workshop was held virtually June 13-15, 2022, and a Methods Workshop was held virtually October 3-5, 2022.
- The assessment is scheduled for completion in the fall of 2023.

Presentations

- Progress Update on Jonah Crab Benchmark Stock Assessment by J. Kipp.

10. Consider Fishery Management Plan Reviews and State Compliance for American Lobster and Jonah Crab for 2021 Fishing Year (11:30-11:45 a.m.)

Background

- State compliance reports for American lobster and Jonah crab were due August 1, 2022.
- The Plan Review Teams reviewed state compliance reports and compiled the annual FMP Reviews for lobster and Jonah crab for the 2021 Fishing Year (Briefing Materials; Supplemental Materials) (**Briefing Materials**).
- Delaware, Maryland, and Virginia have requested and meet the requirements for *de minimis* in the lobster and Jonah crab fisheries.

Presentations

- FMP Reviews for American Lobster and Jonah Crab for the for the 2021 Fishing Year by C. Starks

Board Actions for Consideration at the Meeting

- Approve FMP Reviews, state compliance reports, and *de minimis* requests

11. Other Business/Adjourn



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: American Lobster Management Board
FROM: Law Enforcement Committee
DATE: October 31, 2022
SUBJECT: Law Enforcement Committee Comments on Draft Addendum XXVII

Attendance: Jeff Mercer (RI), Scott Simmons (MD), Tom Gadomski (NY), Delayne Brown (NH), Sean Reilly (NY), Matt Corbin, Michael Henry (NOAA), Lennie Day (USCG), Keith Williams (NY), Jason Snellbaker (NJ), Scott Pearce (NJ), Caitlin Starks (ASMFC), Toni Kerns (ASMFC)

Background

The Law Enforcement Committee (LEC) met on October 31, 2022 to discuss Draft Addendum XXVII to the Fishery Management Plan (FMP) for American lobster. The Draft Addendum proposes increases to the minimum gauge size for Lobster Conservation and Management Area (LCMA) 1 that would be triggered by changes in an index of abundance for the Gulf of Maine/Georges Bank (GOM/GBK) stock to increase protection of spawning stock biomass. The Draft Addendum also proposes some management changes to standardize measures within and across LCMAs.

Under the Magnuson-Stevens Act, it is unlawful for any person to ship, transport, offer for sale, sell, or purchase, in interstate or foreign commerce, any whole live lobster of the species *Homarus americanus*, that is smaller than the minimum possession size in effect at the time under the Commission's American Lobster FMP. Therefore, if the minimum gauge size for LCMA 1 were to increase to 3-5/16" from the current minimum size of 3-1/4" as proposed in the Draft Addendum, imports of American lobster under 3-5/16" would no longer be allowed. Some Commissioners have expressed concerns that this could negatively impact dealers in Maine that rely on Canadian lobster imports under 3-5/16" during the spring when the US fishery supply cannot meet demand.

Staff sought input from the LEC regarding how allowing imports below the smallest US minimum gauge size would affect law enforcement.

LEC Recommendations

There was consensus among the LEC that allowing imports of American lobster under the minimum gauge size in effect in the US would create additional challenges for enforcement. The LEC agreed that from a law enforcement perspective it is preferable to prohibit imports smaller than the US minimum legal size.

LEC members advised that allowing imports to be smaller than lobsters legally harvested in the US could create market opportunities for illegal US lobster catch below the minimum gauge size. At the border, enforcing a different minimum size for imports would be possible. However, once lobsters get to a dealer from different sources, they are usually comingled and it would be difficult to maintain separation of imported versus domestic lobster. This would make it relatively easy for US lobster under the minimum gauge size to be illegally sold as imports from Canada.

If such a difference in minimum size were allowed in the future, extra enforcement measures would need to be taken. For example, in Rhode Island, for a dealer to buy and sell lobster under the LCMA 2 minimum

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size, they must have a special exemption permit, notify Law Enforcement of all shipments, keep these lobsters separate from other sizes, and maintain records of all transactions. They also can only sell lobster under the LCMA 2 minimum size out of state.

Regarding the other proposed options under Issue 1 in Draft Addendum XXVII to standardize measures within and across LCMAs, the LEC supports the standardization of measures wherever possible.



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Atlantic Striped Bass Management Board
FROM: Atlantic Striped Bass Plan Development Team
DATE: November 1, 2022
SUBJECT: PDT Updates to Draft Addendum I on Quota Transfers for Board Review

In August 2021, the Atlantic Striped Bass Management Board (Board) initiated a draft addendum to consider allowing for the voluntary transfer of commercial striped bass quota in the ocean region, concurrent with the development of Draft Amendment 7. The Plan Development Team (PDT) developed the initial draft addendum and outlined PDT concerns (Memo 21-119) in September 2021, but development was constrained due to focus on Draft Amendment 7. Consideration of the draft addendum was then postponed until August 2022, at which time the Board provided guidance to the PDT for further development of the draft addendum.

The PDT developed a revised Draft Addendum I for Board review at the November 2022 Board meeting. The PDT's revisions and a question for the Board are outlined below. The revised draft addendum provides a range of options that consider the voluntary transfer of commercial quota: a general transfer option (similar to what is used for other ASMFC-managed species); a Board discretion option; and stock status-focused options.

Updated Introduction and Background Sections

The PDT revised the introduction and overview sections to focus more narrowly on the striped bass commercial quota system and the ocean fishery, including a more detailed history of quota changes in the FMP and pertinent information on ocean quota utilization.

Question for the Board: Intent of Transfers

In addition to voluntary quota transfers providing in-season relief for states seeking additional striped bass quota, is it also the Board's intent for quota transfers to address overages after the season ends? The typical voluntary transfer process used for other ASMFC-managed species allows quota transfers to address quota overages at the end of season, with transfers allowed up to 45 days after the last day of the calendar year. If this is not the Board's intent, the Board could modify the transfer process in the draft addendum as such (e.g., remove the provision allowing transfers 45 days after the year ends).

New Board Discretion Option

In August 2022, the Board approved the addition of a "Board discretion" option that would allow the Board to decide each year whether transfers are permitted, and to establish criteria for transfers. The PDT added this option to the draft addendum with the following edits:

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- Added flexibility for the Board to decide on transfers every two years or every year.
- Noted that quota transfers would not be permitted unless the Board decides to allow them (i.e., if the Board does not make a decision regarding transfers for a particular year, transfers would not be permitted in that year).
- Clarified the criterion that would limit when quota is available for transfers temporally throughout the year.

The PDT notes that if this “Board discretion” option is selected for implementation, the Board should be as specific as possible when developing criteria (e.g., specify whether eligibility is based on total statewide quota utilization, or gear- or season-specific quota utilization within a state).

New Stock Status Options

The PDT added new options that would not permit quota transfers when the stock is overfished. This type of option has been raised during Board and PDT discussions of the draft addendum, and in public comments. These options would address concerns about allowing quota transfers, and the potential for increased harvest, during a period of poor stock status and stock rebuilding. However, given the current overfished status of the stock, this option would not provide near-term relief to states seeking additional quota. This point is noted in the draft document.

Commercial Quota Reallocated to Recreational Fisheries

The PDT determined that commercial quota that has been reallocated to a state’s recreational fishery (i.e., for a recreational bonus program) should not be eligible to be used for commercial quota transfers. When developing conservation equivalency (CE) proposals to reallocate commercial quota to a recreational fishery, states can specify reallocation of all or part of their commercial quota; any portion of the state’s commercial quota that is not reallocated to the recreational fishery may be used for commercial quota transfers. This is noted in the draft document.

Consideration of Potential Options to Address Different Size Limits

One of the PDT’s concerns about quota transfers is a pound of striped bass commercial quota is not equal across all states. This concern was previously noted by the Technical Committee during consideration of Addendum IV (2014). Through CE, states have been able to adjust their commercial size limits from the historical standard, which results in changes to their respective commercial quotas. Several adjustments have been made to commercial size limits over time resulting in changes to commercial quotas, making transferring quota between states with different size limits difficult.

Standard pound-for-pound transfers would maintain an efficient transfer process, but would not address the uncertainty of moving quota between states that harvest different size fish. Per the Board’s request, the PDT considered potential options to address this concern.

First, the PDT discussed a “same number of fish” approach with the intent of transferring the same number of fish to the receiving state as would have been harvested in the donor state under the transfer quota amount. This analysis requires an average weight of commercially harvested fish for

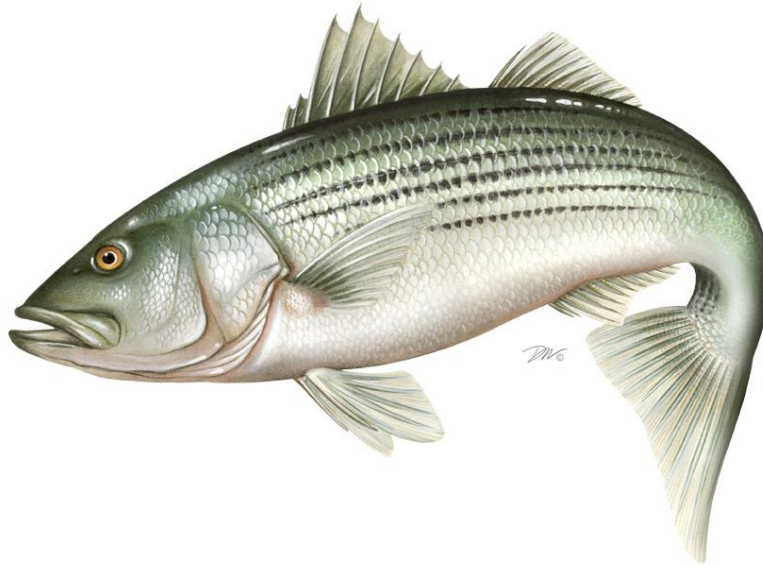
the donor state and receiving state to convert from pounds to number of fish. After the average weight is determined for both states, it is a relatively straightforward calculation. However, determining an appropriate average weight for each state could be difficult because not all states have recent commercial harvest, and for those that do, commercial catch can vary within a state depending on gear type, area, and time of year. Although the Technical Committee could provide criteria to determine the average weight for each state, there would still be assumptions associated with those calculations.

Second, the PDT discussed a “maintain spawning potential” approach with the intent of maintaining at least equivalent spawning potential as the transferred quota moves from the donor state size limits to the receiving state limits. This would be the same methodology used for approved CE programs that have changed commercial size limits and associated quotas. Yield-per-recruit (YPR) and spawning stock biomass-per-recruit (SPR) analyses would be used to determine how to adjust the transfer quota amount to maintain the same spawning potential under the receiving state’s size limit. SPR/YPR analyses require inputs including natural mortality, weight at age, and maturity and selectivity curves. While this approach could more thoroughly address concerns about different size limits, the primary drawback is the complexity and time required for this approach. Technical Committee assistance and review of SPR/YPR analyses would likely be necessary.

Considering the complexity and uncertainty of the alternative approaches, particularly in light of the potentially small amount of quota that would be transferred and the voluntary nature of such transfers, **the PDT supports moving forward with the standard pound-for-pound transfer approach.** The revised draft addendum is currently written to that effect. The PDT notes transferring quota between states that catch different size fish (due to variability in striped bass size distribution along the coast and different state size limits, etc.) is an inherent uncertainty when considering quota transfers for striped bass. The PDT notes that uncertainty could potentially be limited if criteria are set to limit the amount of quota that could be transferred each year.

Atlantic States Marine Fisheries Commission

**DRAFT ADDENDUM I TO AMENDMENT 7
TO THE ATLANTIC STRIPED BASS
INTERSTATE FISHERY MANAGEMENT PLAN**



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.

**Draft for Board Review
11.01.2022**



Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Public Comment Process and Proposed Timeline

In August 2021, the Atlantic Striped Bass Management Board (Board) initiated the development of Addendum VII to Amendment 6 to the Interstate Fishery Management Plan (FMP) for Atlantic Striped Bass to consider allowing voluntary transfers of ocean commercial quota. Since then, Amendment 7 to the FMP was approved, so this draft addendum is now Draft Addendum I to Amendment 7. This Draft Addendum presents background on the Atlantic States Marine Fisheries Commission's (Commission) management of striped bass; the addendum process and timeline; and a statement of the problem. This document also provides management options for public consideration and comment.

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 **XXXXX at 11:59 p.m. (EST)**. Comments may be submitted at state public hearings or by mail, email, or fax. If you have any questions or would like to submit comment, please use the contact information below. Organizations planning to release an action alert in response to this Draft Addendum should contact Emilie Franke, Fishery Management Plan Coordinator, at efranke@asmfc.org or 703.842.0740.

Mail: Emilie Franke
Atlantic States Marine Fisheries Commission
1050 N. Highland Street, Suite 200 A-N
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1.0 Introduction

Atlantic striped bass (*Morone saxatilis*) are managed through the Commission in state waters (0-3 miles) and through the National Marine Fisheries Service (NMFS) in federal waters (3-200 miles). The management unit includes the coastal migratory stock from Maine through North Carolina. Atlantic striped bass are currently managed in state waters under Amendment 7 (2022) to the Interstate Fishery Management Plan (FMP).

In August 2021, the Atlantic Striped Bass Management Board (Board) initiated Draft Addendum VII to Amendment 6 to consider allowing for the voluntary transfer of commercial striped bass quota in the ocean region, after deciding that changes to the commercial quota system would not be considered in the then ongoing development of Draft Amendment 7. Subsequently, this draft addendum was postponed to enable the Plan Development Team (PDT) and Board to focus on the development and completion of Amendment 7, which was approved in May 2022. In August 2022, the Board considered next steps for this draft addendum and provided additional guidance to the PDT on management options to be added. Due to Amendment 7's approval during its development, this addendum is now Draft Addendum I to Amendment 7. The Board approved this draft addendum for public comment in [Month, Year].

2.0 Overview

2.1 Statement of the Problem

Members of the Board and public have raised questions about the striped bass commercial quota system, with particular concern regarding the 1972-1979 reference period and basis for state commercial quotas. Those concerns include, but are not limited to: changes in fishing effort and resource distribution since the 1972-1979 reference period; likely inaccuracies in the commercial landings data for the 1970s reference period due to the lack of mandatory reporting across all states and/or evidence of harvesters selling fish in states other than where it was landed; and inconsistent application of the reference period landings in one management action which increased all but one of the states' quotas (i.e., Delaware in Amendment 6). These concerns, along with other questions about the quota system (e.g., fixed quotas vs. setting quotas annually), were included in the scoping document for Draft Amendment 7 in 2021, but the issue of addressing commercial quotas was not selected for further development in Draft Amendment 7. Some Board members expressed support for addressing the commercial quota issue at a different time separate from Amendment 7, noting a desire to not slow Amendment 7's progress and focus on stock rebuilding.

In order to consider a management option that could provide some, more immediate relief to states seeking a change to their commercial quota, the Board initiated this addendum to consider allowing for the voluntary transfer of striped bass commercial quota in the ocean region. Many quota-managed fisheries allow for the voluntary transfer of commercial quota between states (e.g., black sea bass, bluefish, horseshoe crab). This is a useful technique that can be utilized to address a variety of problems in the management of a commercial fishery (e.g., quota overages, safe harbor landings, shifting stock distributions). The Atlantic Striped

Bass FMP is the only Commission FMP with state-by-state commercial quotas that does not allow for the voluntary transfer of commercial quota or quota reconciliation (using end-of-year quota underages to address any overages).

2.2 Background

2.2.1 Commercial Quota Management for Atlantic Striped Bass

The Atlantic Striped Bass FMP uses a quota system to manage the commercial fishery in the Chesapeake Bay and the ocean region. The FMP establishes a separate Chesapeake Bay-wide quota, which is then allocated to Bay jurisdictions per the mutual agreement of Maryland, the Potomac River Fisheries Commission (PRFC), and Virginia. The FMP establishes state-by-state quotas for the ocean region, which includes all coastal bay, inland rivers, and estuaries outside the Chesapeake Bay system. The ocean region commercial quotas are based on a proportion of the states' average landings during 1972–1979, with one exception for Delaware, and as modified by approved conservation equivalency (CE) proposals, as described in the following section.

Quota overages are paid back the following year on a pound-for-pound basis, while the transfer of quota between states and rollover of unused quota from one year to the next is not permitted.

In addition to commercial quotas, the FMP specifies commercial size limits, and requires states to implement a commercial tagging program whereby all commercially-harvested striped bass must be tagged at the point of harvest and/or the point of sale.

2.2.1.1 History of Commercial Quota Management

In general, the ocean commercial quotas are based on average landings during 1972-1979 and assuming a 28" minimum size limit. This historical base period was first used for management in 1989 under Amendment 4, which allowed for a modest relaxation of the stringent Amendment 3 requirements that had led to harvest moratoria in many states in the mid-to-late 1980s. Amendment 4 required closed seasons in order to restrict commercial harvest to 20% of the 1972–1979 base period, or an equivalent commercial quota as was elected by many of the states. The amendment allowed for separate “producer area” management (including a smaller size limit) for the Hudson River estuary, Chesapeake Bay, and inshore North Carolina. Due to New York’s ban on commercial striped bass harvest in the Hudson River since 1976, this resulted in only an ocean quota for the state. In Maryland, separate Chesapeake Bay and ocean quotas were established, whereas Virginia was approved to adopt a state-wide quota for ease of management. Maryland was also authorized to employ a harvest control model to establish a flexible Chesapeake Bay quota based on projected exploitable biomass. The commercial fisheries never reopened in Maine, New Hampshire, Connecticut, and New Jersey following their voluntary moratoria. In 1991, New Jersey started a Striped Bass Bonus Program (i.e., permit program), which reallocates their commercial quota to the recreational fishery, allowing participating recreational anglers to take a “bonus fish”; the New Jersey bonus program is still

in place and currently operates through an approved CE program. Connecticut implemented a similar bonus program from 2011-2019.

State-specific quotas were first implemented under Amendment 5 (1995) when the Commission declared the stock fully rebuilt; states were allocated 70% of their average landings during the 1972–1979 base period. Amendment 5 specified separate quotas for producer areas and the ocean, and extended producer-area status to the Delaware River and Bay, which allowed its producer-area commercial quota to be managed under a harvest control model (i.e., maintain a target *F* rate) similar to that used in the Chesapeake Bay. Like Virginia, Delaware was approved to combine its producer area and ocean quotas into one overall state quota beginning in 1996. The three Chesapeake Bay jurisdictions with commercial fisheries (Maryland, PRFC, and Virginia) adopted a Bay-wide commercial quota in 1997 (allocated per their own agreement) that was set using the harvest control model. Maryland maintained a separate ocean quota, while Virginia continued with a combined state-wide quota until 2002, when Virginia switched to managing the ocean and Bay quotas separately due to shifting effort into the coastal area.

Under Amendment 6 (2003), the state-by-state ocean commercial quotas were increased to 100% of the base period, except for Delaware’s commercial quota which remained at the level allocated in 2002 for its statewide quota (Table 1). The decision to hold Delaware’s commercial quota at the 2002 level was based on tagging information that indicated fishing mortality on the Delaware River/Bay stock was too high, and uncertainty regarding the status of the spawning stock for the Delaware River/Bay.

Producer areas were also no longer used as a management tool under Amendment 6, but the Chesapeake Bay and the Albemarle Sound/Roanoke River in North Carolina were defined as their own management areas, for different reasons. The Albemarle/Roanoke stock contributes minimally to the coastal migratory stock, and is therefore managed separately by the state of North Carolina under the auspices of ASMFC. On the other hand, the Chesapeake Bay stock, which is unquestionably part of the coastal migratory stock, was established as a management area in Amendment 6 in order to have a separate management program due to the size availability of the striped bass in the area. This resulted in the ongoing use of a Chesapeake Bay-wide commercial quota distinct from the ocean commercial quotas.

Amendment 6 required all states to maintain a 28-inch minimum size limit for the commercial fishery, with three exceptions. The Delaware Bay shad gillnet fishery and the Albemarle Sound commercial fishery were subject to a 20-inch minimum size limit, and the Chesapeake Bay commercial fishery was subject to an 18-inch minimum size limit.

The ocean quotas were subsequently reduced by 25% in 2015 (Addendum IV) and by an additional 18% in 2020 (Addendum VI) in response to declining stock status (Table 1). Addendum IV required all states to maintain their 2013 commercial size limits and Addendum VI required all states to maintain their 2017 commercial size limits. Throughout quota

management, states have used conservation equivalency (CE) to implement different commercial size limits resulting in changes to their quota amounts. Approved CE programs have used yield-per-recruit (YPR) and spawning stock biomass-per-recruit (SPR) analyses to determine how to adjust the quota to maintain the same spawning potential under the new commercial size limit. The Addendum IV quota reductions were applied to the Amendment 6 base quotas, whereas the Addendum VI reductions were applied to the Addendum IV quotas as modified by conservation equivalency. The Addendum VI quotas were further modified by some states through approved CE plans (Table 1). Massachusetts increased its Addendum VI base quota to account for increasing its commercial minimum size limit, and New York reduced its base quota to account for lowering the minimum size of its commercial slot limit. Additionally, New Jersey, Delaware, Maryland, PRFC, and Virginia increased their Addendum VI base quotas by taking a greater than 18% reduction in the recreational sector to offset the commercial sector taking a smaller reduction. Amendment 7 (2022) maintains the same commercial measures specified in Addendum VI to Amendment 6; all approved Addendum VI CE programs and state implementation plans are maintained until commercial measures are changed in the future.

Table 1. Commercial striped bass quotas for the ocean region from 2003-2022.

Year	2003-2014	2015-2019	2020-2022	
State	Am6 Quota (lbs)	Add IV Base Quotas: 25% reduction from Am6 Quota (lbs)	Add VI Base Quotas: 18% Reduction from Add IV Quotas (lbs) <i>[accounting for Add IV CE adjustments]</i>	Add VI CE-Adjusted Quotas
Maine*	250	188	154	154
New Hampshire*	5,750	4,313	3,537	3,537
Massachusetts	1,159,750	869,813	713,247	735,240
Rhode Island	243,625 ^a	182,719 ^b	148,889	148,889
Connecticut**	23,750	17,813	14,607	14,607
New York	1,061,060 ^a	795,795	652,552	640,718
New Jersey**	321,750	241,313 ^b	197,877	215,912
Delaware	193,447	145,085	118,970	142,474
Maryland Ocean	131,560 ^a	98,670 ^b	74,396	89,094
Virginia Ocean	184,853	138,640	113,685	125,034
North Carolina	480,480	360,360	295,495	295,495
Ocean Total	3,806,275	2,854,706	2,333,409	2,411,154

* Commercial harvest/sale prohibited, with no re-allocation of quota.

** Commercial harvest/sale prohibited, with re-allocation of quota to the recreational fishery.

a. Amendment 6 quota reduced through conservation equivalency; NY (828,293 pounds) and MD (126,396 pounds) beginning in 2004, RI (239,963 pounds) beginning in 2007.

b. Addendum IV quota reduced through conservation equivalency for RI (181,572 lbs), NJ (215,912), and MD (90,727 lbs).

2.2.1.2. Past Consideration of Quota Transfers

Throughout its history, the Striped Bass FMP has not permitted the transfer of commercial quota between jurisdictions. The Board previously considered commercial quota transfers in the FMP through Draft Amendment 5 and Draft Addendum IV to Amendment 6. The Board did not approve the use of transfers in Amendment 5 (1995) in order to focus efforts on rebuilding the stock. During consideration of Draft Addendum IV to Amendment 6, the Technical Committee raised concerns that transfers had the potential to increase harvest at a time when harvest reductions were needed, which contributed to the Board not approving transfers under Addendum IV (2014).

2.2.2 Status of the Stock

Note: This section will be updated with 2022 stock assessment results and projections following the November 2022 Board meeting.

Female spawning stock biomass (SSB) and fishing mortality rate (F) are estimated on a regular basis, and compared to target and threshold levels (i.e., biological reference points) in order to assess the status of the striped bass 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% of the female SSB threshold. The associated F threshold and F target are calculated to achieve the respective SSB reference points in the long term.

In May 2019, the Board accepted the 2018 Benchmark Stock Assessment and Peer Review Report for management use. The accepted model is a forward projecting statistical catch-at-age model, which uses fishery-dependent data and fishery-independent survey indices to develop catch-at-age matrices and estimate annual population size, fishing mortality, and recruitment. The assessment found the stock to be overfished and experiencing overfishing in the terminal year (2017). Female SSB in 2017 was estimated at 151 million pounds, which is below the SSB threshold of 202 million pounds. F in 2017 was estimated at 0.31, which is above the F threshold of 0.24.

The assessment also indicated a period of strong recruitment (numbers of age-1 fish entering the population) from 1994-2004, followed by a period of low recruitment from 2005-2011 which likely contributed to the decline in SSB in recent years. However, recruitment was high in 2012, 2015, and 2016 (corresponding to the 2011-, 2014-, and 2015-year classes). In 2017, recruitment was estimated at 108.8 million age-1 fish which is below the time series average of 140.9 million fish.

A stock assessment update is expected in October 2022 with a terminal year of 2021. This assessment is expected to indicate whether the management revisions implemented in 2020 and 2021 under Addendum VI to Amendment 6 achieved the goal of ending overfishing and putting the resource on a path to rebuild within the 10-year deadline (i.e., 2029). In 2020, a 27.5% reduction in total removals (numbers of fish harvested plus commercial dead discards

and recreational release mortality) was realized relative to total removals coastwide in 2017, exceeding the 18% reduction targeted in Addendum VI to end overfishing.

2.2.3 Status of the Fishery

Note: Since this draft addendum applies only to commercial quota in the ocean region, this section focuses primarily on the ocean commercial fishery. For information on the Chesapeake Bay commercial fishery or striped bass recreational fisheries, see the Review of the Fishery Management Plan for Atlantic Striped Bass: 2021 Fishing Year (August 2022).

In 2021, total Atlantic striped bass removals (commercial and recreational, including harvest, commercial dead discards and recreational release mortality) were estimated at 5.1 million fish, which is about the same as removals in 2020. In 2021, the commercial sector accounted for 14% of total removals in numbers of fish (12% harvest and 2% dead discards), and the recreational sector accounted for 86% of removals in numbers of fish (36% harvest and 50% release mortality) (Figure 1). Removals for each sector by year are listed in the Appendix.

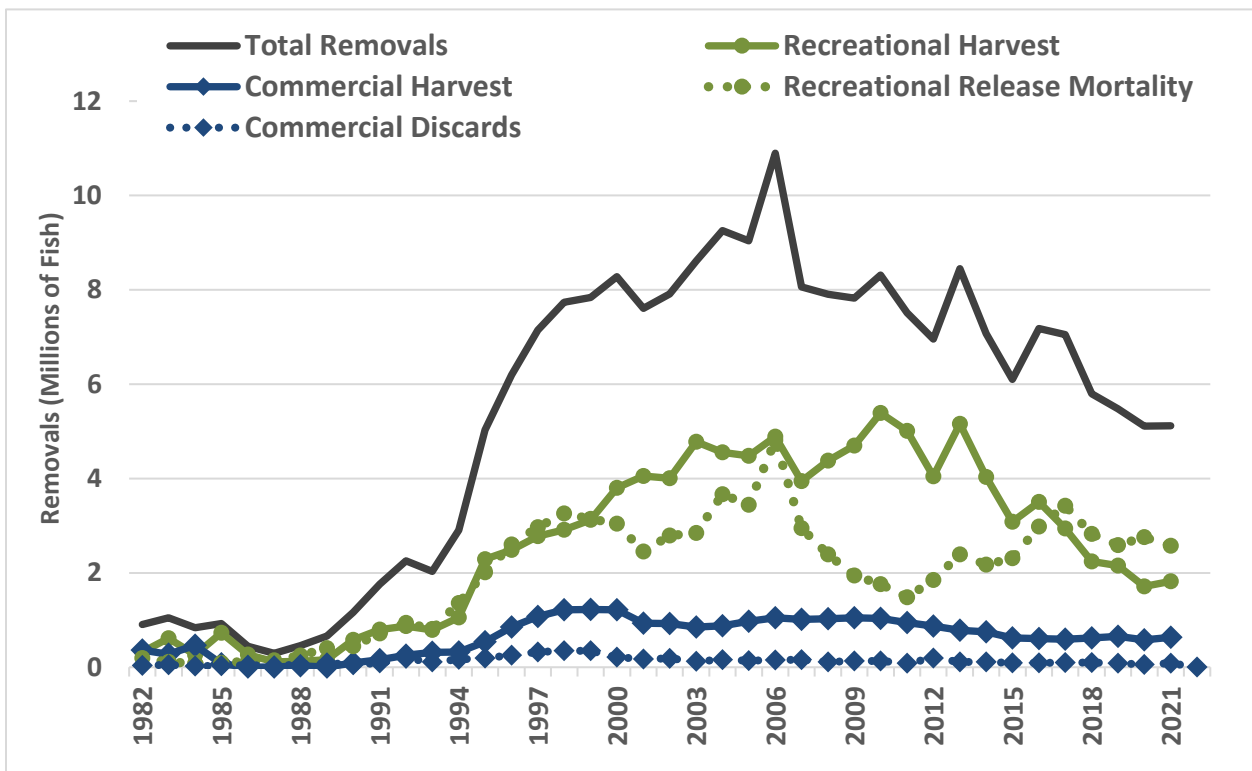


Figure 1. Total Atlantic striped bass removals by sector in numbers of fish, 1982-2021. Source: State compliance reports, MRIP, ASMFC.

Commercial Fishery Landings

In 2021, the ocean commercial striped bass quota was 2,411,154 pounds, and 1,840,693 pounds were harvested in the ocean region. In the Chesapeake Bay region, the 2021 commercial striped bass quota was 3,001,648 pounds, and 2,435,126 pounds were harvested. Neither quota was exceeded in 2021. Refer to the Appendix for 2021 quotas and landings by state, as well as 2021 commercial fishery regulations by state, including size limits, trip limits, and seasons, where applicable.

Since 1990, commercial landings from the ocean fishery have accounted for approximately 40% of total coastwide commercial landings by weight, with the other 60% coming from the Chesapeake Bay (Figure 2). The proportion of commercial harvest coming from Chesapeake Bay is much higher in numbers of fish (roughly 80%) because fish harvested in Chesapeake Bay have a lower average weight than fish harvested in ocean fisheries.

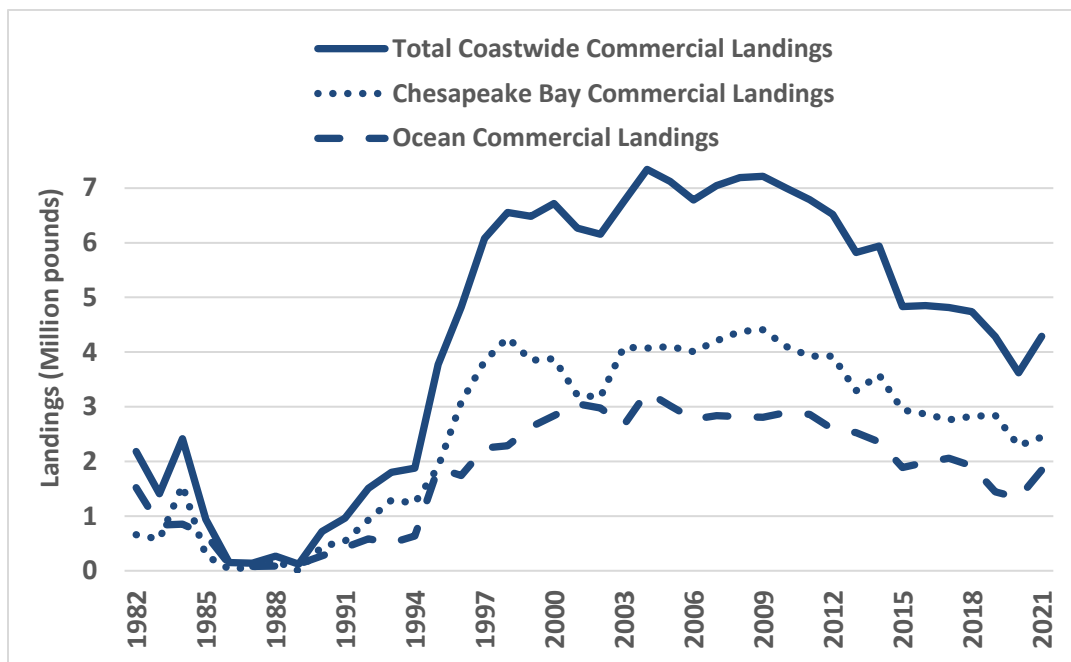


Figure 2. Commercial landings total and by region in pounds, 1982-2021. Source: State compliance reports.

From 2004 to 2014, ocean commercial landings averaged 2.8 million pounds annually. From 2015-2019, ocean commercial landings decreased to an average of 1.9 million pounds annually due to implementation of Addendum IV and a reduction in the commercial quota. In the last two years under Addendum VI, ocean commercial landings were 1.3 million pounds in 2020, and 1.8 million pounds in 2021.

In 2021, Massachusetts landed 40% of the ocean commercial harvest by weight, New York landed 34%, Delaware landed 8%, Rhode Island landed 7%, Virginia landed 7%, and Maryland landed 5% (Figure 3). North Carolina has had zero commercial harvest in their ocean waters since 2012.

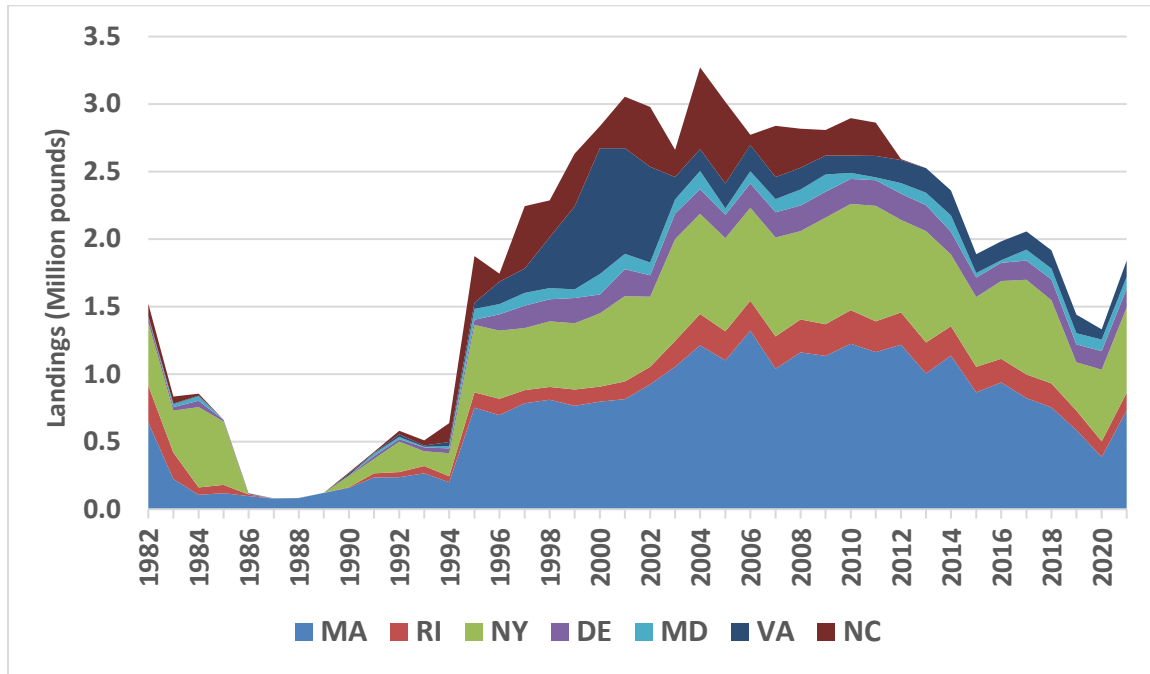


Figure 3. Commercial Atlantic striped bass landings from the ocean region by state in pounds, 1982-2021. Source: State compliance reports. Commercial harvest and sale prohibited in ME, NH, CT, and NJ. NC is ocean only.

Commercial Quota Utilization in the Ocean Region

The ocean region regularly underutilizes its cumulative quota due to lack of striped bass availability in some state waters (particularly North Carolina, which holds 13% of the ocean quota, yet has had zero ocean harvest since 2012) coupled with prohibitions on commercial striped bass fishing in Maine, New Hampshire, Connecticut, and New Jersey, which collectively share about 10% of the ocean commercial quota.

In 2021, the commercial quota utilization in the ocean region increased from 55% in 2020 to 76% in 2021 (Figure 4). This is the highest ocean quota utilization in the past five years and is similar to the ocean quota utilization in 2017 (74%). Each state that allows commercial harvest utilized 87-99% of their ocean quota in 2021, with the exception of North Carolina which had zero ocean harvest (Table 2).

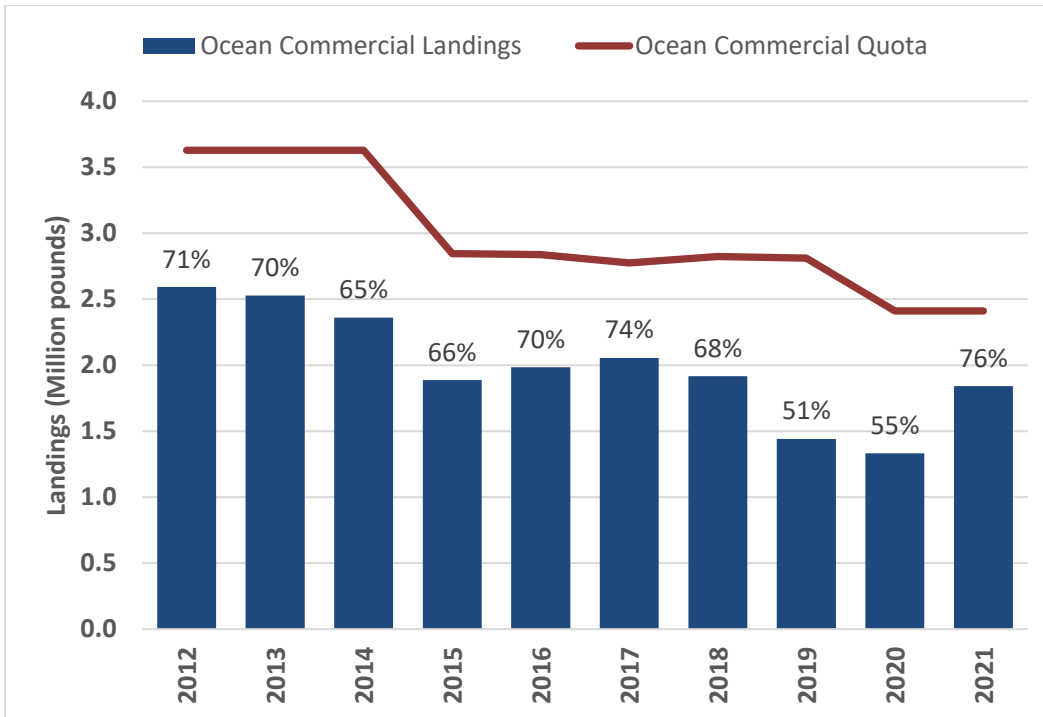


Figure 4. Ocean commercial landings and ocean commercial quota, and percent utilization, 2012-2021.

Table 2. Percent of ocean commercial quota utilized by state, 2017-2021.

State	2017	2018	2019	2020	2021
Maine*	0%	0%	0%	0%	0%
New Hampshire*	0%	0%	0%	0%	0%
Massachusetts	103%	89%	67%	53%	100%
Rhode Island	97%	97%	79%	78%	88%
Connecticut*	0%	0%	0%	0%	0%
New York	88%	78%	45%	83%	98%
New Jersey**	0%	0%	0%	0%	0%
Delaware	98%	107%	98%	97%	98%
Maryland (ocean only)	89%	88%	91%	94%	100%
Virginia (ocean only)	97%	97%	100%	62%	96%
North Carolina (ocean only)	0%	0%	0%	0%	0%
Ocean Total	74%	68%	51%	55%	76%

* Commercial harvest/sale prohibited.

** Commercial harvest/sale prohibited, with re-allocation of quota to the recreational fishery.

There are several factors that could contribute to how much quota is landed each year, including year class availability, overall stock abundance, nearshore availability, fishing effort, and state management programs. These factors and their impact on striped bass commercial fisheries likely vary among states and within the seasons.

Allowing quota transfers could increase utilization of the total ocean quota, which could undermine the goals and objectives of the reductions taken under Addendum VI. The commercial ocean fishery has consistently underutilized its total quota, due to a combination of fish availability and state-specific regulations (e.g., commercial fishing prohibitions). Addendum VI was designed to achieve a specific reduction in total removals through more restrictive recreational measures and reduced commercial quotas in order to achieve the fishing mortality target. During the Addendum VI process, the Technical Committee noted the reduction in commercial quota would achieve the necessary reduction in commercial removals only if the commercial fishery performs as it has in the past (i.e., if the total quota continues to be underutilized to the same degree). This assumption may be violated if the transfer of commercial quota in the ocean region is permitted. If Addendum VI commercial quotas were fully utilized through the transfer of latent quota, commercial harvest would be higher than estimated in the Addendum VI projections and states may not maintain the desired commercial reduction.

3.0 Proposed Management Program

Draft Addendum I presents options that would allow for the voluntary transfer of commercial quota in the ocean region between states that have ocean quota. However, commercial quota that has been reallocated to a state's recreational fishery (i.e., for a recreational bonus program) is not eligible to be used for commercial quota transfers. When developing CE proposals to reallocate commercial quota to a recreational fishery, states can specify reallocation of all or part of their commercial quota; any portion of the state's commercial quota that is not reallocated to the recreational fishery may be used for commercial quota transfers.

This draft addendum does not address potential transfers of the Chesapeake Bay quota among the Bay jurisdictions because the FMP does not establish state-specific shares of the Chesapeake Bay quota; Maryland, Virginia, and PRFC do so per the jurisdictions' mutual agreement. Additionally, this draft addendum does not consider allowing transfer of Chesapeake Bay quota to an ocean fishery (or vice versa) due to the distinct management programs between the regions (e.g., size and availability of fish).

If quota transfers are permitted, quota would be transferred pound-for-pound from the donor state to the receiving state. There would be some inherent uncertainty associated with transfers occurring between states that harvest different size striped bass. State commercial fisheries catch different size fish due to multiple factors, including variability in striped bass size distribution along the coast and state management programs (different size limits, gears, seasons). Further, through CE, states have been able to adjust their commercial size limits from

the historical standard, which results in changes to their respective commercial quotas. Several adjustments have been made to commercial size limits over time resulting in changes commercial quotas. Stated more simply, a pound of striped bass commercial quota is not equal across all states.

3.1 Options for Allowing Commercial Ocean Quota Transfers

Option A (status quo): Commercial quota transfers are not permitted.

Option B: General commercial quota transfer provision.

The voluntary transfer of commercial quota in the ocean region between states that have ocean quota would be permitted. Transfers between states may occur upon agreement of two states at any time during the fishing year and up to 45 days after the last day of the calendar year. All transfers require a donor state (state giving quota) and a receiving state (state accepting additional quota). There is no limit on the amount of quota that can be transferred by this mechanism, and the terms and conditions of the transfer are to be identified solely by the parties involved in the transfer.

The Administrative Commissioner of the agencies involved (giving and receiving state) must submit a signed letter to the Commission identifying the involved states, species, and pounds of quota to be transferred between the parties. A transfer becomes effective upon receipt of a letter from Commission staff to the donor and receiving states, and does not require approval by the Board. All transfers are final upon receipt of the signed letters by the Commission. In the event that the donor or receiving state of a transaction subsequently wishes to change the amount or details of the transaction, both parties have to agree to the change, and submit to the Commission signed letters from the Administrative Commissioner of the agencies involved. These transfers do not permanently affect the state-specific shares of the quota (i.e., the state-specific quotas remain fixed).

Once quota has been transferred to a state, the state receiving quota becomes responsible for any overages of transferred quota. That is, the amount over the final quota (that state's quota plus any quota transferred to that state) for a state will be deducted from the corresponding state's quota the following fishing season.

Option C: Limited commercial quota transfer provision.

Same as Option B except transfers would not be permitted when the stock is overfished (i.e., below the SSB threshold).

Note: Given the current overfished status of the stock, this option would not provide near-term relief to states seeking additional quota.

Option D: Board discretion commercial quota transfer provision.

The Board has discretion to decide whether the voluntary transfer of commercial quota in the ocean region between states that have ocean quota would be permitted in the next one or two

years. Quota transfers are not permitted unless the Board decides to allow them. The Board would decide by their final meeting of the year, based on the information the Board has available on the status of the striped bass stock and performance of the fisheries, whether to allow commercial quota transfers in the next one or two years.

Note: If the Board selects this option and the Addendum is approved during 2023, the Board could decide at the time of the Addendum's approval whether to allow transfers for the 2023 fishing year.

If the Board allows the voluntary transfer of commercial quota, the Board may choose to specify one or more of the following criteria:

- A limit on the transferable amount of quota (e.g., a set poundage or a set percentage of the total commercial quota), and further, a seasonal limitation on its transferability (e.g., no more than 50% of the transferable quota amount may be transferred before July 1).
- The eligibility of a state to receive a transfer based on percentage of that state's quota landed (e.g., state may not request quota until it has landed 90% of its annual quota).

If the above criteria are implemented, the Board should be as specific as possible when developing criteria (e.g., specify whether eligibility is based on total statewide quota utilization, or gear- or season-specific quota utilization within a state).

If the Board approves commercial quota transfers for a given year, transfers between states may occur upon agreement of two states at any time during the fishing year and up to 45 days after the last day of the calendar year. All transfers must adhere to the quota transfer limitations/criteria established by the Board for that year. All transfers require a donor state (state giving quota) and a receiving state (state accepting additional quota).

The Administrative Commissioner of the agencies involved (giving and receiving state) must submit a signed letter to the Commission identifying the involved states, species, and pounds of quota to be transferred between the parties. A transfer becomes effective upon receipt of a letter from Commission staff to the donor and receiving states, and does not require the approval by the Board. All transfers are final upon receipt of the signed letters by the Commission. In the event that the donor or receiving state of a transaction subsequently wishes to change the amount or details of the transaction, both parties have to agree to the change, and submit to the Commission signed letters from the Administrative Commissioner of the agencies involved. These transfers do not permanently affect the state-specific shares of the quota (i.e., the state-specific quotas remain fixed).

Once quota has been transferred to a state, the state receiving quota becomes responsible for any overages of transferred quota. That is, the amount over the final quota (that state's quota plus any quota transferred to that state) for a state will be deducted from the corresponding state's quota the following fishing season.

Option E: Limited Board discretion commercial quota transfer provision.

Same as Option D except transfers would not be permitted when the stock is overfished (i.e., below the SSB threshold).

Note: Given the current overfished status of the stock, this option would not provide near-term relief to states seeking additional quota.

4.0 Compliance Schedule

Measures approved by the Board through this Addendum would be effective immediately on the date of approval.

If commercial quota transfers are permitted, states must account for any additional quota potentially received via transfers when determining the number of commercial tags required for the upcoming season.

Appendix. State-by-State Commercial Fishery Regulations, Commercial Landings, 2021 Quota Accounting, and Coastwide Removals by Sector

Table A1. 2021 Striped Bass commercial regulations.

Source: 2022 State Compliance Reports. Minimum sizes and slot size limits are in total length (TL).

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.	6.16-11.15 (or when quota reached); open fishing days of Monday, Tuesday and Wednesday, with Thursday and Friday added on October 1 (if quota remains). 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 throughout.
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.	5.15 – 12.15, or until quota reached. Limited entry permit only.
NJ*	Commercial fishing prohibited; *quota reallocated to recreational bonus program: 1 fish/permit at 24" to <28"	215,912 lbs.	5.15 – 12.31 (permit required)
PA	Commercial fishing prohibited		

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Table A1, continued

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)	Bay Pound Net: 6.1-12.31 Bay Haul Seine: 1.1-2.28; 6.1-12.31 Bay Hook & Line: 6.1-12.31 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. (split between gear types; 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 <u>Gill Net</u> : 11.9.2020-3.25.2021 Misc. Gear: 2.15-3.25, 6.1-12.15
VA	Chesapeake 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

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Table A2. 2021 Commercial quota accounting in pounds.

Source: 2022 state compliance reports. 2021 quota was based on Addendum VI and approved conservation equivalency programs.

State	Add VI (base)	2021 Quota [^]	2021 Harvest	Overage
Ocean				
Maine*	154	154	-	-
New Hampshire*	3,537	3,537	-	-
Massachusetts	713,247	735,240	732,071	0
Rhode Island	148,889	148,889	130,308	0
Connecticut*	14,607	14,607	-	-
New York	652,552	640,718	629,491	0
New Jersey**	197,877	215,912	-	-
Delaware	118,970	142,474	140,250	0
Maryland	74,396	89,094	88,652 ⁺	0
Virginia	113,685	125,034	119,921	0
North Carolina	295,495	295,495	0	0
Ocean Total	2,333,409	2,411,154	1,840,693	0
Chesapeake Bay				
Maryland	2,588,603	1,445,394	1,305,276 ⁺	0
Virginia		983,393	729,736	0
PRFC		572,861	400,414	0
Bay Total		3,001,648	2,435,126	0

Note: North Carolina’s fishing year is December-November; PRFC’s fishing year for gill nets is Nov-March

* 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).

⁺ Maryland commercial landings for 2021 are considered preliminary.

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Table A3. Commercial harvest by state and region in pounds (x1000), 1997-2021 calendar years.

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	
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	163.2	84.6	375.0	273.0	2,286.6	2,426.7	726.2	1,112.2	4,265.1	6,551.6
1999	766.2	119.7	491.8	187.1	62.6	614.8	391.5	2,633.7	2,274.8	653.3	923.4	3,851.4	6,485.1
2000	796.2	111.8	542.7	140.6	149.7	932.7	162.4	2,836.0	2,261.8	666.0	951.2	3,879.0	6,715.0
2001	815.4	129.7	633.1	198.8	113.9	782.4	381.1	3,054.3	1,660.9	658.7	893.1	3,212.6	6,267.0
2002	924.9	129.2	518.6	160.6	93.2	710.2	441.0	2,977.6	1,759.4	521.0	894.4	3,174.9	6,152.6
2003	1,055.5	190.2	753.3	191.5	103.9	166.4	201.2	2,662.1	1,721.8	676.6	1,690.4	4,088.7	6,750.8
2004	1,214.2	232.3	741.7	182.2	134.2	161.3	605.4	3,271.2	1,790.3	772.3	1,507.0	4,069.6	7,340.8
2005	1,102.2	215.6	689.8	173.1	46.9	185.2	604.5	3,017.4	2,008.7	533.6	1,561.0	4,103.3	7,120.6
2006	1,322.3	221.4	688.4	179.5	91.1	195.0	74.2	2,771.8	2,116.3	673.5	1,219.0	4,008.7	6,780.5
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	188.8	118.0	163.1	288.4	2,817.7	2,208.0	613.8	1,551.3	4,373.1	7,190.8
2009	1,134.3	234.8	789.9	192.4	127.3	140.4	190.0	2,809.1	2,267.3	727.8	1,413.3	4,408.4	7,217.5
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	530.5	138.0	83.6	77.2	0.0	1,332.2	1,273.8	400.3	613.8	2,287.9	3,620.0
2021 ⁺	732.1	130.3	629.5	140.3	88.7	119.9	0.0	1,840.7	1,305.3	411.3	729.7	2,446.4	4,287.0

+ Maryland commercial landings for 2021 are considered preliminary.

Table A4. Total removals (harvest plus discards/release mortality) of Atlantic striped bass by sector in numbers of fish, 1992-2021 calendar years. Note: Harvest is from state compliance reports/MRIP (June 2022), discards/release mortality is from ASMFC. Estimates exclude inshore harvest from NC.

Year	Commercial		Recreational		Total Removals
	Harvest	Dead Discards*	Harvest	Release Mortality	
1992	256,476	189,814	869,779	937,611	2,253,681
1993	314,526	114,317	789,037	812,404	2,030,284
1994	325,401	165,700	1,055,523	1,360,872	2,907,496
1995	537,412	192,368	2,287,578	2,010,689	5,028,047
1996	854,102	257,506	2,487,422	2,600,526	6,199,556
1997	1,076,561	324,445	2,774,981	2,969,781	7,145,769
1998	1,215,219	346,537	2,915,390	3,259,133	7,736,278
1999	1,223,572	347,186	3,123,496	3,140,905	7,835,158
2000	1,216,812	213,863	3,802,477	3,044,203	8,277,354
2001	931,412	175,815	4,052,474	2,449,599	7,609,300
2002	928,085	187,084	4,005,084	2,792,200	7,912,453
2003	854,326	126,274	4,781,402	2,848,445	8,610,447
2004	879,768	156,026	4,553,027	3,665,234	9,254,055
2005	970,403	142,385	4,480,802	3,441,928	9,035,518
2006	1,047,648	152,308	4,883,961	4,812,332	10,896,250
2007	1,015,114	158,078	3,944,679	2,944,253	8,062,124
2008	1,027,824	108,830	4,381,186	2,391,200	7,909,039
2009	1,050,055	133,317	4,700,222	1,942,061	7,825,654
2010	1,031,448	132,373	5,388,440	1,760,759	8,313,020
2011	944,777	82,015	5,006,358	1,482,029	7,515,180
2012	870,684	192,190	4,046,299	1,847,880	6,957,053
2013	784,379	112,620	5,157,760	2,393,425	8,448,184
2014	750,263	114,065	4,033,746	2,172,342	7,070,415
2015	621,952	88,614	3,085,725	2,307,133	6,103,425
2016	609,028	91,186	3,500,434	2,981,430	7,182,077
2017	592,670	98,801	2,937,911	3,421,110	7,050,492
2018	621,123	101,264	2,244,765	2,826,667	5,793,819
2019	653,807	85,262	2,150,936	2,589,045	5,479,050
2020	583,070	58,641	1,709,973	2,760,231	5,111,915
2021	634,552	85,676	1,824,484	2,572,931	5,117,643

* 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 A5. Proportion of total removals (harvest plus discards/release mortality) of Atlantic striped bass by sector in numbers of fish, 1992-2021. Note: Harvest is from state compliance reports/MRIP (June 2022), discards/release mortality is from ASMFC. Estimates exclude inshore harvest from NC.

Year	Commercial		Recreational	
	Harvest	Dead Discards*	Harvest	Release Mortality
1992	11%	8%	39%	42%
1993	15%	6%	39%	40%
1994	11%	6%	36%	47%
1995	11%	4%	45%	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%	2%	51%	35%
2003	10%	1%	56%	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	12%	2%	39%	47%
2020	11%	1%	33%	54%
2021	12%	2%	36%	50%

* Commercial dead discard estimates are 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.

**Shad & River Herring Technical Committee
Meeting Summary**

October 27, 2022

Technical Committee Members: Brian Neilan (Chair, NJ), Wes Eakin (Vice-Chair, NY), Jacque Benway (CT), Kevin Job (CT), Bill Post (SC), Brad Chase (MA), Ingrid Braun (PRFC), Jeremy McCargo (NC), Ken Sprankle (USFWS), Mike Brown (ME), Patrick McGee (RI), Ruth Haas-Castro (NOAA), Matthew Jargowsky (MD), Patrick McGrath (VA), Kevin Sullivan (NH), Jim Page (GA)
ASMFC Staff: James Boyle, Katie Drew, and Caitlin Starks

The TC met via conference call on October 27, 2022 to review updates to the Massachusetts Shad Habitat Plan and the Massachusetts and Maine River Herring Sustainable Fishery Management Plans (SFMPs).

The next SFMPs to be reviewed are from Connecticut (Shad) and the Potomac River Fisheries Commission (Shad).

1. Massachusetts Taunton River Shad Habitat Plan Addition

Brad Chase presented the American Shad Habitat Plan for the Taunton River that was developed to begin a stocking project of juvenile shad. A previous assessment from the 1960s determined there were 45rkm of potential spawning habitat in the river, and Massachusetts seeks to assess the amount of suitable habitat that currently exists and use stocking to restore the population. In 2022, 5 million shad larvae were stocked with the goal of stocking 2-4 million each year at 4-5 locations in the river over the next 6-8 years for a cumulative total of 20 million fish stocked. **The TC recommended the plan for approval by consensus.**

2. Massachusetts River Herring SFMP (Nemasket River Update and Herring River Addition)

Brad Chase presented the updated MA SFMP for River Herring, which included updated information for the Nemasket River and added a section for the Herring River.

Nemasket River

The update proposes the following sustainability metrics:

Sustainability Measures. The ongoing spawning run count with calculated run size will serve as the primary measure to monitor the Nemasket River run status.

Sustainability Target. One fishery-independent sustainability target will be used. Harvest will be capped at 10% of the time series mean (TSM). This value will be recalculated each year.

Primary Action Threshold. The 25th percentile of the Nemasket River run count time series will serve as the primary action threshold to trigger a management response to declining run size.

Management Actions. With two consecutive years where the Nemasket River run count is below the 25th percentile, the sustainability target will be reduced to 5% of the TSM for the following year. Three consecutive years with the run count below the 25th percentile of the time series will trigger a minimum 3-year closure the following year. In order to reopen the harvest, an opening threshold of three consecutive years above the TSM would have to occur.

Secondary Threshold. An annual exploitation rate of 10% of the run size will serve as a secondary threshold or warning limit. Following a single, annual exceedance of this threshold, the Massachusetts Department of Marine Fisheries (DMF) will meet with the Herring Commission to review harvest records and management practices and document the review and cause of increase in exploitation rate in a joint memorandum.

Additionally, the update proposes to limit harvest establishing a harvest period of five weeks, with three harvest days per week, and by establishing a weekly catch limit to 20 fish per permit.

Herring River

The new section concerning the portion of the Herring River in the town of Harwich proposes the following sustainability metrics:

Sustainability Measures. The ongoing spawning run count will serve as the primary measure to monitor the Herring River run status.

Sustainability Target. One fishery-independent sustainability target will be used that limits harvest at 10% of the time series mean (TSM) with adjusted count data for 2009-2022. This value will be recalculated every three years.

Primary Action Threshold. The 25th percentile of the Herring River run count time series distribution will serve as the primary action threshold to trigger a management response to declining run size.

Secondary Threshold. An annual exploitation rate of 10% of the run size will serve as a secondary threshold or warning limit. Following a single, annual exceedance of this threshold, DMF will meet with the Harwich Department of Natural Resources to review harvest records and management practices and document the review and cause of the increase in exploitation rate in a joint memorandum.

Management Actions. In any given year, a run count falling below the 25th percentile will result in DMF reporting this to ASMFC in their annual compliance report for Shad and River Herring, and DMF having a pre-season discussion with Harwich Department of Natural Resources on potential concerns. If the run count drops below the 25th percentile for two consecutive years, the sustainability target will be reduced to 5% of the TSM. If the run count drops below the 25th percentile three consecutive years a minimum 3-year closure will be imposed on harvest for the following year. In order to reopen the harvest, a threshold of three consecutive years above the 25th percentile would have to occur.

Additionally, harvest will be limited by distributing a maximum of 600 permits, establishing a harvest period of five weeks, with three harvest days per week, and by establishing a weekly

catch limit to 20 fish per permit. **The TC recommended the updated plan for approval by consensus.**

The TC also discussed the difficulty of using mortality estimates as sustainability metrics due to the sensitivity of the estimate to variations in age classes. The Stock Assessment Subcommittee for the 2023 River Herring Benchmark Assessment will review alternative methods for estimating mortality that are less sensitive to these variations.

3. Progress Update on Maine River Herring SFMP Addendum

In 2019, the Board approved an addendum to the Maine River Herring SFMP to allow for three provisional fisheries through 2024, with a required update in 2022, in an effort to incentivize the continuation of local restoration efforts. Mike Brown presented the report on the status of the fishery relative to the established metrics with the request that the fishery be allowed to continue for the remainder of its permitted term. Of the three locations that were capable of harvest under the addendum, only one chose to permit harvest. At that location, while mortality is higher than desired (1.79), it is still under the target of 2.0. Repeat spawning was the only metric not met, and the addendum establishes a management action of reducing harvest by 5% of TSM. Notably, one location that did not yet allow harvest met the criteria for inclusion in the state SFMP. **The TC recommended the fishery be allowed to continue under the current guidelines of the addendum for the remainder of the permitted period.**



American Shad Habitat Plan for the Taunton River, Massachusetts

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June 2022

Introduction

American shad (*Alosa sapidissima*) habitat plans are required by the Atlantic States Marine Fisheries Commission (ASMFC) through Amendment 3 of the Interstate Fishery Management Plan for Shad and River Herring. The first Massachusetts shad habitat plan was prepared in 2014 (MA DMF 2014) with an update submitted to ASMFC in 2021 (Chase et al. 2021). This American shad habitat plan for the Taunton River will be included in the next Massachusetts update for ASMFC and follows ASMFC formatting for shad habitat plans. However, the primary purpose at this time is to support the development of a cooperative shad stocking effort in the Taunton River between the Massachusetts Division of Marine Fisheries (DMF), Massachusetts Division of Fish and Wildlife (*MassWildlife*), and the United States Fish and Wildlife Service (USFWS).

American shad spawning runs in Massachusetts occur in two large rivers bordering several states and six small coastal watersheds. The Connecticut River and Merrimack River have relatively large runs of American shad that support recreational fisheries and are managed by multi-jurisdiction management plans (CRASC 1992; and MRTC 1997). The American shad habitat plans for the Connecticut River (CRASC 2014) and Merrimack River (MRTC 2010) were reported independently from the Massachusetts shad habitat plan. The other coastal rivers with known spawning runs present are: Palmer River, Jones River, the Indian Head and South rivers in the North River watershed, Neponset River, and Charles River. The Taunton River historically had a robust shad run and fishery that experienced sharp declines in the early 20th century, with limited recent evidence of a remnant run.

The principal threat identified for most shad runs in Massachusetts in the 2021 ASMFC shad habitat plan was **Barriers to Migration**. However, significant questions exist on the status of potential threats such as water withdrawals and water quality impairment that require further investigation.

Life History. American shad in Massachusetts undergo a late-spring spawning run to natal rivers. Spawning occurs from late April and can extend into July. Shad in New England are iteroparous (individuals can spawn over multiple years) unlike the semelparous (spawn only once) runs in southern states. A synopsis of investigations on American shad spawning habitat requirements (Greene et al. 2009) revealed that although consensus is lacking, shad generally spawn well upstream of the tidal interface at mid-river runs in relatively shallow depths (< 4 m) with more apparent selection to water velocity (0.3 to 0.9 m/s) than to a specific substrate type. Spawning shad release semi-buoyant eggs in the water column that gradually sink to the bottom where hatching occurs in 6-15 days when water temperatures range from 12-17 °C.

Juvenile shad spend their first summer primarily in the lower freshwater reaches of natal watersheds. Emigration of juveniles to tidal waters typically occurs in the fall for northern populations, with southern populations migrating later in the year. Numerous factors influence the growth of juvenile shad in freshwater habitats and the maturity of adult shad in marine waters (Greene et al. 2009). In Massachusetts shad spawning runs, the average age of maturation for shad is typically 5-6 years old, with fish maturing as early as age-3 and returning as old as age-8.

Taunton River

Watershed Information. The Taunton River is the largest river in southeastern Massachusetts and has no barriers that impede American shad passage along the 62 kilometer (km) main stem. The Taunton River includes a large drainage area (approximately 1,456 km²) that is supported by numerous significant tributaries. The Taunton River, which is formed by the confluence of the Matfield and Town rivers in Bridgewater, passes the borders of more than 10 towns before reaching the tidal Mount Hope Bay, which connects to Narragansett Bay (Figure 1). The watershed has a legacy of industrial pollution, yet is unique in Massachusetts among coastal rivers with no dams along its entire main stem.

Fish Ladder Specifications: No fishways in main stem Taunton River.

Regulatory Authority: The principal regulatory authority related to American shad is found with the state regulations of the DMF (coastal) and *MassWildlife* (inland). Wetlands habitat and water quality protections are provided by M.G.L. Chapter 131 §40 and CMR 10.00 and administered by the Massachusetts Department of Environmental Protection (*MassDEP*).

Water Withdrawal Permissions: Three facilities have MA Water Management Act permits with authorized surface and groundwater withdrawals totaling 3.27 million gallons per day (MGD). Of these three facilities, the largest withdrawal at 3.03 MGD is for a municipal public water source.

Water Discharge Data: The main stem Taunton River has a United States Geological Survey stream flow gauge in Bridgewater (No. 01108000, 676 km² drainage area). The average monthly discharge at the Bridgewater gauge station is 900 cubic feet per second (cfs) for April and 554 cfs for May from the time series record of 1929-2020.

Water Quality Monitoring: *MassDEP* assesses waterbodies by comparing water quality to Surface Water Quality Standards (SWQS), identifying threats to habitats, and recommending remedial actions (*MassDEP* 2005 and 2018). The Taunton River watershed was last assessed in 2004 (Rojko et al. 2005); with most of the potential main stem shad habitat listed as *Suitable* to support aquatic life or "Not Assessed."

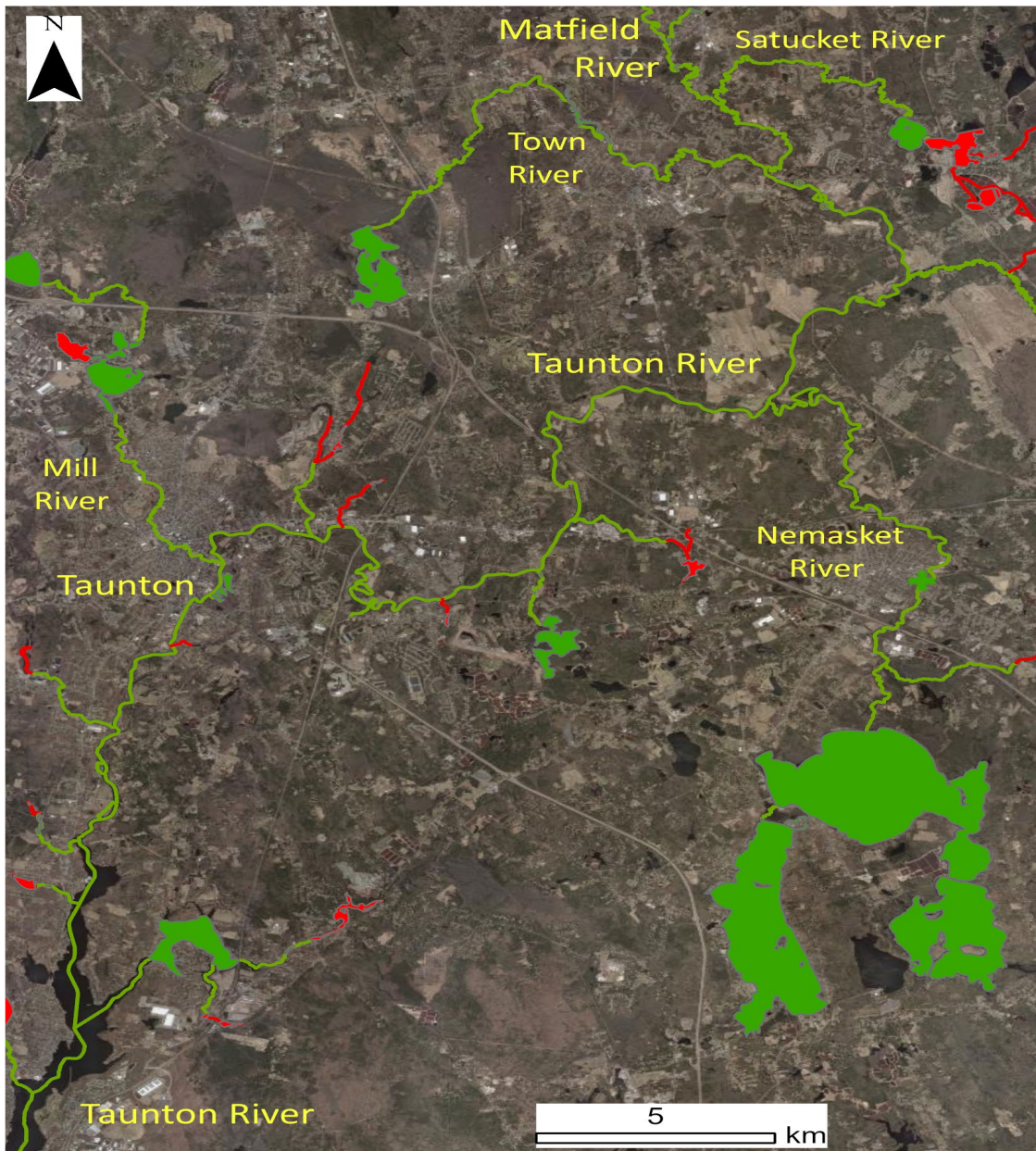
The Taunton River Watershed Alliance (TRWA) has been monitoring water quality throughout the Taunton River watershed for over two decades, measuring levels of nitrate, total phosphorus, and bacteria, along with abiotic metrics. High levels of total nitrogen and total phosphorus have been the greatest impairment to water quality in the Taunton River in recent decades, followed by bacteria levels. Recent improvements in water management, most notably improvements in sewer system integrity and treatment plants and pump station capacity have resulted in declining nutrient and bacteria levels in the Taunton River (TRWA 2019).

American Shad Status

Historical. Belding's (1921) anadromous fish survey of the early 20th century recognized a sharp decline in the historical shad run in the Taunton River. A quote from Belding (1921) suggests the significance of industrial pollution in the watershed and its impact on the shad population, "if not for vast amounts of pollution, the Taunton River with its many branches and ponds would support extensive alewife and shad fisheries. The shad, once present in numbers, is now commercially extinct". The next anadromous fish survey in the 1960s (Reback and DiCarlo 1972) also cited pollution as the primary driver of low shad numbers in the Taunton system as opposed to dams. During this survey, additional work was done to identify shad habitat in the Taunton River. DMF surveyed the stream substrate from the Berkley Bridge in Dighton (between the Segregansett River and Three Mile River tributaries) to the Jenkins Leatherboard Company dam (Town River) in Bridgewater (Figure 2). The Berkley Bridge was the lower limit of salt water intrusion. They documented 45 river kilometers (rkm) of potential spawning habitat in this stretch and highlighted the promising outlook for shad restoration. They also named the Segregansett River and

Nemasket River as Taunton River tributaries with shad present. Reback and DiCarlo (1972) noted a shad stocking project in 1969 that transferred shad eggs from Connecticut River adults to the Nemasket River. During the much of the 1970s and into the 1980s DMF stocked adult American shad in the Taunton River from the Connecticut River with attempts also made to stock fertilized shad eggs (MA DMF, unpublished report). Unfortunately, no monitoring was conducted to assess the response to these stocking efforts.

Figure 1. Taunton River watershed and major tributaries. Waterways in green are passable to diadromous fish and those in red have barriers to passage. Source: DMF Diadromous Fish Restoration Priority List.



Recent Conditions. The most recent DMF anadromous fish survey (Reback et al. 2004) echoes the potential for shad restoration in the Taunton River but recognized that shad stocking in the 1960s and 1970s with eggs and adults from the Connecticut River produced little evidence of success. In recent decades, the status of shad in the Taunton River watershed was largely unknown with a few anecdotal reports of angler catches and observations of individual adult shad.

Figure 2. American shad survey locations in the Taunton River reported by Reback and DiCarlo (1970).



While some American shad populations in other Atlantic drainage rivers have rebounded to varying degrees naturally, others have required external efforts from both habitat restoration and stocking (Hendricks et al. 2002). Proximate, strong runs are likely a significant factor where runs naturally rebound (Pess et al. 2014). Recent American shad stocking efforts in the Charles River, conducted by DMF in collaboration with the USFWS Northeast Region hatcheries, has resulted in documented returns of spawning adult shad. Further, passage improvements concurrent with stocking efforts in the Pawcatuck and Pawtuxet Rivers in Rhode Island have resulted in a returning shad run.

Over the last three decades, water quality and fish passage have improved significantly enough to potentially support a returning shad population in the Taunton River. Water quality improvements are largely the result of increased passage and enforcement of the Clean Water and Wetlands Protection acts, along with the closing of riverside mills. Dam removals and the construction of fish ladders have substantially improved access to upstream habitats to tributaries that were inaccessible for centuries. With these apparently improved habitat conditions, DMF began literature reviews of past records of shad in the Taunton River in 2016 and field investigations on the status of shad in the Taunton River in 2017.

Pre-Stocking Monitoring

The status of American shad in the Taunton River in recent decades is poorly documented. The abundance has substantially declined from historic levels, but little is known on the causes and present level of population abundance and condition of spawning and nursery habitat. Uncommon and intermittent catches of shad by anglers confirm their presence in the Taunton River, but not much else is known. DMF stocked American shad in the Taunton River from 1969 through 1987 with little documented success. Recent successful shad stocking in the Charles River using advanced hatchery methods has led to discussions on other watersheds that might be viable for shad restoration, including the Taunton River. Prior to initiating stocking, more information was needed on the status of a remnant population. Concurrently, DMF has identified the Taunton River as an important coastal river where improved information is needed on diadromous fish population demographics, habitat status, and restoration potential. These data needs have resulted in the development of a monitoring project for American shad in the Taunton River, with pilot work conducted in 2017 and continued through 2021.

In 2017, a beach seining survey was conducted from June – September to target potential juvenile shad nursery habitat. Sampling was conducted throughout the main stem Taunton River, with few suitable sampling locations found above the Weir Village in Taunton. This effort identified six shoreline stations with suitable physical conditions for seine sampling. These fixed stations were sampled during 2018-2021 with sampling targets of 1-2 seine hauls each month. All catches were identified to species where possible, enumerated, and measured, with length measurements taken for all diadromous fish and a subsample of 20 fish for each other species captured. At each station, a YSI 6920 water quality sonde was used to record water chemistry following Quality Assurance Program Plan protocols similar to the DMF's river herring habitat assessments (Chase et al. 2020).

The 2017 seine survey did not catch any juvenile American shad. In 2018, six individual juvenile American shad were caught during the seine survey. Subsequently, very few additional juvenile shad were caught during 2019-2021 and similarly low numbers of adult shad were caught while conducting exploratory boat electrofishing between the Segregansett River and Mill River confluences with *MassWildlife*. The seining and electrofishing surveys conducted during 2017-2021 are documented in further detail in a separate Taunton River American Shad Monitoring Plan (Mattocks et al. 2022). The preliminary results of the 2017-2021 monitoring suggest that the historic population remains extremely depleted. The lack of strong neighboring runs to provide adequate straying to the Taunton River may be a factor in the lack of population response after recent water quality improvements in the watershed.

ASMFC Shad Habitat Plan Framework

1.) Shad Habitat Assessment. The only assessment of shad spawning and nursery habitat in the Taunton River was conducted by DMF in the 1960s. This survey documented 45 rkm of potential spawning habitat in the Taunton River and highlighted the promising outlook for shad restoration. Recent exploratory work has been done in the Taunton River focusing on the documentation of shad presence.

2.) Threats Assessment. No formal threat assessments have been made for shad in the Taunton River watershed. As a river with the uncommon status in Massachusetts of no main stem dams, the threat of **Barrier to Migration** is not a factor. Historical overfishing and industrial pollution were cited in past anadromous fish surveys as impacting shad populations in the Taunton River.

3.) Habitat Restoration Plan. DMF is currently working with *MassWildlife* and the USFWS to prepare a scope for stocking shad in the Taunton River.

Recommended action:

DMF seeks more information on the presence of shad in the Taunton River, the status of potential shad habitat, and the influence of potential threats such as historical and present pollutant loading, and water quality impairment. We expect that a habitat survey and assessment would be useful for this watershed with methods potentially transferable to other watersheds in Massachusetts, but funding is not presently available. We **recommend** the following actions for the Taunton River: (1) assessment of the amount and suitability of habitat for shad spawning and rearing; and (2) continued monitoring to document the status of a shad spawning run.

Agency or Agencies with Regulatory Authority: DMF - coastal waters diadromous fish, *MassWildlife* - inland waters diadromous fish, and *MassDEP* - wetlands and water quality protection.

Action actively being addressed by agency: DMF and *MassWildlife* are presently conducting river bank seining and boat electrofishing to document the presence of shad. Efforts are also underway to develop a cooperative shad stocking project with DMF, *MassWildlife*, and the USFWS.

Initial Habitat Goal: No restoration actions are needed to expand habitat access in the Taunton River. Agency efforts will focus on confirming species status and developing a stocking plan in 2022.

Timeline and Costs for Achieving Goals/Targets. Juvenile American shad stocking is recommended for six to eight years and would cost approximately \$180,000-240,000 with partial reimbursement needed for the regional USFWS hatchery. Monitoring efforts would continue for a minimum of this duration to document changes in adult and juvenile American shad abundances in the river resulting from stocking efforts. Efforts are underway to secure funding sources.

Possible metrics to evaluate progress: (1) comparison of water quality parameters to MA SWQS for supporting aquatic life; (2) discharge range that provides suitable water depth and velocity at river habitats; and (3) American shad population metrics based on seine and electrofishing surveys.

Potential setbacks/areas of concern: The watershed is part of an active water supply and urbanized area with documented surface water quality and stormwater impairments. The municipal needs for water compete directly with water needs for aquatic life, but the effects are unknown.

Other organizations: The USFWS and *MassWildlife* are partners with ongoing shad monitoring and stocking plan development. Additionally, several towns have active river herring wardens that would likely take an interest and perhaps participate in future shad monitoring and restoration efforts as would The Nature Conservancy and the Taunton River Watershed Alliance, active non-profit groups that work to improve the aquatic resources of the Taunton River.

Taunton River Shad Stocking Proposal

The Taunton River watershed was previously reported to contain approximately 45 rkm and 79.5 acres of potential American shad spawning habitat (MA DMF unpublished report). Based on this estimate, we propose stocking 2-4 million juvenile American shad each year at 4-5 locations in the river over 6-8 years with a cumulative target of 20 million fish stocked. To achieve this goal, approximately 350 broodstock fish would be collected annually from the Connecticut River at the Holyoke Dam fish lift with surviving adults released post-spawning. A cost-sharing or grant funding approach will need to be developed to fund this effort. Additionally, monitoring for juveniles during the summer and fall would continue to document survival; adult monitoring would begin after 3 years of stocking to determine project success (monitoring

methods are still being explored to determine the most effective option). The ultimate goal of this effort would be a self-sustaining population that eventually could be opened for recreational fishing.

The DMF prepared a shad stocking proposal in December 2018 for review by the three participating agencies. DMF and USFWS prepared a Memorandum of Agreement to initiate a 5-year Taunton River shad stocking project (approved June 2022).

The Taunton River shad stocking project will include monitoring that will utilize ASMFC recommendations for shad monitoring and investigate the potential to develop shad population indices of abundance for the Taunton River (Mattocks et al. 2022). Updates of the shad stocking project will be provided in the annual ASMFC Shad and River Herring Compliance Report for Massachusetts.



American shad caught in the Taunton River, May 2015

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MASSACHUSETTS RIVER HERRING SUSTAINABLE FISHERY MANAGEMENT PLAN

Submitted by the Massachusetts Division of Marine Fisheries
to the Atlantic States Marine Fisheries Commission

Nemasket River, Middleborough/Lakeville SFMP – page 1
Herring River, Harwich SFMP – page 19

August 29, 2022 – ASMFC Review Draft



Bank Building, 20 Centre Street, Middleborough, Massachusetts 02346

Nemasket River Sustainable Fishery Management Plan for River Herring

Developed Cooperatively by the Massachusetts Division of Marine Fisheries and
Middleborough-Lakeville Herring Fishery Commission

INTRODUCTION

The Taunton River watershed contains at least 10 tributaries that support river herring runs of which the Nemasket River is acknowledged as one of the largest runs in Massachusetts. River herring harvest in Massachusetts has been prohibited since 2006 due to concerns over declining stocks. The objective of this Sustainable Fishery Management Plan (SFMP) is to allow a reopening of the recreational river herring fishery in the Nemasket River, located within the towns of Middleborough and Lakeville, Massachusetts (Figure 1). This 2022 SFMP is an update of the original SFMP prepared cooperatively by Massachusetts Division of Marine Fisheries (DMF) and the Middleborough-Lakeville Herring Fishery Commission (Herring Commission) and approved by the Atlantic States Marine Fisheries Commission (ASMFC) in 2016.

River herring were an important food source for Native American tribes living along Massachusetts coastal rivers. The Wampanoag tribe established villages along the Nemasket River (which means “place of fish”) and caught herring during the annual spring migration. The Wampanoag taught the early European settlers to catch herring for sustenance and for fertilizer. Soon after Middleborough was incorporated as a town, laws were established for commercial and sustenance river herring harvest. The early Middleborough rules provided allowances for citizens to catch herring, with shares given to widows, orphans, and the poor. Mill owners along the river were required to allow the passage of herring during the annual migration. Also, around this time, a long-standing practice began to elect or appoint herring wardens to oversee the herring catch and enforce the fishery regulations. The Town of Lakeville split from Middleborough in 1853 and established itself as a separate town. The incorporating legislation specifically states that Lakeville and Middleborough jointly manage the Nemasket River herring fishery and jointly share profits (Appendix 1).

Two species of river herring occur in the Nemasket River. A large majority are alewives (*Alosa pseudoharengus*) that typically arrive in mid-March; although in warm winters, they can arrive in late-February. Blueback herring (*Alosa aestivalis*) follow two to three weeks later. River herring are present throughout April and into May. Traditionally the upstream migration peaks in April and fades during the second or third week of May, although in times of abundance the run can continue into June.

WATERSHED

The Taunton River starts at the confluence of the Matfield River and Town River and flows into Mount Hope Bay near the City of Fall River. The Taunton River is unique among large coastal rivers in Massachusetts in having no main stem dams. The entire watershed is 562 mi² and covers a wide range of rural, suburban, and urban areas in 43 towns and cities. One stream flow gauge station is present on the main stem river in Bridgewater (USGS #01108000; drainage area = 261 mi²). The mean April discharge for the time series to present is 896 cfs. The river was used extensively for commerce and waterpower during colonial and industrial times. Presently, the mills have long since been closed, water quality has improved, and the Taunton River is now designated as a Wild and Scenic River by the U.S Congress.

The eleven-mile long Nemasket River starts at the Assawompsett Pond dam and flows north, entering the Taunton River near the Bridgewater/Middleborough line. The Nemasket River has low gradient and water velocity throughout the entire length and has only one small section with swifter flow, a short distance below Wareham Street in Middleborough. The river is crossed by ten roads (including a multi-lane highway) and two railroad tracks. The low grade and changes in water supply withdrawals may have contributed to recent increases in invasive aquatic vegetation and siltation. The upper one third of the river forms the boundary between Middleborough and Lakeville. For approximately the lower two thirds of its length, the Nemasket River flows entirely within Middleborough.

Overall, river herring migrate approximately 23 miles and must pass three obstructions in the Nemasket River on the way from Mount Hope Bay to the spawning grounds in the Assawompsett Pond complex. A partially restored colonial mill complex is located at Oliver Mill Park, an attractive and popular public park that includes a large and functional pool and weir fish ladder constructed by the DMF Fishway Crew in the 1980s (Figure 2). The second obstruction is a remnant industrial mill dam and a movable bascule gate from a former power plant at Wareham Street. A concrete pool and weir fish ladder is located here; originally built in 1874 and most recently by the DMF Fishway Crew in 1996 (Reback et al. 2004). The third obstruction is the Assawompsett Pond dam that includes a 1968 Denil fish ladder: the first Denil built in Massachusetts (Reback and DiCarlo 1972). Recently, water level operations have allowed passage directly through the gates of the dam, negating the need for the fish to use the ladder.

SPAWNING HABITAT

The Assawompsett Pond complex consists of Assawompsett Pond, Pocksha Pond, Great Quittacus Pond, Little Quittacus Pond, and Long Pond providing over 5,000 acres of river herring spawning and nursery habitat. The first four are directly connected, forming the largest natural pond complex in Massachusetts. This amount of habitat is certainly a contributing reason why the Nemasket River hosts one of the largest herring run in Massachusetts. Much of the surrounding watershed land, except for Long Pond, is owned by cities, the state, or conservation trusts. Long Pond has experienced more traditional lakeside development, with many seasonal cottages now trending towards year-round neighborhoods.

All ponds in the Assawompsett Pond complex except Long Pond are protected water supply reservoirs for the cities of Taunton and New Bedford. As such, the cities vigorously protect the watershed, and did not even allow fishing from the shore for almost a hundred years. Given the protections and goals of the water supply, the lakes have maintained suitable water quality. The lakes are shallow and prone to temperature changes, although except for years of very low water, there has been no observed limitation of spawning or nursery habitat quality. Spawning adult herring can access the entire pond complex, except for Little Quittacus Pond which is gated off to ensure herring do not enter the intake pump at the New Bedford water treatment plant. Juvenile herring remain in the pond complex for several months, until exiting during a seaward migration occurring primarily in the fall.

HERRING FISHERY COMMISSION

The towns of Middleborough and Lakeville have a long-standing commitment to manage and protect the Nemasket River herring run. This tradition has been supported by monetary incentives and interest to sustain a natural resource used widely by the public. Over the years, individuals and commercial enterprises were allowed allotments of herring and commercial licenses were issued through annual bids. For many years, Middleborough and Lakeville residents were allowed one bushel of herring annually. Commercial herring fishing on the Nemasket River ended in 1965. For many decades, herring wardens were appointed by the Selectmen, but no formal program was in place. In 1996, the current Herring Commission was established, and new harvest rules were promulgated. Any Middleborough or Lakeville residents could buy a permit allowing up to four dozen (48) herring being taken per week, with four days open for harvest. Three hundred permits were reserved for residents of other communities. The harvest was overseen by the wardens and several volunteer observers. The season ran from the last Wednesday in March to June 15, although catching usually ended in May as the herring run faded. This system remained in place until DMF instituted the ban on recreational herring harvest in 2006.

The current Herring Commission consists of seven volunteer fish wardens, appointed jointly by the Boards of Selectmen in Middleborough and Lakeville. Wardens are the voting members of the Commission and are assisted by several volunteers. The Commission is broadly charged with administering and enforcing herring harvest regulations, maintaining and enhancing herring habitat, and public education on the herring run. It was agreed that since the spawning grounds and river boundaries were in both Middleborough and Lakeville, and the law gave control of the herring fishery to both towns, then both towns should work jointly to protect the herring. Operating as a Chapter 44, Section 53E and ½ revolving fund agency, Commission funds came solely from the sale of herring permits. With the ban on herring catching, no permits have been sold and no operating funds have been generated since 2005. Through frugal management practices the Commission presently maintains an annual operating budget.

POPULATION AND HARVEST ESTIMATES

Early in the 20th century Belding (1921) reported the Nemasket River herring run was underperforming mainly due to blockages and pollution related to mill works on the river. The herring harvest in 1912 was reported as 200 barrels (estimated as about 193,000 fish at 965 fish/barrel) with an estimated potential of 2,000 barrels (about 1,930,000 fish) (Belding 1921). A review of more recent river herring surveys by DMF (Reback and DiCarlo 1972; Reback et al. 2004) and Herring Commission files reveals a pattern of improvement in the herring run during the 20th century that may reflect rebounding habitat quality as mills closed, reconstructed fishways, and the stewardship of the Herring Commission.

Volunteer herring counts were established in 1996 and utilize a ten-minute count at the exit of the Wareham Street fish ladder, along with recording air temperature, water temperature, weather at the time of the count, and barometric pressure. The volunteer count data were provided to DMF, who then calculate annual estimates of herring passage based on extrapolating the ten-minute counts.

The Nemasket River herring count data was revisited in 2012 to generate run size estimates using a random stratified sampling design recommended by DMF (Nelson 2006). The updated analysis partitions 10-minute counts into three periods of each day. This approach avoids bias that can occur when counts are concentrated at a time of day of run peaks and these data influence the extrapolated results for other times of the day. The updated analysis results in lower run size estimates than the earlier method (Table 1, Figure 3). The run size time series shows a low period of 2004-2005 of less than 250,000 herring each year, followed by a moderate increasing trend since the harvest ban in 2006. The series high estimate was over 1.3 million fish in 2002 followed by about 840,000 fish in 2013. These catch numbers relative to

other herring counts in Massachusetts support the commonly held assertion of the Nemasket River being one of the largest herring run in the state, and the largest run in many years.

For decades prior to 1996, the residents of Middleborough and Lakeville were allowed one bushel of herring per year, although recreational harvest enforcement was not consistent and was poorly reported. The illegal harvest of herring mainly for lobster and striped bass bait became a growing problem that no records can accurately describe. In 1996, local control was formally established, and the Herring Commission has since endeavored to record recreational herring catch numbers. Issued permits were formatted to allow Herring Wardens at the catching station to record the number of fish taken on each catching day. Harvest permitting ceased with the state-wide ban in 2006.

Stocking Source. The Nemasket River has been a source of river herring for stocking to augment or create runs at other rivers for many decades. For the last ten years, the Herring Commission participated in formal multi-year stocking programs in cooperation with DMF. Typically, the Commission provided 2,000 herring per year to restock other runs on a five-year program. The five-year period allowed for one or two years of continued stocking after the first returns of spawning fish should have occurred. Stocking efforts have been recently conducted for the Town River, Three Mile River, and Ten Mile River, and in cooperation with the Rhode Island Department of Environmental Management, University of Massachusetts, and DMF for stock enhancement and research purposes.

SUSTAINABLE HARVEST PLAN

ASMFC. The Atlantic States Marine Fisheries Commission's Amendment 2 to the Interstate Fishery Management Plan for Shad and River Herring gives states guidance for developing Sustainable Fishery Management Plans (SFMP) for river herring (ASMFC 2009). These plans are to be developed and approved by State jurisdictions then reviewed by the ASMFC Technical Committee (TC) and if suitable forwarded to the ASMFC Shad and River Herring Management Board (Board) for approval. The premise is that SFMPs should allow harvest while not diminishing the potential future reproduction and recruitment of herring stocks. The SFMPs are based on Sustainability Targets that relate management responses to population action and warning levels. SFMPs can be river-specific, regional or state-wide.

***ASMFC Sustainability Targets.** The recommended sustainability targets in Amendment 2 included: spawning stock biomass, fish passage counts, mortality rates, repeat spawning ratio, and juvenile abundance indices. From these measures, thresholds or targets shall be set to prompt action level (management action such as fishery closure or regulation change) or warning level responses (documentation and management planning).*

The first ASMFC review of SFMPs occurred during 2011-2012 when state plans from ME, NH, NY, NC and SC were approved. The sustainability targets from these SFMPs were mainly based on exploitation rates, escapement targets related to fishery dependent harvest or independent herring spawning run counts. Additionally, a recruitment failure definition and a juvenile index were applied in one case each as sustainability targets. Several states indicated their intention to investigate the future use of population metrics (mortality, length, CPUE, and repeat spawning ratio) as sustainability targets or warning limits.

ASMFC Update. During the 2017-2018 review of new SFMPs and renewals from 2011-2012, the TC identified several inconsistencies between state SFMPs and the requirements of Amendments 2 and 3. As a result, the Board tasked the TC with developing proposed improvements to Amendments 2 and 3 regarding the five items below. The Board reviewed the TC recommendations in February 2021, and subsequently directed the TC to develop a technical guidance document to ensure that implementation of the Amendment 2 and 3 requirements related to the issues outlined below are consistent with the TC

recommendations. The guidelines were presented to the Board in April 2021 (ASMFC 2021). The Nemasket River SFMP was prepared with consideration for these ASMFC guideline updates.

- 1.) Management and monitoring of rivers with low abundance and harvest of shad and river herring.
- 2.) Standardization of SFMP requirements: content, metrics, and management responses to triggers.
- 3.) Improved integration of stock assessment information into SFMPs.
- 4.) Clarification of de minimis requirements as they pertain to SFMPs.
- 5.) Review SFMP renewal schedule and the number of years of data required for a suitable SFMP.

Herring Commission Objectives. The Herring Commission sent an inquiry to DMF in December 2013 regarding the potential and process for opening harvest of river herring at the Nemasket River. Consequently, several meetings occurred to discuss the topic and DMFs staff evaluated the available biological and count data to develop metrics for a river herring SFMP. The Commission, with their decades of experience managing the Nemasket River run, stated their belief that their previous harvest system of permitting, reporting, and limited harvest days under Commission supervision would allow a sustainable harvest. They support this contention by outlining that the modest harvest of 1999–2005 averaged about 15% of the annual run count with no evidence of impact on future recruitment. Furthermore, these harvest years include two of the lowest run counts in the time series (2004 and 2005) that were followed by nearly 10 years of steady improvements to run counts. Therefore, they expressed an interest in opening harvest to allow similar catches as occurred in 1999–2005, that when removed from the present stock, would constitute an exploitation rate of approximately 10% of the spawning run size.

State Role. DMF supported the request and proceeded to develop a SFMP for the Nemasket River herring run that was ultimately approved by the ASMFC in December 2016. The approved SFMP could have been implemented in 2017; however, the Herring Commission elected not to open harvest due in part to concerns over being the only run open to harvest in Massachusetts and a sharp downturn in the 2017 run size. The Commission did not elect to harvest herring during 2017–2022. They wish to update the plan in 2022 to support a future decision to open harvest. DMF supports this approach and has cooperatively updated the SFMP with additional data from 2016–2021.

Management Unit. The SFMP has a river-specific management unit of the Nemasket River herring run in the Towns of Middleborough and Lakeville.

Sustainability Measures. The ongoing spawning run count with calculated run size will serve as the primary measure to monitor the Nemasket River run status.

Sustainability Target. One fishery-independent sustainability target will be used. Harvest will be capped at 10% of the time series mean (TSM). This value will be recalculated each year. This level was selected as a conservative level of harvest that will be lower proportionally than 1999–2005 harvest levels in the Nemasket River and will allow within-year management measures to adjust daily limits and close harvest when the harvest target is reached. Table 1 and Figure 3 provide the run count statistics that formed the basis of the recommended sustainability target.

Primary Action Threshold. The 25th percentile of the Nemasket River run count time series will serve as the primary action threshold to trigger a management response to declining run size.

Management Actions. With two consecutive years where the Nemasket River run count is below the 25th percentile, the sustainability target will be reduced to 5% of the TSM for the following year. Three consecutive years with the run count below the 25th percentile of the time series will trigger a minimum 3-year closure the following year. In order to reopen the harvest, an opening threshold of three consecutive years above the TSM would have to occur.

Secondary Threshold. An annual exploitation rate of 10% of the run size will serve as a secondary threshold or warning limit. An exploitation rate of 10% of annual run size would recently have been similar to a harvest target of 10% TSM; but also would provide an alternative annual signal of how harvest relates to run size. Two exploitation rates in ASMFC-approved SFMPs presently target 18% (SC) and 20% (NH) of average run counts. Annual exploitation rates will be tracked each year with a threshold of 10% assigned as a warning limit. Following a single, annual exceedance of this threshold, DMF will meet with the Herring Commission to review harvest records and management practices and document the review and cause of increase in exploitation rate in a joint memorandum.

Potential Future Metrics. With the SFMP implementation, and increasing time series, efforts will be made to develop additional primary and secondary thresholds. DMF has conducted annual biological sampling of alewife and blueback sex, size, and age data at the Nemasket River since 2004 (Table 2, and Figures 4-6). These data allow the calculation of age, length, weight statistics and estimates of sex ratios, mortality, and survival. The target sampling level is 100 river herring per week for the duration of the run to meet suitable levels of power to discern trends (Nelson et al. 2011) for both sexes and species. The targeted run duration is usually six weeks. Aging is conducted using otoliths and following published DMF protocols (Elzey et al. 2015).

The data derived from biological sampling can provide additional information on population status and supporting evidence for management measures. However, as found in Nelson et al. (2011), the length and age metrics for river herring analyzed to date in Massachusetts provide little predictive power when related to population abundance. Mean lengths and mean ages of fish within a run can point to long-term changes in demography, but the current time series appears to be tracking inter-annual fluctuations in year class recruitment into the population and indicates that robust age structure has not been recovered. With these conditions, it is not presently possible to clearly identify thresholds associated with the biological data. This limitation is not unexpected nor prevents the development of future metrics: 18 years of size and age data allows the tracking of about four generations of river herring. DMF recommends that biological data continue to be collected from the Nemasket River herring run with the goal of developing population thresholds based on the following metrics:

Age Structure. Evidence of age structure truncation is present now in Massachusetts river herring populations, including the Nemasket River population. Additional cohorts to evaluate age structure or mortality rates may become useful for setting warning limits. Changes in age structure will be examined annually using the χ^2 test as described in Davis and Schultz (2009).

Repeat Spawners. A target percentage of repeat spawners in annual spawning run could be used for setting a warning limit. However, with the present focus on otoliths for aging, it would take a renewed effort to collect and process a subsample of scales from older Nemasket River herring to compare to earlier scale samples.

Escapement Targets. Alternatively, to annually opening harvest at the start of the run, the Commission could consider not allowing harvest until a suitable escapement target of incoming spawners was met. The escapement target would depend on real-time reporting from an electronic or video counting station at one of the Nemasket River fishways and relate counts to a spawning habitat productivity metric. For example, the Maine Department of Marine Resources uses a calculation based on spawners per surface acre of spawning and nursery habitat (Havey 1961, Havey 1973) to set escapement targets. This would guarantee a certain number of spawners entering the spawning habitat and guard against unexpected low returns.

One potential drawback in some systems could be focusing the harvest on later arrivals that may have a higher proportion of younger fish or blueback herring.

HARVEST MANAGEMENT

Opening harvest in a single river creates management and enforcement challenges given that Massachusetts has over 100 rivers and 50 coastal towns that contain river herring runs. Ideally, a regional approach would be established to allow several runs to open at the same time. This would reduce concerns over harvest compliance and enforcement while providing a larger opportunity for Commonwealth citizens who are not town residents to purchase harvest permits. This has been a goal of DMF; however, few herring runs presently have the full complement of favorable stock status, a suitable data series, and the infrastructure and dedication found in the Herring Commission. Since the first SFMP was approved in 2016, three other Towns have requested a harvest opening with only Herring River in Harwich advancing to the present SFMP update.

The prior Nemasket River harvest was managed by the Herring Commission until the 2006 state-wide ban (Appendix A2). They used a proven system of selling an unlimited number of permits to residents and 200–300 permits to non-residents with a weekly maximum catch of 48 fish that could be taken on four open days at only one catching area. Catching was only allowed in the presence of a Herring Commission warden or volunteer observer. The permits were printed with punch-card features on the border that allowed the herring wardens to mark each weekly harvest.

The Herring Commission was interested in opening harvest in 2017 with an approach similar to pre-2006 that allowed a large permit base to have access to 48 fish per week with the acknowledgement that many permit holders won't maximize their allowable catch. After review of three alternative management options, the sustainability target of 10% of the TSM using the following approach was selected for balancing the interest of providing access to a large number of permit holders and preventing overages of the harvest target.

Harvest Permits. Typically, 600-700 resident permits were sold per year in the decade prior to the harvest ban and non-resident permits were capped at 200-300 and provided via lottery. The available harvest records do not presently allow a determination of the harvest rate per permit or number of inactive permits. However, the Herring Commission's impression is that a majority of permits did not realize their maximum harvest rate, and many were inactive or marginally used. Therefore, this proposal seeks to limit the potential for overharvesting the sustainability target by reducing the harvest period to five weeks, reducing the harvest days to three per week, and reducing the weekly catch limit per permit to 20 fish. Using the range of permits sold previously, this approach would have a potential maximum harvest that ranged from 80,000 to 100,000 fish (800 to 1000 permits). By allowing unlimited resident permits and 250 non-resident permits via lottery the Commission is expecting about 900 total permits. The maximum harvest under this scenario would be 90,000 fish. An assumed harvest rate of 50% of the maximum potential harvest would result in a harvest of 45,000 fish.

The potential for harvest to exceed the sustainability target exists for this approach if a high proportion of permit holders takes the full weekly harvest each week. This proportion is expected to be low given the Herring Commission's past experience. This outcome is hard to predict but will be easily tracked once harvest is open. The SFMP will diligently monitor harvest performance by permit and week in order to make annual adjustments to relate the harvest target to the numbers of permits issued.

The previous "punch-card" permit system would be augmented with the issuance of daily catch cards to each permit holder that harvests herring. The card would indicate the date, permit number, and number of fish. State regulations will be changed by DMF to require that any possession of river herring in Massachusetts be accompanied by the Nemasket River harvest permit and the daily harvest card. Herring frozen in bags must have the original daily harvest card placed in the bag. The permits and daily catch cards would be professionally printed on waterproof paper.

The usage of harvested river herring trended sharply towards striped bass bait in the decade leading up to the state-wide harvest ban. DMF recognizes that a component of the concern that led to the state-wide ban on river herring harvest was excessive harvest and declining conservation ethics related to the harvest for lobster and striped bass bait. Under this SFMP, recreational bait use will be allowed; however, the SFMP seeks to promote and encourage traditional uses of consumption of river herring as grilled, pickled, and smoked fish and fried roe. There will be public outreach associated with the implementation of the SFMP that encourages responsible use of herring for bait and traditional use as food. The Herring Commission will also consider accommodating requests for food as able. For example, requests for only females for roe harvest might be allowed when manageable on-site during the three open days per week. In these cases, the Herring Commission should record the female only harvests and compensate daily as needed by providing males for bait use.

Native American Harvest. The Commonwealth of Massachusetts recognizes the aboriginal practice of the Wampanoag tribe to harvest river herring in Massachusetts. In prior years, a Memorandum of Agreement was signed between DMF and the tribe with the agreement that harvest was an aboriginal right for sustenance purposes only and that harvest would be reported by river to DMF. The tribe's harvest is not bound to SFMP measures; however, an accurate accounting of their harvest in the Nemasket River will assist a successful SFMP. DMF will discuss the possibility of issuing free permits to the Wampanoag tribe and to coordinate with the tribe to encourage responsible harvest, record keeping, and the potential to include tribal harvest in annual sustainability targets under the SFMP.

STATEWIDE REGULATIONS AND ENFORCEMENT

For this harvest opening to be successful and enforceable, the process will need a tightly managed accounting system for daily harvest, well-planned coordination with the State Environmental Police, and participation from Town law enforcement. A coordination meeting will be held with the Massachusetts Environmental Police, DMF, Town Police, and the Herring Commission each year prior to the season start. DMF will enact changes to the existing state regulations that ban state-wide harvest to allow harvest and possession of Nemasket River herring in accordance with this SFMP. This process will include a review of existing penalties for non-compliance and updating the penalties as needed.

The Massachusetts Environmental Police has recommended that the Herring Commission provide information on permit records and seasonal harvest records to improve the enforcement of harvest regulations. The ideal approach would be to have an online source of permit records and the names and schedules of herring wardens available at the start of each season with weekly updates in harvest by permit. The Herring Commission may not presently have the capacity to provide permit data or weekly harvest records online. However, the Herring Commission recognizes the value in these communications for law enforcement and will endeavor to prepare a spreadsheet of permit holder information and river herring warden names, schedules, and phone numbers for the start of the harvest season.

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TABLES & FIGURES

Figure 1. Nemasket River Watershed. Source: DMF Diadromous Fish Restoration Priority List. River herring can access green locations and red locations are impassible to river herring.

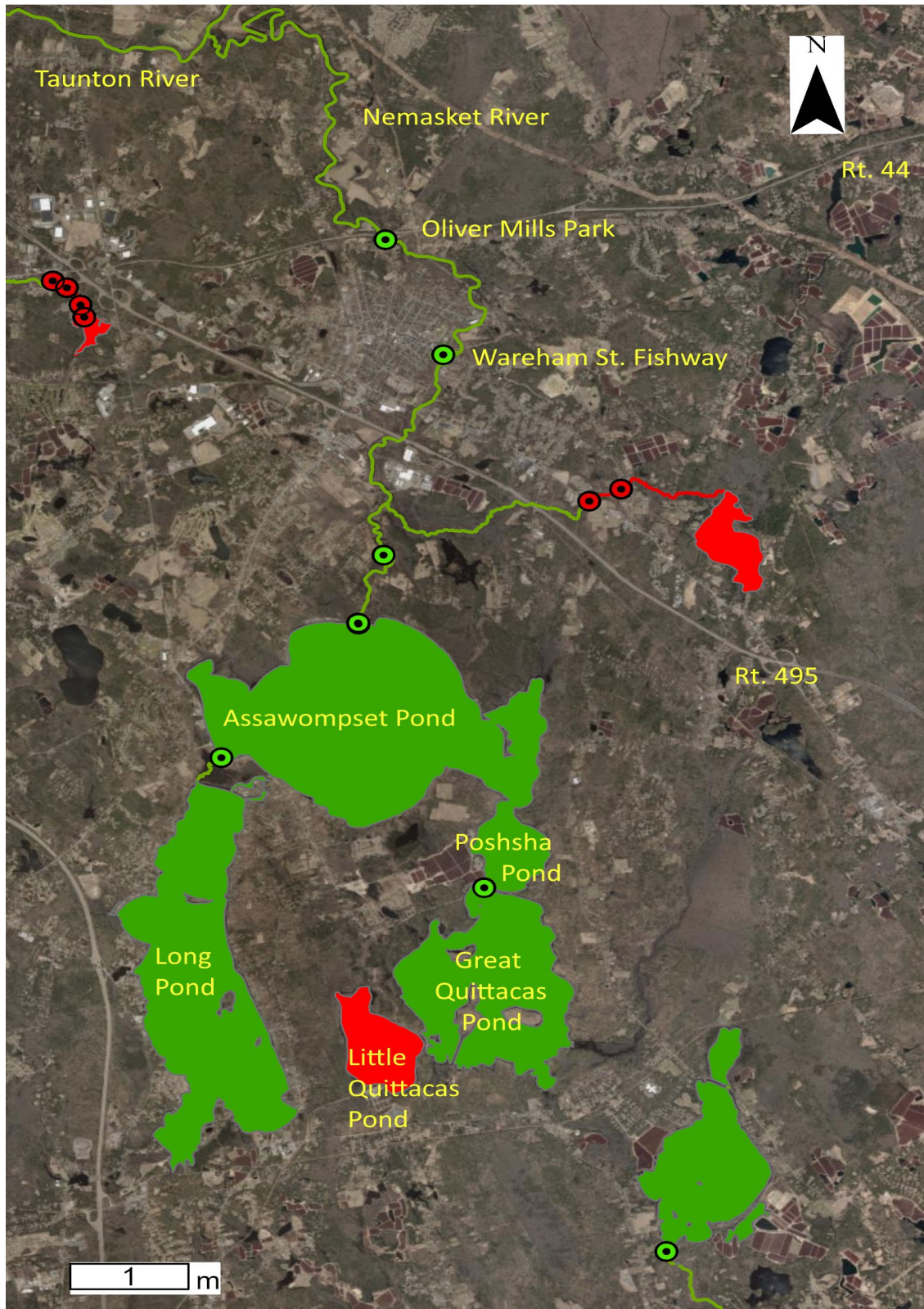


Figure 2. Oliver Mill Park, Nemasket River, Middleborough.



Figure 3. River herring spawning run count for the Nemasket River, Middleborough/Lakeville, Massachusetts. Graphical presentation of Table 1 data showing the time series mean (TSM), 1st quartile (25th percentile) and sustainability target (10% of TSM) as blue line.

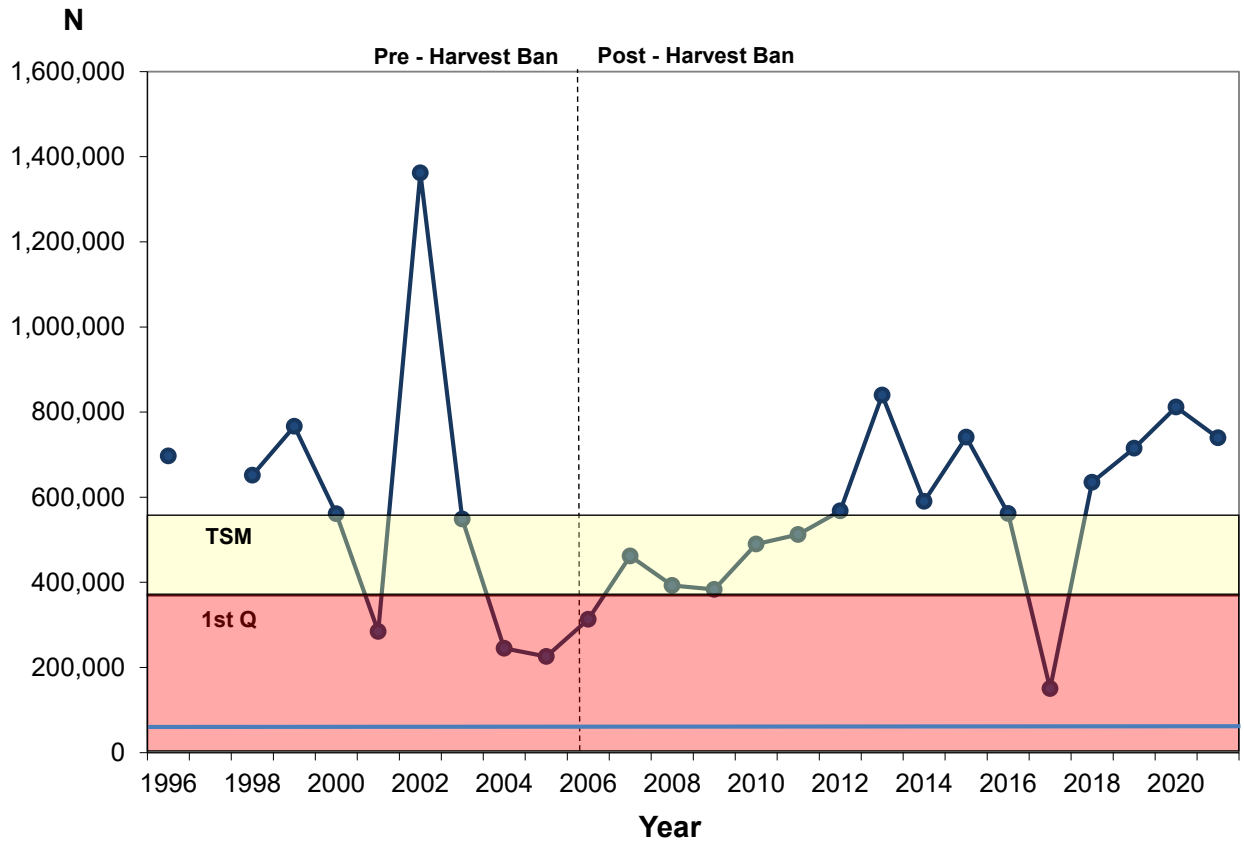


Table 1. River herring spawning run counts, prior harvest data, and Sustainable Fishery Management Plan metrics for the Nemasket River at the Wareham Street fishway, Middleborough, during 2004-2021.

Year	Spawning Run Count (No.)	Permits (No.)	Harvest (No.)	Harvest % of Count (%)	Summary Statistics
1996	696,666				
1997					
1998	651,441				
1999	766,694	742	104,992	0.14	
2000	560,986		76,426	0.14	
2001	284,498	1966	59,514	0.21	
2002	1,361,691	2698	86,301	0.06	
2003	548,835	2113	61,945	0.11	
2004	244,832	2109	64,593	0.26	
2005	225,904	1931	33,964	0.15	
2006	313,242				N (years) 25
2007	462,000				Mean 569,869
2008	392,451				Median 561,538
2009	383,338				Minimum 150,392
2010	489,931				Maximum 1,361,691
2011	512,139				1st Quartile 392,451
2012	567,952				10% of TSM 56,987
2013	840,033				
2014	590,105				
2015	741,048				
2016	561,538				
2017	150,392				
2018	635,234				
2019	714,951				
2020	811,568				
2021	739,266				

Table 2. Summary total length statistics for alewife sampled by DMF from the Nemasket River at the Wareham Street fishway during 2004-2021.

	Year	N	Mean	SD	2SE	Min	Max	
Female	2004	127	291.5	14.36	1.30	255	324	
	2005	130	280.4	15.20	1.34	248	318	
	2006	127	275.3	13.66	2.37	244	316	
	2007	255	278.1	12.41	1.64	197	320	
	2008	228	281.9	12.49	1.39	250	320	
	2009	191	278.3	11.33	1.87	249	310	
	2010	277	281.4	11.67	1.51	256	317	
	2011	220	287.1	11.21	1.63	254	315	
	2012	154	284.3	13.44	2.11	258	325	
	2013	213	279.5	9.79	1.50	258	312	
	2014	236	287.2	11.63	1.48	254	327	
	2015	248	286.6	11.92	1.49	253	312	
	2016	258	296.3	14.20	1.73	253	330	
	2017	223	276.5	15.96	2.09	247	327	
	2018	167	280.6	13.45	2.04	242	327	
	2019	251	285.7	9.23	1.14	256	320	
	2020	228	286.1	11.59	1.50	241	310	
	2021	239	276.3	13.39	1.70	250	314	
	Male	2004	141	282.6	15.15	2.51	248	311
		2005	148	273.0	16.11	2.77	233	309
2006		197	265.1	13.35	1.86	238	315	
2007		395	276.6	12.84	1.03	212	300	
2008		276	269.1	12.94	1.59	225	300	
2009		313	268.1	11.06	1.38	240	308	
2010		276	272.1	10.67	1.26	237	300	
2011		283	275.2	11.42	1.69	237	298	
2012		229	270.3	12.50	1.63	240	303	
2013		284	270.5	10.14	1.43	243	295	
2014		324	277.2	11.24	1.22	249	309	
2015		281	276.8	11.87	1.40	237	310	
2016		321	282.1	13.30	1.46	252	316	
2017		318	263.8	17.50	1.93	195	309	
2018		398	269.0	11.80	1.16	240	300	
2019		306	276.5	7.76	0.87	255	308	
2020	295	276.0	10.62	1.21	248	300		
2021	288	264.8	10.74	1.24	236	300		

Figure 4. Average age of alewife sampled at the Nemasket River, Middleborough, during 2004-2021.

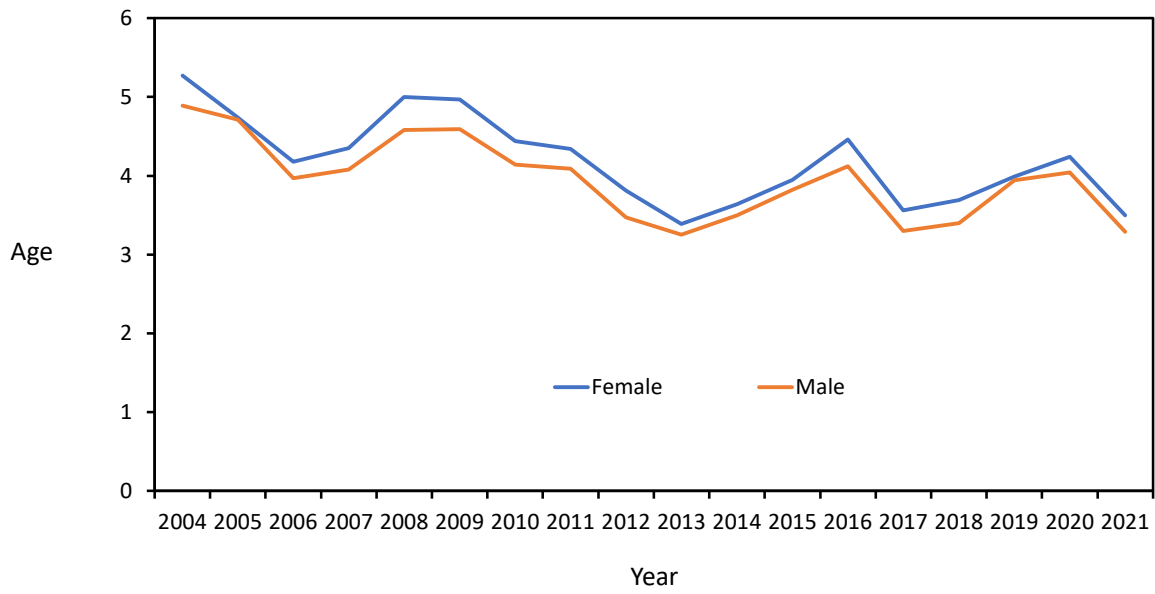


Figure 5. Average instantaneous mortality rate (combined sexes, $Z \pm 2$ SE) of alewife sampled at the Nemasket River, Middleborough, during 2004-2021.

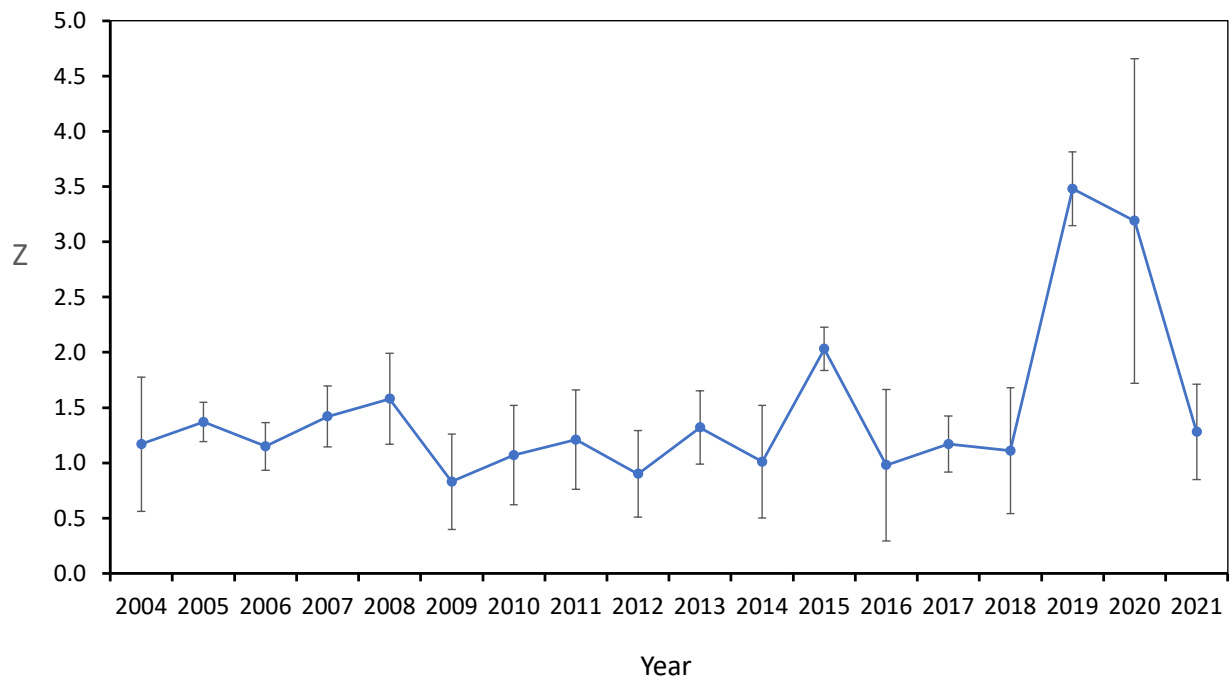
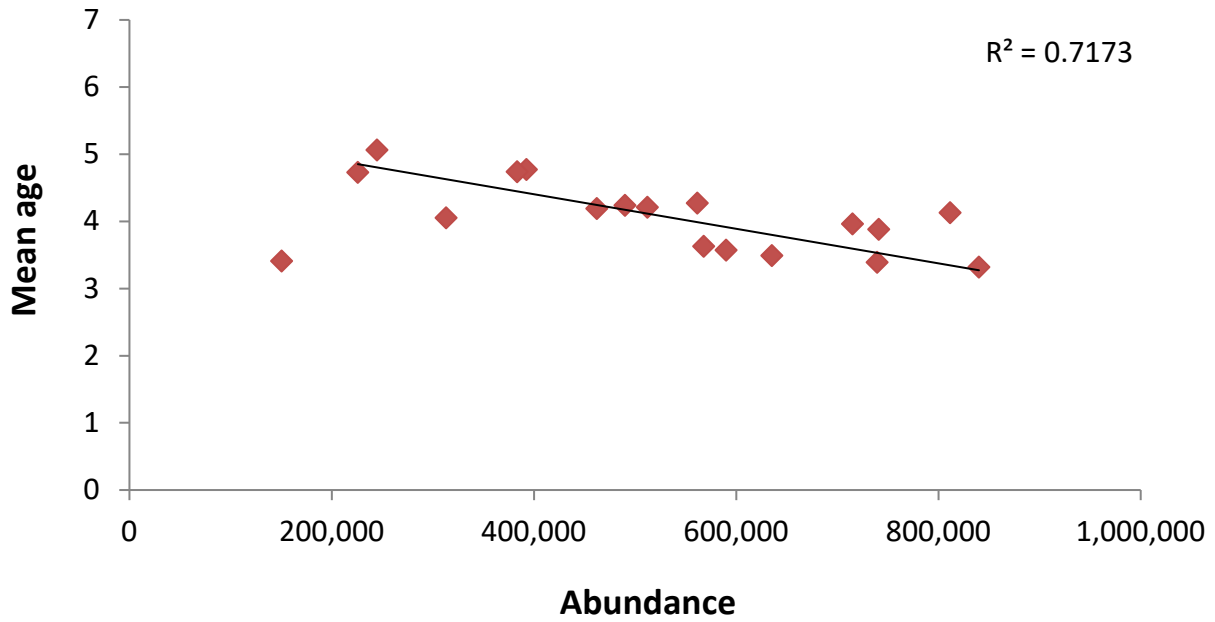


Figure 6. Scatterplot with linear trend of the annual mean age (combined sexes) against spawning run abundance for alewife sampled at the Wareham Street fishway, Nemasket River, Middleborough, during 2004-2021. The R^2 value improves to 0.770 with the removal of the time series low abundance value (150,392) from 2017.



APPENDIX

A1. Massachusetts Legislature, Acts of 1853; Chapter 338, Section 5 of the Act incorporating the Town of Lakeville, Massachusetts.

"The alewife fisheries of the Nemasket River shall be and remain the property of said towns of Middleborough and Lakeville, and the manner of taking said fish, and the whole management of said fisheries, shall be regulated by the selectmen of said towns; and the proceeds thereof shall be divided between the said towns, in proportion to the number of ratable polls in each respectively, and the respective parts of such protocols shall be disposed of by said towns respectively, in such a manner and for such purposes as each town shall for itself determine and direct."

A2. Middleborough-Lakeville Herring Fishery Commission: Herring Rules and Regulations, December 2004 (the last revisions prior to the state-wide ban in 2006).



Bank Building, 20 Centre Street, Middleborough, Massachusetts 02346

HERRING RULES AND REGULATIONS

A. No herring may be taken without a valid and signed permit. Herring may only be taken during posted hours with a Warden or Volunteer Observer on duty.

B. A **maximum** of 48 fish per week may be taken, in any combination of visits. The Warden or Observer on duty may limit the catch as conditions warrant.

C. Herring may **ONLY** be taken by hand-held hoop net **WITH A MESH OF 3/8 INCH OR SMALLER** or by hand. Herring that are "gilled" or otherwise injured must be harvested first.

D. Permits are sold at the Middleborough Town Clerk's Office, 20 Center Street, Monday through Friday from 8:45 AM to 5:00 PM. The Commission will determine the number of permits sold and the manner of sale each season.

E. Permit Fees: Valid identification will be required.

\$5.00 Middleborough/Lakeville Residents	\$25.00 Non-residents
\$1.00 Middleborough/Lakeville Senior Citizens	\$5.00 Non-resident Senior Citizen

Duplicate Permits \$2.00 (with proof of identification).

F. Catching Days and Times:

Wednesday:	4:00 PM to 8:00 PM
Friday:	6:00 AM to 7:00 PM
Saturday:	5:00 AM to 7:00 PM
Sunday:	6:00 AM to 10:00 AM

The season opens on the last Wednesday in March and ends June 15, unless closed earlier as dictated by the availability of fish.

Exception: To accommodate sport fishermen and tide considerations; herring may be taken at other times of the day or night, from May 15 to June 15 (depending on the availability of fish). The Middleborough Town Manager must be notified at least 24 hours in advance. Call (508) 947-0928 during business hours to set an appointment with a Warden or Volunteer Observer.

G. Catching Area:

1. The pool below the falls at the Wareham Street fish ladder in Middleborough is the **ONLY** legal catching area in Middleborough or Lakeville. **No herring may be taken without the direct permission of the Warden or Volunteer Observer on duty.**

2. No one is permitted to enter the fish ladder, including the concrete mouth of the ladder. No one is permitted to disturb, injure, hinder or obstruct the passage of herring in any fish ladder. Fishing in the pools above or below the fish ladders at Oliver Mill Park and Wareham Street with a rod and reel in a manner which disturbs the herring, or which could snag a herring is prohibited.

3. For safety reasons, to prevent disturbing herring eggs and to prevent hindering the passage of herring; no person is permitted to enter the river at any time.

H. Littering in the general park area or throwing rocks, sticks or other objects into the fish ladders or catching areas is prohibited. Visitors and catchers shall assume all risk and liability.

It is the Commission's intention to provide a safe recreational area. Disorderly conduct or public drunkenness will not be tolerated. Offenders will be ejected from park areas.

MGL Chapter 130 Sect. 95 applies throughout Middleborough and Lakeville:

Taking Fish From Fisheries Without Permission

"Whoever takes, kills or hauls onshore or disturbs, injures, hinders or obstructs the passage of any herring, alewives or other swimming marine food fish ... shall be punished by a fine of not less than five nor more than fifty dollars."

The Towns of Middleborough and Lakeville and the Mass. Environmental Police may prosecute violation of these rules. Violators are subject to arrest, fine, seizure of equipment, and loss of permit.

All Rules and Regulations are subject to the discretion of the Warden or Volunteer Observer on duty. Regulations may be modified as conditions warrant.

Revised: December 2004



Sustainable Fishery Management Plan for River Herring Herring River, Harwich, Massachusetts

Developed Cooperatively by the Massachusetts Division of Marine Fisheries and the Harwich Department of Natural Resources

INTRODUCTION

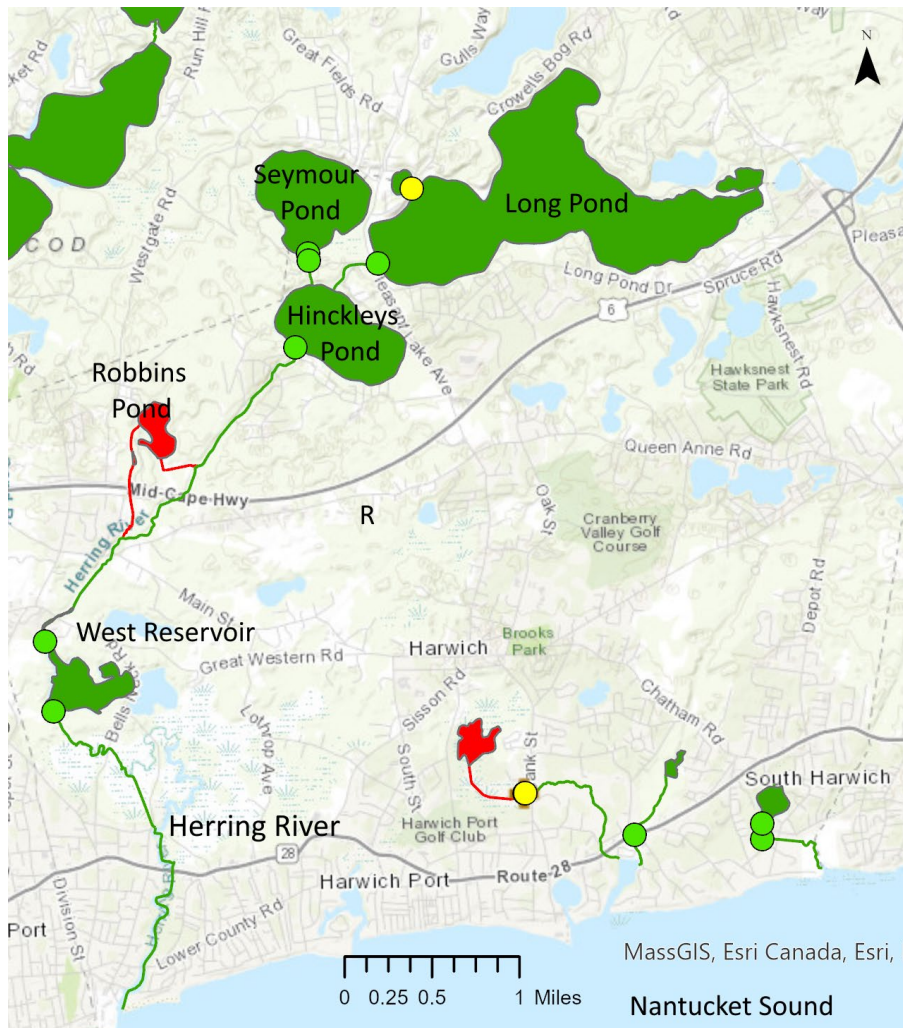
The Herring River, Harwich, has historically been one of the largest river herring runs in Massachusetts. Given the size of this herring run it likely had importance to native tribes for millennia. Reports from the early 20th century indicate that the harvest in the Herring River was among the highest in Massachusetts (Belding 1921). River herring harvest has been prohibited in Massachusetts since 2006 due to concerns over declining stocks. The objective of this sustainable fishery management plan (SFMP) is to allow a reopening of the recreational river herring fishery in the Herring River. River herring in the Herring River consist of two species, alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*). Alewife are most numerous, arriving typically in late-March on spawning runs that can last into early June. Blueback herring arrive later with a shorter duration run that peaks in late May.

WATERSHED

The Herring River watershed naturally begins at Hinckleys Pond and flows nearly 7 miles (mi) to Nantucket Sound (Figure 1). In terms of freshwater discharge and wetland acreage, the watershed is one of the largest on Cape Cod. The watershed contains numerous groundwater-fed kettle ponds of glacial origin with porous glacial sands and gravel dominating the river channel and watershed substrata (Godfrey 1974; Tunison 1997). The Herring River estuary has extensive salt marsh wetland with tidal influence extending 3 mi inland to the West Reservoir dam.

The entire watershed is approximately 14.9 mi² and located within the Towns of Brewster and Harwich. River flows are groundwater driven. A United States Geological Survey (USGS, #01105880; drainage area = 9.4 mi²) flow gauge station is present on the Herring River in North Harwich downstream of Hinckleys Pond. The USGS data series for this station ran from 1966 to 1988, then paused until restarting in 2007 to the present. The mean monthly discharge for both April and May during the entire time series to present is 15.0 cubic feet per second (cfs). A comparison of seasonal averages between the two periods showed an 23% increase in flow from November to April and an 18% decrease from June to September during the 2007-2020 time period.

Figure 1. Herring River watershed, Harwich, Massachusetts. Waterways and waterbodies in green are open to river herring passage and those in red have no present passage.



Significant concerns have grown over the rate of development and the manifestation of eutrophication in the Herring River watershed in recent decades (Tunison 1997; MEP 2013). Residential lot development has increased substantially since the 1970s. Sewage treatment for the watershed is provided entirely by individual home septic systems. The Massachusetts Estuaries Project (MEP) has documented water quality impairment in the Herring River due to excessive nitrogen concentrations. The MEP study found that approximately 68% of the nitrogen load in Herring River originates from septic systems. The MEP has developed a total maximum daily load for nitrogen in the river. This TMDL target is presently driving the Town of Harwich planning to implement a sewage treatment system for the watershed.

The watershed has a long history of commercial use with fisheries, salt hay farming, ship building and mills with hydropower developing in the 18th century. Mill construction was active in the 18th century with numerous applications for cotton, wool, grist, wood, and other fabrications. The largest industry near the river may have been cranberry farming which flourished in the 19th century with numerous water control dikes and diversions installed to use Herring River water for irrigation, bog protection and harvesting. Ditches were dug to connect Hinckleys Pond to Seymour Pond and Long Pond in the 19th century to both supply water to cranberry farms and to expand the herring fisheries. The connection from Seymour Pond to Hinckleys Pond was hand dug in 1852-1853 by cranberry bog owner Captain Alvin Cahoon and is

presently called Cahoon Canal. The channel from Hinckleys Pond to Long Pond was dug in the latter half of the 19th century and is presently called Princess Brook. The West Reservoir was created by the construction of a dike for cranberry farm water control in the Belles Neck Bogs possibly in 1880. The dam was most recently reconstructed in 1932 by Vernon Johnson. Belding's coast-wide survey of alewife fisheries (1921) reported there were seven dams on the Herring River used for cranberry bog operations, although some were originally constructed for hydropower. Several water diversions exist presently for cranberry farm supply and two dams remain to regulate outflow at Long Pond and Hinckleys Pond. At least two of the cranberry bog dams washed out in the 1950s and were not rebuilt (Tunison 1997).

FISHWAYS

Five fishways are present in the Herring River watershed; four at the outlets of each of the major ponds (Reback and DiCarlo 1972), and a fifth connecting Long Pond to the 9-acre Black Pond. The Black Pond fishway is a 65-ft wood flume of unknown origin placed in a man-made channel connecting the ponds. The fishways at the West Reservoir and Hinckleys Pond were in poor condition at the time of Reback and DiCarlo's survey (late 1960s) and have since been reconstructed.

West Reservoir Outlet. The construction of the West Reservoir dike for cranberry farm water control in approximately 1880 likely included a fishway for this valuable herring run. Belding's survey (1921) described an excellent fishway at the concrete dam. The dam was most recently reconstructed in 1932 by Vernon Johnson; with the fishway still called Johnson's Flume by some presently. The fishway was next reconstructed in 1977, designed in cooperation with the Massachusetts Division of Marine Fisheries (DMF) and the U.S. Fish and Wildlife Service (USFWS). This fishway was again reconstructed during 2003-2004 based on a USFWS design funded by DMF. The 2003-2004 construction project involved the National Resource Conservation Service (NRCS), USFWS, and Town of Harwich funding. The present fishway is an 88 ft concrete weir-pool with a width of 4.7 ft and 10 weirs. Some weirs are concrete, and some are wood boards in slots and most have steel side baffles to constrain the width of flow. DMF installed a Smith-Root electronic fish counter at this site in 2016.

Hinckley Pond Outlet. The DMF Fishway Crew reconstructed the Hinckleys Pond fishway in 1982. No records were found of prior fishways at this location, although anecdotally it is reported that a wood flume was present at the pond outlet for decades. The project was done cooperatively with the Town of Harwich paying for approximately \$3,000 in materials and providing heavy machinery. The present fishway is a concrete weir-pool that is 18 ft long, 4 ft wide with 5 weirs, and an auxiliary spillway for flow management. This is the location of a volunteer herring spawning run count from 2009 to 2019.

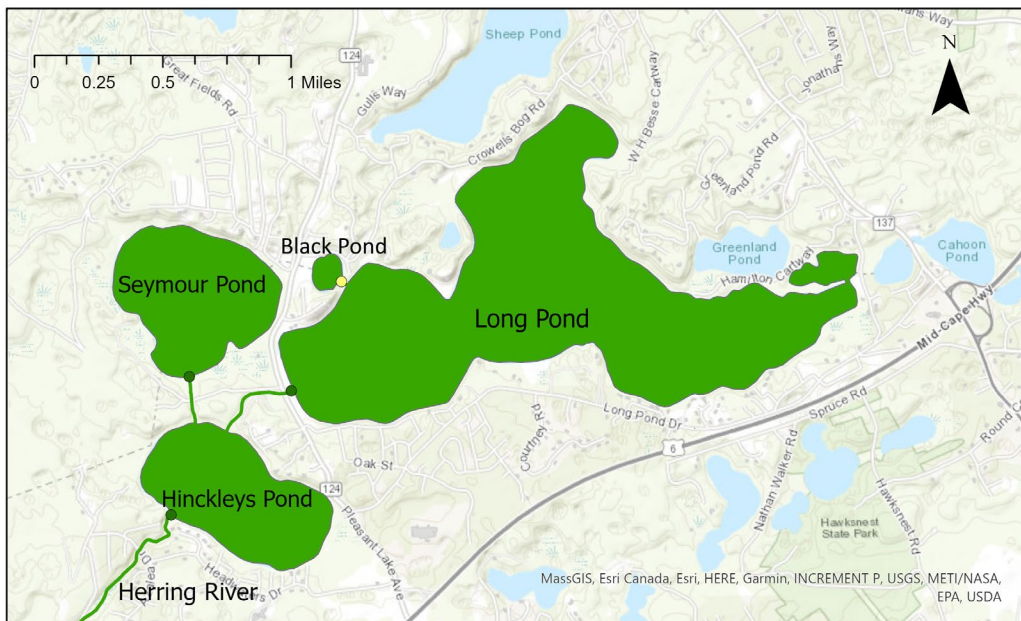
Seymour Pond Outlet. The Seymour Pond outlet was hand-dug in the 1850s and likely had a wooden flume to manage outflow. The DMF Fishway Crew replaced a degraded wood flume in 2017 that was reported to have been built in the 1970s (Metcalf and Eddy 1974). The present fishway has two pools and 3 board slots to manage outflow. A Fishway Operations and Maintenance Plan for the Seymour Pond fishway was prepared by DMF for the Town of Harwich in 2018.

Long Pond Outlet. Belding's survey (1921) shows a photograph of a wood flume at the outlet of Long Pond. This location has also been called the Princess Brook flume. A concrete weir-pool fishway was constructed by the DMF Fishway Crew at this location in 1948. That fishway was replaced in 1987 by the DMF Fishway Crew under a cooperative project with the Town of Harwich for approximately \$4,000. The present fishway is a 100-ft weir-pool, with a concrete section that is 4-ft wide with a single weir that connects to a wood section extending into Long Pond. Sand intrusion from the pond has long been a problem for water depth in the fishway and downstream channel (Metcalf and Eddy 1974). In 2018, DMF fabricated and installed a custom aluminum fishway exit chute to reduce sand entrainment from the pond.

SPAWNING HABITAT

The tidal Herring River reaches the outlet of the West Reservoir where the fishway allows access to the 70-acre reservoir. On the north side of the reservoir the backwater of the dam dissipates, and the river continues under the former railway, Great Western Road, and Route 6 to the 171-acre Hinckleys Pond. River herring can pass from Hinckleys Pond to the 168-acre Seymour Pond via Cahoon Canal and to the 717-acre Long Pond via Princess Brook. The three primary spawning ponds provide 1056 acres of habitat (Figure 2). Collectively, the Herring River watershed provides 1,135 acres of spawning and nursery habitat - one of only 4 herring runs in Massachusetts with access to over 1,000 acres.

Figure 2. Primary river herring spawning and nursery habitat in the Herring River watershed.



Several locations in the Herring River watershed were developed for leased herring harvest in the 19th century; however, there is no present access to these former spawning habitats. The best documented location is Coy Brook on the eastern side of Herring River which was managed by the Coy's Brook Fishing Company starting in 1842. The brook channel was dug out to allow herring to reach Cornelius Pond (16 acres) and Walker Pond (29 acres) with later efforts to bring herring to Andrews Pond (6 acres) and Flax Pond (15 acres) (Tunison 1997). By the time of Belding's survey (1921) the run was described as "former" with access either not maintained or prevented by cranberry bog operations. Water flow manipulations for cranberry bog operations at the East Reservoir (30 acres) and to Robbins Pond (28 acres) on the western side of the Herring River may have allowed herring passage into those water bodies with managed harvest during the latter half of the 19th century. A drainage culvert presently links the East and West Reservoirs (Tunison 1997), although fish passage is obstructed.

The ponds in the Herring River watershed have had algae blooms that are indications of excessive nutrient loading. Long Pond and Hinckleys Pond have had alum treatments to bind phosphorus that contributes to the algae blooms. The Long Pond treatment occurred over 15 years ago with ongoing improvement of water clarity. The Hinckleys Pond alum treatment was conducted in 2020.

TOWN MANAGEMENT

There is a long history of active management of the Herring River run by the Town of Harwich extending back to the 18th century. Belding (1921) reported that a Town managed fishery with a Herring Committee and harvest regulations was established in 1787. As one of the largest herring runs in Massachusetts, cooperative support to maintain the Herring River run was provided by the Massachusetts Department of Fish and Game in the late 19th and early 20th centuries (Belding 1921). Following the designation of river herring as a public resource under state management in the 1930s with allowance for local control (M.G.L. Chapter 130 §94), a Herring River harvest and management plan was developed cooperatively by the Town of Harwich and DMF and approved by the DMF Director

The Town of Harwich managed a herring harvest at the Johnson's Flume fishway off Depot Street in the Belles Neck Bogs Conservation Area for many years with no permit requirement. More recently, leading up to the statewide moratorium in 2006, the run was managed with a daily catch limit and 3-4 no fishing days per week. Harvest permits were first required in 2002. In 2003, permit holders were allowed 6 herring per day for March-May and 12 herring per day after June 1st. Additionally, permit holders could harvest a 5 gallon bucket of herring per family once per week on Tuesday, Thursday or Sunday during March-May. In 2004, harvest was reduced to 12 herring per day per permit on Wednesday, Friday, Saturday, or Sunday from March 1st to June 15th. The permit cost for 2004 was \$25 with a limit of 1,000 permits.

Much concern was generated in the 2000s from declining spawning run adults following an extended period of low pond levels and river flow during 2000-2003. The low precipitation during these years approached drought conditions that peaked in 2002 with very low pond levels during all of 2002. The Town responded proactively with discussions of a river herring harvest ban by the Board of Selectmen in 2003- 2004. This action resulted in a Town decision to cease harvest in 2005, one year prior to DMF' statewide harvest ban approved in 2005 and enacted for the 2006 season.

POPULATION AND HARVEST ESTIMATES

Historical information on the Herring River herring run is limited to the Belding (1921) survey and fragments from agency summaries. One account reported 1,200 barrels (estimated 1,158,000 fish at 965 fish/barrel) harvested from Harwich in 1764 (Paine 1937, p. 347). Belding (1921) reported that the herring run in the Herring River generated among the highest annual revenue for Towns in Massachusetts during 1870-1900. In 1912, 1,500 barrels of herring (estimated 1,447,500 fish) were harvested at West Reservoir catching station with Belding (1921) estimating maximum production at 3,000 barrels (estimated 2,895,000 fish), and that an "exceptionally good year" could equate to a total spawning run size of roughly 3.5 million fish. The DMF annual reports from the 1960s provide insight on the size of the Herring River run. From 1963 to 1968 the annual harvest alone was estimated to be approximately 400,000 to 1,000,000 fish (MA DMF, unpublished annual reports).

Interest in the Herring River spawning run prompted a Harwich High School teacher to lead a volunteer visual spawning run count in the 1990s; predating the present DMF river herring counting methods guided by Nelson (2006). These data were not available for the SFMP and may not be comparable to present counting methods. A volunteer visual herring count was established at Hinckleys Pond in 2009 by the Harwich Conservation Trust. Ten-minute counts of adult herring moving through the fishway into Hinckleys Pond are made throughout the day. These counts are applied to a DMF model to extrapolate a population estimate for the spawning run (Nelson 2006). The Hinckleys Pond count averaged 75 thousand fish for 11 years from 2009-2019. The COVID pandemic caused the count to cease for 2020 and 2021. DMF installed a Smith-Root electronic fish counter at the West Reservoir in 2016 which has produced a near-census of the spawning run annually since then, with an average annual count of 620,000 for 2016-2022.

The electronic count series at the West Reservoir provides only 7 years of spawning run count data as of 2022. The volunteer visual count series at Hinckleys Pond has 11 years of data. Decisions on a sustainability metric for this run were supported by a review and comparison of the two counting methods. The present volunteer count targeted at least nine 10-minute counts between 07:00 and 19:00 for the entire spawning run. The electronic fish counter recorded much higher numbers of fish during 2016-2019 than at Hinckleys Pond. The higher number is certainly influenced by the inclusion of night movements and fish that spawn in the West Reservoir and do not advance further upstream to Hinckleys Pond. Table-1 shows the counts for both locations and the ratio of the two sites when both counts occurred. The ratio allows the two options of using adjusted count data from 2009-2022, or solely the electronic count data for 2016-2022.

SUSTAINABLE HARVEST PLAN

ASMFC. The Atlantic States Marine Fisheries Commission (ASMFC) Amendment 2 to the Interstate Fishery Management Plan for Shad and River Herring gives states guidance for developing Sustainable Fishery Management Plans (SFMP) for river herring (ASMFC 2009). These plans are to be developed and approved by State jurisdictions then reviewed by the ASMFC Technical Committee (TC) and if suitable forwarded to the ASMFC Shad and River Herring Management Board (Board) for approval. The premise is that SFMPs should allow harvest while not diminishing the potential future reproduction and recruitment of herring stocks. The SFMPs are based on Sustainability Targets that relate management responses to population action and warning levels. SFMPs can be river-specific, regional or state-wide.

***ASMFC Sustainability Targets.** The recommended sustainability targets in Amendment 2 included: spawning stock biomass, fish passage counts, mortality rates, repeat spawning ratio, and juvenile abundance indices. From these measures, thresholds or targets shall be set to prompt action level (mgt. action such as fishery closure or regulation change) or warning level responses (documentation and management planning).*

The first ASMFC review of SFMPs occurred during 2011-2012 when state plans from ME, NH, NY, NC and SC were approved. The sustainability targets from these SFMPs were mainly based on exploitation rates and escapement targets related to fishery dependent harvest or independent herring spawning run counts. Additionally, a recruitment failure definition and a juvenile index were applied in one case each as sustainability targets. Several states indicated their intention to investigate the future use of population metrics (mortality, length, CPUE, and repeat spawning ratio) as sustainability targets or warning limits.

ASMFC Update. During the 2017-2018 review of new SFMPs and renewals from 2011-2012, the TC identified several inconsistencies between state SFMPs and the requirements of Amendments 2 and 3. As a result, the Board tasked the TC with developing proposed improvements to Amendments 2 and 3 with regard to the five items below. The Board reviewed the TC recommendations in February 2021, and subsequently directed the TC to develop a technical guidance document to ensure that implementation of the Amendment 2 and 3 requirements related to the issues outlined below are consistent with the TC recommendations. The guidelines were presented to the Board in April 2021 (ASMFC 2021). The Herring River SFMP was prepared with consideration for the pertinent guideline updates with provisions adopted where applicable for items #2, 3 and 5:

- 1.) Management and monitoring of rivers with low abundance and harvest of shad and river herring.
- 2.) Standardization of SFMP requirements: content, metrics, and management responses to triggers.
- 3.) Improved integration of stock assessment information into SFMPs.
- 4.) Clarification of de minimis requirements as they pertain to SFMPs.
- 5.) Review SFMP renewal schedule and the number of years of data required for a suitable SFMP.

Standardization of SFMPs. The 2021 TC guidelines recommend that standardized management responses are provided in SFMPs. For example, if a stock falls below the sustainability target or threshold identified in the SFMP, the state must notify the Board in the next annual compliance report and pursue implementation of the specified management response for the following calendar year. This approach is adopted in the Herring River SFMP and described below under “Management Actions”.

Stock Assessment Information. The TC supported the inclusion of stock assessment information such as size, age, and mortality data in SFMPs; however, did not recommend new requirements at this time. Each jurisdiction should develop sustainability metrics for their SFMPs and review all available population data with each 5-year plan renewal to see if stock assessment updates or other data can be utilized as metrics in SFMPs. The Herring River SFMP discusses the available biological data collected for this population below under “Potential Future Metrics”.

Time Series Duration. The guidelines standardized the acceptable time-series duration for data supporting a sustainability metric to be 10 consecutive years for river herring, with allowance of a shorter duration of 7-9 years if the TC accepts additional information related to the proposed exploitation rate, stock size, or other relevant factors. The Herring River SFMP proposes to begin harvest in 2023 based on spawning run count data from 2009 to 2022; using the electronic count data for the most recent seven years and the volunteer count data for the first seven years.

Town of Harwich Objectives. The Town of Harwich, Department of Natural Resources (DNR) sent a request to DMF in December 2020 to begin an evaluation of opening harvest for river herring in the Herring River. The Herring River herring harvest was closed by the Town of Harwich in 2005, one year before the coast-wide harvest moratorium in Massachusetts. The Town cites steady improvements in spawning run counts since the closure with high relative counts in recent years as justification to open the traditional recreational harvest.

State Role. The DMF supports this request and has proceeded to evaluate the existing biological and count data from the Herring River. From this review, the following framework is presented for a Herring River Sustainable Fishery Management Plan for river herring. The proposed SFMP would commence in 2023. The harvest ban would at that time have been in place for 18 years (2006–2023) and the count time series duration will be 14 years in total; with seven years for the electronic count at the West Reservoir and 11 years for the volunteer visual count at Hinckleys Pond.

Management Unit. The SFMP has a river-specific management unit of the Herring River herring run in the Town of Harwich.

Sustainability Measures. The ongoing spawning run count will serve as the primary measure to monitor the Herring River run status.

Sustainability Target. One fishery-independent sustainability target will be used that limits harvest at 10% of the time series mean (TSM). This value will be recalculated every three years. This target was selected as a conservative harvest level given the short duration of the run count. Table 1 provides the run count statistics that formed the basis of the recommended sustainability target. The target is 10% of the TSM with adjusted count data for 2009-2022. It is recognized that this is a coarse estimate for the years prior to the electronic counter (2009-2015); however, the harvest target is the lower among the two options. This approach will be substituted with a sustainability target derived solely from the electronic counter at the next SFMP update.

Primary Action Threshold. The 25th percentile of the Herring River run count time series distribution will serve as the primary action threshold to trigger a management response to declining run size.

Secondary Threshold. An annual exploitation rate of 10% of the run size will serve as a secondary threshold or warning limit. Annual exploitation rates will be tracked each year with a threshold of 10% assigned as a warning limit. Following a single, annual exceedance of this threshold, DMF will meet with the Harwich Department of Natural Resources to review harvest records and management practices and document the review and cause of the increase in exploitation rate in a joint memorandum.

Management Actions. In any given year, a run count falling below the 25th percentile will result in DMF reporting this to ASMFC in their annual compliance report for Shad and River Herring, and DMF having a pre-season discussion with Harwich Department of Natural Resources on potential concerns. If the run count drops below the 25th percentile for two consecutive years, the sustainability target will be reduced to 5% of the TSM. If the run count drops below the 25th percentile three consecutive years a minimum 3-year closure will be imposed on harvest for the following year. In order to reopen the harvest, a threshold of three consecutive years above the 25th percentile would have to occur.

Biological Samples. River herring at the Herring River have been sampled by DMF since 2013 for length, weight, sex and age. Weekly collections of river herring are taken by dip net in the West Reservoir fishway for as many weeks as possible to cover the duration of both the alewife and blueback herring runs. The target sampling level is 100 river herring per week for the duration of the run to meet suitable levels of power to discern trends for both sexes and species (Nelson et al. 2011). These data allow the calculation of age, length, and weight statistics and estimates of sex ratios, mortality, and survival. Aging is conducted using otoliths and following published DMF protocols (Elzey et al. 2015). In most years, the sample size for alewife is sufficient for size and age analyses. In contrast, the blueback run is smaller in size than the alewife and sufficient samples are not always available for robust analysis.

Biological Sample Summary, 2013-2021. The Herring River biological data for alewife during 2013-2021 has been summarized in Table 2, and Figures 3-5 display the age and mortality statistics for alewife. Blueback samples have not been sufficient in some years for similar summaries. For example, the age samples from blueback were too low in 2013-2015 and 2018 to estimate mortality. More detailed analyses will be made in subsequent SFMPs to evaluate the contribution of blueback herring to the Herring River run and to consider alternative sustainability targets for both species.

Potential Future Metrics. With the SFMP implementation, and increasing time series, efforts will be made to develop additional thresholds based on biological data. The data derived from biological sampling can provide additional information on population status and supporting evidence for management measures. However, as found in Nelson et al. (2011), the length and age metrics for river herring analyzed to date in Massachusetts provide little predictive power when related to population abundance. Mean lengths and mean ages of fish within a run can point to long-term changes in demography, although the current time series appears to be tracking inter-annual fluctuations in year class recruitment to the population and indicates that robust age structure has not been recovered. With these conditions, it is not presently possible to clearly identify thresholds based on the biological data. This limitation is not unexpected nor prevents the development of future metrics: 9 years of size and age data allows the tracking of only two generations of river herring. Biological data will continue to be collected from the Herring River herring run with the goal of considering population thresholds based on the following metrics.

Age Structure. Evidence of age structure truncation is present in Massachusetts river herring populations (Nelson et al. 2011). Additional cohorts to evaluate age structure or mortality rates may become useful for setting warning limits. Changes in age structure will be examined annually using the χ^2 test as described in Davis and Schultz (2009).

Mean Length. Mean length data provide similar evidence of demographic status as age data with reduced diagnostic capability due to interannual growth changes and the influence of cohort dynamics to shape mean data. However, these data are readily prepared and with a growing duration of the time series, may become a useful index of population change.

Escapement Targets. Future SFMPs for the Herring River could alternatively consider to annually open harvest following the meeting of a suitable escapement target of incoming spawners. The escapement target would depend on real-time reporting from the electronic counting station and relate counts to a metric on spawning habitat productivity. For example, the Maine Department of Marine Resources uses a calculation based on spawners per surface acre of spawning and nursery habitat (Havey 1961 and 1973) to set escapement targets. This would guarantee a certain number of spawners entering the spawning habitat and guard against unexpected low returns. One potential drawback in some systems could be focusing the harvest on later arrivals that may have a higher proportion of younger fish or blueback herring.

Repeat Spawners. A target percentage of repeat spawners in the annual spawning run could be used to set a warning limit. However, with aging now based on otoliths, it would require an initiative to collect scales from Herring River fish. Given the cost of scale processing and the time needed to collect a useful time series the development of this metric is not presently recommended.

HARVEST MANAGEMENT

Opening harvest in a single river creates management and enforcement challenges given that Massachusetts has over 100 rivers in 50 coastal towns that contain river herring runs. Ideally, a regional approach would be established to allow several runs to open at the same time. This would reduce concerns over harvest compliance and enforcement while providing a larger opportunity for Commonwealth citizens who are not town residents to purchase harvest permits. This has been a goal of DMF; however, few herring runs presently have the full complement of favorable stock status, a suitable data series, and the necessary infrastructure and dedication in local run management. Since the inception of the ASMFC SFMP process, four Massachusetts Towns (Wareham, Middleborough/Lakeville, Pembroke, Harwich) have formally requested an opening of river herring harvest at their runs. The Nemasket River SFMP for Middleborough/Lakeville was approved in 2016. The Herring River SFMP for Harwich is the second plan to advance for ASMFC review.

Proposed Harvest Management. The numbers of permits, weekly catch limits and harvest days will be managed to avoid exceeding the harvest target of 57,378 (10% of TSM). A ratio of 4:1 for residents to non-residents is recommended for permits; with a maximum permit number of 600. Recommended cost for resident permits is \$25 with consideration for different costs for seniors and non-residents.

A cap of 450 resident and 150 non-resident licenses would be enacted with a weekly catch limit of 20 fish allowed over a five-week season with three open days per week. The potential maximum catch under this scenario would be 60,000 fish. Assuming that half the permit holders catch their maximum allowance and the other half only realize half of their maximum harvest, the harvest would be estimated to be 45,000 fish. This assumption is not based on past harvest records but on the expectation that many permit

holders will remain inactive or minimally active each year and will take well below the potential maximum harvest. The harvest management should account for the different runs of alewife and blueback herring in the Herring River. At the onset of the run in late March only alewife are present, and the first month of the run can be nearly all alewife. Bluebacks arrive in late April and early May and can be a majority of the herring in the run from mid-May to early June. An effort should be made to not overharvest either species and to direct some harvest effort to emigrating, post-spawned fish. With these conditions in mind, it is proposed that the harvest season occurs from April 15th to May 15th, with the discretion of the Harwich DNR to extend the season to the full 5 weeks depending on harvest and run count statistics.

Harvest Monitoring. The potential for harvest to exceed the sustainability target exists under all management options if a high proportion of permit holders takes the full weekly harvest each week. This outcome is hard to predict but can be tracked once harvest is open. The Harwich DNR will diligently monitor harvest performance by permit and week in order to make annual adjustments to relate the harvest target to the number of permits issued.

Harvest will only be allowed at the West Reservoir fishway during three open days per week. Set times for harvest will be posted on the open days and Town Herring Wardens will be present to monitor harvest and issue daily catch cards. The gate to the fishway at the West Reservoir will be closed on all days from March 15th to June 15th from 7 pm to 7 am (with consideration for sundown closures as daylight increases). The Herring Wardens will be authorized to issue citations for harvest violations at the harvest locations and other locations in Harwich. No harvest will be allowed at other herring runs in Harwich.

Harvest will be monitored through the issuance of daily catch cards to each permit holder that harvests herring. The card would indicate the date, permit number, and number of fish and will expire in 30 days. State regulations will be changed by DMF to require that any possession of river herring in Massachusetts be accompanied by the Herring River harvest permit and the daily harvest card. Herring frozen in bags must have the original daily harvest card placed in the bag. The permits and daily catch cards would be professionally printed on waterproof paper.

The usage of harvested river herring trended sharply towards striped bass bait in the decade leading up to the state-wide harvest ban. DMF recognizes that a component of the concern that led to the state-wide ban on river herring harvest was excessive harvest and declining conservation ethics related to the harvest for lobster and striped bass bait. Under this SFMP, recreational bait use will be allowed; however, the SFMP seeks to promote and encourage traditional uses of river herring as food. There will be public outreach associated with the implementation of the SFMP that encourages responsible use of herring for bait and food. The Harwich Department of Natural Resources will also consider accommodating requests for food as able. For example, requests for only females for roe harvest may be allowed when manageable on-site during the three open days per week. In these cases, the Department should record the female only harvests and compensate weekly as needed by providing males for bait use.

Native American Harvest. The Commonwealth of Massachusetts recognizes the aboriginal practice of the Wampanoag tribe to harvest river herring in Massachusetts. In prior years, a Memorandum of Agreement was signed between DMF and the tribe with the agreement that harvest was an aboriginal right for sustenance purposes only and that harvest would be reported by river to DMF. The tribe's harvest is not bound to SFMP measures, and the amount is undocumented. Anecdotally, their recent level of effort and catch is unlikely to produce 1,000 fish. DMF will discuss the possibility of issuing free permits to the Wampanoag tribe and to coordinate with the tribe to encourage responsible harvest, record keeping, and the potential to include tribal harvest in annual sustainability targets under the SFMP.

STATEWIDE REGULATIONS AND ENFORCEMENT

For this harvest opening to be successful and enforceable, the process will need a tightly managed accounting system for daily harvest, well-planned coordination with the State Environmental Police, and participation from Town law enforcement. A coordination meeting will be held with the Massachusetts Environmental Police, DMF, Town Police, and the Harwich Department of Natural Resources each year prior to the season start. DMF will enact changes to the existing state regulations that ban state-wide harvest to allow harvest and possession of Herring River herring in accordance with this SFMP and the Town of Harwich regulations. This process will include a review of existing penalties for non-compliance and updating the penalties as needed.

The SFMP recommends that the Town of Harwich provides information on permit and seasonal harvest records to the Massachusetts Environmental Police to improve the enforcement of harvest regulations. The recommended approach is to have a record of permits, herring warden contact information, with weekly updates on harvest and the spawning run count provided online by the Town of Harwich. The Town of Harwich will endeavor to create this process during the initial SFMP 5-year period; recognizing that experiences of the first open season will be instructive on how to develop and manage this accounting.

Table 1. River herring spawning run count data at Herring River, Harwich. Volunteer visual counts occurred from 2009-2019 at Hinckleys Pond. Electronic counts at the West Reservoir began in 2016, with four years of comparison between the two locations.

Year	Hinckleys Count No.	Reservoir Count No.	Comparison (Ratio)	Adjusted (0.082)	Adjusted (0.173)
2009	19,336			235,805	111,769
2010	41,254			503,098	238,462
2011	10,466			127,634	60,497
2012	101,624			1,239,317	587,422
2013	91,167			1,111,793	526,977
2014	247,894			3,023,098	1,432,913
2015	127,860			1,559,268	739,075
2016	60,349	348,000	0.173		348,000
2017	11,980	284,936	0.042		284,936
2018	47,698	864,748	0.055		864,748
2019	69,680	1,223,263	0.057		1,223,263
2020		887,724			887,724
2021		436,090			436,090
2022		291,000			291,000
Mean		619,394	0.082		573,777
Median		650,419			481,533
25th %		319,500			286,452
10% of mean		61,939			57,378

Note: The average ratio of the two counting stations for 2016-2019 is 0.082. However, there is low confidence that the run in 2014 had over 3 million fish. DMF staff observations and local accounts suggest that 2014 and 2019 were the largest herring runs in the Herring River in over a 20-year period; and were similar in size. Therefore, a conservative approach is taken by using the highest ratio (2016) and applying this to adjust Hinckleys Pond count data for 2009-2015.

Table 2. Biological statistics for alewife sampled in the Herring River, Harwich during 2013-2021.

Alewife	Total Length (mm)						
	Year	N	Mean	SD	2 SE	Min	Max
Female	2013	96	266	10.89	2.22	241	290
	2014	165	272	13.49	2.10	235	310
	2015	226	273	10.80	1.44	245	304
	2016	233	280	11.08	1.45	244	308
	2017	257	277	15.71	1.96	235	321
	2018	160	267	12.82	2.03	240	303
	2019	267	278	9.59	1.17	249	324
	2020	214	283	10.66	1.46	246	312
	2021	326	272	14.68	1.63	240	308
Male	2013	100	256	9.94	1.99	232	280
	2014	265	260	12.55	1.54	233	300
	2015	270	264	9.68	1.18	241	292
	2016	190	270	11.17	1.62	237	310
	2017	284	260	14.65	1.74	215	299
	2018	328	255	11.11	1.23	224	293
	2019	255	268	10.02	1.25	230	290
	2020	215	270	11.54	1.57	228	298
	2021	386	259	13.00	1.32	226	304

Alewife	Age						
	Year	N	Mean	SD	2 SE	Min	Max
Female	2013	96	3.4	0.64	0.13	3	6
	2014	163	3.7	0.60	0.09	3	6
	2015	220	4.0	0.38	0.05	3	5
	2016	232	4.7	0.83	0.11	3	8
	2017	249	4.4	1.29	0.16	3	8
	2018	157	3.5	0.84	0.13	3	7
	2019	262	3.9	0.54	0.07	3	7
	2020	212	4.6	0.84	0.12	3	8
	2021	324	3.9	1.08	0.12	3	7
Male	2013	100	3.2	0.52	0.10	2	5
	2014	175	3.5	0.63	0.10	3	6
	2015	268	4.0	0.39	0.05	3	5
	2016	187	4.4	0.83	0.12	3	6
	2017	268	3.7	1.12	0.14	2	7
	2018	326	3.2	0.60	0.07	3	7
	2019	244	3.8	0.43	0.05	2	5
	2020	213	4.3	0.89	0.12	2	6
	2021	380	3.5	0.91	0.09	2	6

Note: N = sample size; SD = standard deviation; SE = standard error

Figure 3. Average age of alewife sampled at the Herring River, Harwich, during 2013-2021.

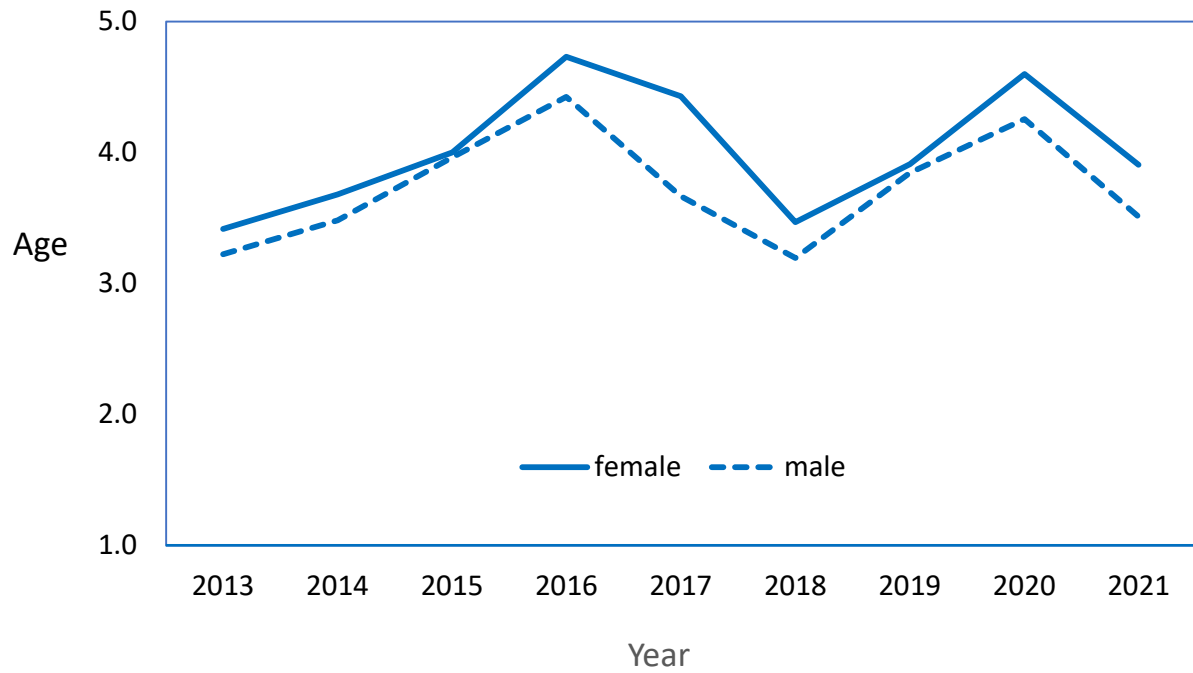


Figure 4. Annual age composition of alewife sampled (count = number of adult herring in annual biological sample) at the Herring River, Harwich, during 2013-2021.

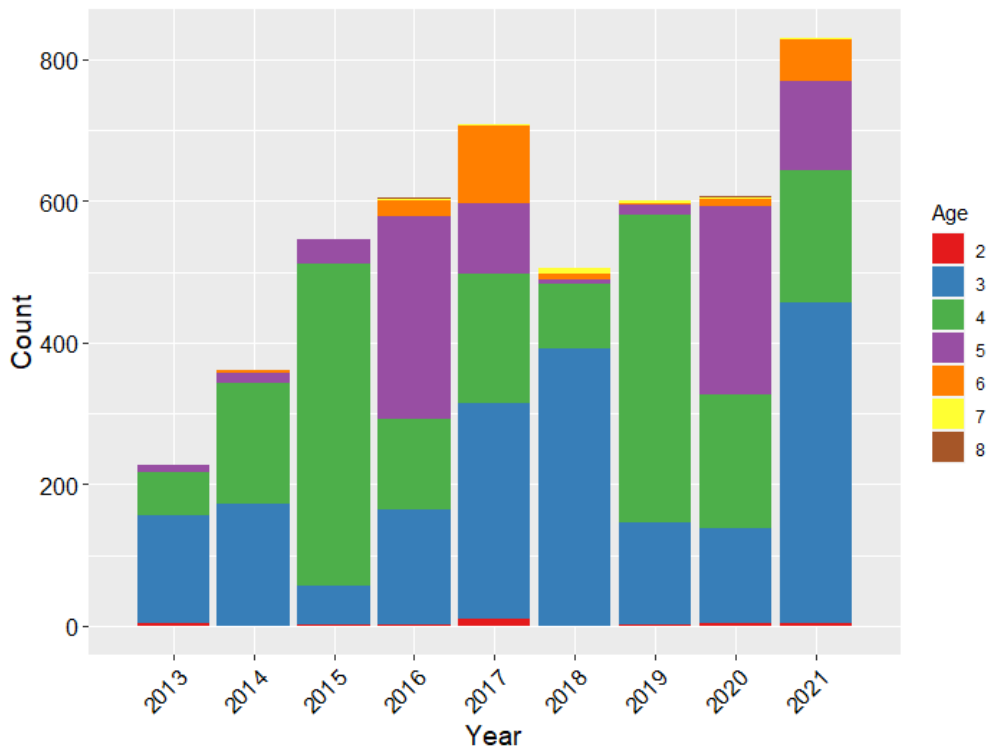
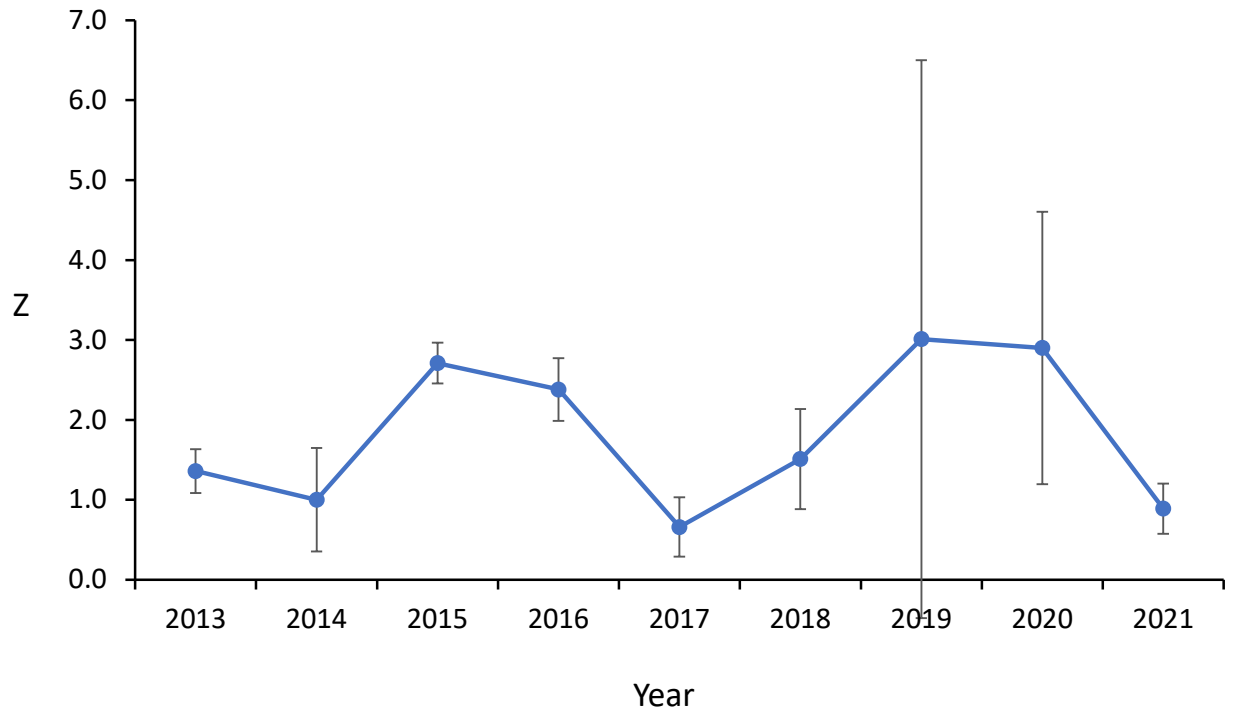


Figure 5. Average instantaneous mortality rate (combined sexes, $Z \pm 2$ SE) of alewife sampled at the Herring River, Harwich, during 2013-2021.



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ATLANTIC STATES MARINE FISHERIES COMMISSION
REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN
FOR
SPANISH MACKEREL
(Scomberomorus maculatus)
2021 FISHING YEAR



Draft For Board Review
October 2022



Sustainable and Cooperative Management of Atlantic Coastal Fisheries

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I. Status of the Plan

Date of FMP Approval: Original FMP – November 1990

Amendments: Omnibus Amendment to Spanish Mackerel, Spot, and Spotted Seatrout (Amendment 2) – August 2011

Addendum: Addendum I – August 2013

Management Area: The Atlantic coast distribution of the resource from Rhode Island through the east coast of Florida

Active Boards/Committees: Coastal Pelagics Management Board; Spanish Mackerel Plan Review Team; South Atlantic Species Advisory Panel

The Fishery Management Plan (FMP) for Coastal Migratory Pelagic Resources (1983 and subsequent amendments) and the [Interstate Fishery Management Plan for Spanish Mackerel](#) (1990) manage Atlantic group Spanish mackerel in federal and state Atlantic waters from Rhode Island through the east coast of Florida. All states in that range, excluding Pennsylvania, have a declared interest in the Interstate FMP for Spanish mackerel. The Coastal Pelagics Management Board serves to manage Spanish mackerel for the Commission. The Interstate FMP for Spanish mackerel is a flexible document intended to track the federal FMP; thus, the South Atlantic Fishery Management Council (SAFMC) has the lead on Atlantic group Spanish mackerel management.

[Amendment 1](#) to the Spanish mackerel FMP, as part of an Omnibus Amendment to the ISFMP Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout, was approved in August 2011. The primary objective of this amendment was to bring the FMPs for all three species under the authority of ACFCMA to provide more efficient and effective management and changes to management for the future. In addition, the amendment made the Commission's Spanish mackerel FMP consistent with federal Spanish mackerel requirements determined by the SAFMC.

[Addendum I](#) was approved in August 2013 to allow for a two-year pilot program (2013 and 2014) that allowed states to reduce the minimum size limit of Spanish mackerel for the commercial pound net fishery to 11.5 inches from 12 inches for July through September.

The goals of the ISFMP are to complement federal management in state waters, to conserve the Atlantic group Spanish mackerel resource throughout its range and to achieve compatible management among the states that harvest Spanish mackerel. In accordance with the 2011 Omnibus Amendment, the updated FMP's objectives are to:

1. Manage the Spanish mackerel fishery by restricting fishing mortality to rates below the threshold fishing mortality rates to provide adequate spawning potential to sustain long-term abundance of the Spanish mackerel populations.

2. Manage the Spanish mackerel stock to maintain the spawning stock biomass above the target biomass levels.
3. Minimize endangered species bycatch in the Spanish mackerel fishery.
4. Provide a flexible management system that coordinates management activities between state and federal waters to promote complementary regulations throughout Spanish mackerel's range which minimizes regulatory delay while retaining substantial ASMFC, Council, and public input into management decisions; and which can adapt to changes in resource abundance, new scientific information and changes in fishing patterns among user groups or by area.
5. Develop research priorities that will further refine the Spanish mackerel management program to maximize the biological, social, and economic benefits derived from the Spanish mackerel population. See Table 1 for state Spanish mackerel regulations in 2020-2021.

In 2019, several inconsistencies between the two FMPs were brought to the Board's attention, but the Board decided to postpone any changes to the Commission's Spanish mackerel FMP until after completion of the next stock assessment in 2022. As the SAFMC has the lead on Atlantic Spanish mackerel management, the measures summarized below are those of the federal FMP.

The SAFMC manages Atlantic group Spanish mackerel with guidance from its Scientific and Statistical Committee (SSC). The SAFMC determines needed adjustments to regulatory measures, including allowable catch, bag limits, size limits, and trip limits. The SAFMC deliberations are assisted by a Mackerel Cobia Committee that includes representatives from the Mid-Atlantic Fishery Management Council, and an Advisory Panel with South Atlantic and Mid-Atlantic industry representation. Since the Coastal Migratory Pelagic Resources FMP is a joint plan with the Gulf of Mexico Fishery Management Council (GMFMC), any plan amendments to this FMP must be approved by both Councils. Actions that can be completed through the Coastal Migratory Pelagics FMP's framework procedure and only address Atlantic group Spanish mackerel, do not require approval from the GMFMC.

The federal FMP divides the commercial fishery and defines quotas for the Atlantic and Gulf migratory groups. Within the Atlantic migratory group, there are two zones- the Northern (consisting of the states from New York through North Carolina) and the Southern (South Carolina to the Miami-Dade/Monroe County border, Florida). For the Atlantic migratory group in the 2020/2021 year, in accordance with CMP Framework Amendment 2, the full commercial quota was 3.33 million pounds with allocations of 662,670 pounds and 2,667,330 pounds to the Northern and Southern zones, respectively. An adjusted Southern quota of 2,417,330 pounds was used to determine trip limit reductions in the Southern commercial zone. The 2020-2021 fishing year began on March 1st, 2020 and closed on July 22, 2020 in the Northern Zone. The Southern Zone reduced the commercial trip limit on January 29, 2020, to 500 lbs. until March 1, 2020.

The federal commercial trip limit is a year-round 3,500 pound daily possession/landings limit for the states from New York through North Carolina, with South Carolina through Florida's commercial trip limit varying depending on the percent of quota remaining. Following the implementation of Amendment 20B and CMP Framework Amendment 2, the federal trip limit for the Southern zone (SC through FL) decreases as quota is caught. When 75% of the "adjusted" Southern zone quota¹ (1,812,998 pounds ww) is caught, the trip limit is reduced from 3,500 pounds to 1,500 pounds. When 100% of the adjusted Southern zone quota (2,417,330 pounds ww) is caught, the commercial trip limit is further reduced to 500 pounds. When 100% of the Southern zone commercial quota is met, harvest is prohibited for the remainder of the fishing year in federal waters, with limited commercial harvest remaining open in some state waters. In both the Northern and Southern zones, the recreational bag limit is set at 15 fish. The minimum size limit for both fisheries is 12 inches fork length (the total length equivalent, 14 inches, is used for some state waters).

II. Status of the Stocks

The most recent stock assessment on Spanish mackerel was completed in 2012 through the Southeast Data, Assessment, and Review (SEDAR) process (SEDAR 28, 2012). It reported that the Spanish mackerel stock was neither overfished nor experiencing overfishing. The terminal year spawning stock biomass was estimated to be $SSB_{2011}/MSST=2.29$, the fishing level (exploitation rate) for the ending three years was estimated to be $F_{2009-2011}/F_{MSY}=0.526$, and the terminal year fishing mortality rate was estimated to be $F_{2011}/F_{MSY}=0.521$. The estimated total biomass declined significantly in the mid-1970s and was below B_{MSY} between years 1983 and 2000 before increasing in trend again through 2009 (Figure 1). Total biomass then decreased in trend in the last three years of the time series but remained above B_{MSY} (Figure 1). The overfishing ratio (F/F_{MSY}) showed that fishing mortality rate estimates increased in the mid-1970s and the stock experienced overfishing in year 1980 (Figure 2). Fishing mortality rates then decreased again in 1981 and became stable but variable through 1994 before decreasing in trend again through 2011 (Figure 2).

In 2022, an operational assessment (i.e., update to the last assessment) was completed through the SEDAR process with data through 2020. This most recent assessment (SEDAR 78) initially indicates the same stock status: the stock is not overfished and it is not experiencing overfishing based on a three-year average of fishing mortality. SEDAR 78 is currently undergoing additional review and analysis before being considered for use in management.

III. Status of the Fishery

On July 1, 2018, the Marine Recreational Information Program recalibrated recreational harvest estimates from the Coastal Household Telephone Survey (CHTS) to the mail-based Fishing Effort Survey (FES). Estimates used in this report are now those of the FES, but Figure 3 shows a comparison of CHTS and FES estimates. The federal FMP quotas are still based on previous CHTS estimates, but FES estimates will be incorporated into management after the 2022 stock assessment is approved for management use.

¹ The adjusted quota is the Southern zone quota minus 250,000 lbs.

Spanish mackerel are an important recreational and commercial fishery in South Atlantic waters, with some landings in the Mid-Atlantic region, particularly in recent years (Tables 2-4). While the fishery is managed according to a March – February fishing year, landings summarized in this report are shown by calendar year, unless otherwise stated. Total landings of Spanish mackerel in calendar year 2021 are estimated at 14.6 million pounds. The commercial fishery harvested approximately 33% of the total and the recreational fishery about 67%, according to MRIP recreational harvest estimates.

From 1950 to 2021, commercial landings of Atlantic coast Spanish mackerel have ranged between 1.8 and 11.1 million pounds, although landings have been relatively stable hovering around the 10-year average of 3.5 million pounds for the past few decades. Coastwide commercial landings have generally been below 4 million pounds since 1995, coinciding with the entanglement net ban in Florida, with the exception of 2010 (4.52 million pounds) and 2011 (4.35 million pounds). Gill nets were the dominant commercial gear in Florida prior to the ban, after which the use of cast nets increased. In 2021, coastwide commercial landings were 4.75 million pounds (Figure 4), of which 3.4 million pounds (72%) were landed in Florida and approximately 1 million pounds (24%) were landed in North Carolina (Table 2).

According to MRIP, recreational anglers harvested 8.6 million Spanish mackerel (9.8 million pounds) in 2021, the highest in the time series (Tables 3 and 4; MRIP query September 2022). The number of recreationally harvested fish appears to show a cyclical trend, with low harvests in the early to mid-80s and mid to late 90s, interspersed with higher harvests (Figure 5). Florida and North Carolina have historically accounted for the majority of recreational landings in both number and weight, with 67% and 18% of the total number of fish caught in 2021, respectively. The number of recreational releases of Spanish mackerel has generally increased over time, reaching the highest amount in the time series of 6 million fish in 2021 (Table 5, Figure 5). Live releases comprised 41% of the total recreational catch, slightly below the previous 10-year average (2011-2020) of 43%.

It is important to note concerns and questions have been raised regarding the 2020 and 2021 recreational catch estimates, and the Marine Recreational Information Program (MRIP) is looking further into these estimates, particularly shore-based landings estimates. This report will be revised if MRIP estimates are updated.

IV. Status of Assessment Advice

The last stock assessment accepted for management use was completed in 2012 through the Southeast Data, Assessment, and Review (SEDAR) process (SEDAR, 2012). The input data (through 2011) were applied to two assessment models, with the primary model being a statistical catch at age model called the Beaufort Assessment Model (BAM); while a secondary surplus-production model (ASPIC) provided a comparison of model results. The Review Panel concluded that the statistical catch at age model was the most appropriate model to characterize the stock status for management purposes.

The SSC reviewed the assessment during its December 2012 meeting and accepted the SEDAR 28 Spanish mackerel stock assessment as best available science. The SSC concurred with the Review Panel's conclusion that the stock is not experiencing overfishing and the stock is not overfished.

In 2022, an operational assessment was completed through the SEDAR process with data through 2020. Based on concerns raised by SSC and discussed at the September 2022 SAFMC meeting, SEDAR 78 is currently undergoing additional review and analysis before being considered for use in management. SEDAR 78 incorporates FES recreational harvest estimates.

V. Status of Research and Monitoring

The National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC) continues to monitor length and weight at age and size frequencies, fishing mortality, and migration; collect age data and catch per unit effort by area, season, fishery, and gear; monitor shrimp trawl bycatch; investigate methods to predict year class strength; calculate estimates of recruitment, and develop conservation gear to reduce bycatch. The NMFS is also collecting discard data through a bycatch logbook in the mackerel and snapper-grouper fisheries. The Gulf and South Atlantic Fisheries Development Foundation and several states (North Carolina, South Carolina, Georgia, and Florida) have evaluated finfish bycatch in the southeastern shrimp trawl fishery, including bycatch of Spanish mackerel. The South Atlantic component of the Southeast Area Monitoring and Assessment Program (SEAMAP) collects Spanish mackerel data in its coastal trawl survey from Cape Hatteras to Cape Canaveral. Additionally, the Northeast Area Monitoring and Assessment Program (NEAMAP) began regular spring and fall surveys between Martha's Vineyard and Cape Hatteras in the fall of 2007.²

Abundance trends continue to be monitored primarily through fishery-dependent sources. The states and the SEFSC monitor catch data through the cooperative commercial statistics collection program and the recreational fisheries survey. Commercial trip reports are tallied more frequently in the winter and early spring by the state of Florida and NMFS as the commercial quota is approached.

North Carolina also conducts fishery independent monitoring. Three fishery independent gill net surveys were initiated by the North Carolina Division of Marine Fisheries in May of 2001, 2003 and 2008, respectively. These surveys utilize a stratified random sampling scheme designed to characterize the size and age distribution for key estuarine species in Atlantic Ocean (ended in 2015) and Pamlico Sound as well as the Pamlico, Pungo, Neuse, Cape Fear and New Rivers. The overall Spanish mackerel CPUE from these surveys was extremely low and therefore lacks the desired precision and confidence needed for the data to be used for management purposes.

² Many states and regional surveys experienced an interruption in sampling efforts in both recreational and commercial fishery surveys during the 2020 calendar year.

VI. Status of Management Measures

2008 Framework Adjustment (Federal)

In February 2008, NOAA Fisheries finalized a framework adjustment to change the beginning date for trip limits in the Atlantic Spanish mackerel fishery off the east coast of Florida. The 3,500 pound trip limit begins March 1 each year to correspond with the beginning of the fishing year (as changed in Amendment 15).

Omnibus Amendment (Interstate)

In August 2011, the Management Board approved an amendment to the Spanish Mackerel FMP to address three issues: compliance measures, consistency with federal management in the exclusive economic zone, and alignment with Commission standards. Through the Omnibus Amendment, the following fisheries management measures are required for states within the management unit range:

Recreational Fishery

- 12" Fork Length (FL) or 14" Total Length (TL) minimum size limit
- 15 fish creel limit
- Must be landed with head and fins intact
- Calendar year season
- Prohibited gear: Drift gill nets prohibited south of Cape Lookout, NC
- Decrease in the recreational quota the following year via reduced bag limits if the Total Annual Catch Limit (ACL) is exceeded and stock is overfished.

Commercial Fishery

- Prohibited: purse seines; drift gill nets south of Cape Lookout, NC
- 12" FL or 14" TL minimum size limit
- March 1 – end of February season
- Trip limits (per vessel, per day)
NY-GA: 3500 lbs
FL: 3500 lbs, 3/1-11/30;
3500 lbs Mon-Fri & 1500 lbs Sat-Sun, 12/1 until 75% adjusted quota taken;
1500 lbs, when 75% adjusted quota taken until 100% adjusted quotas taken;
500 lbs after 100% of adjusted quotas taken (the adjusted quota compensates for estimated catches of 500 lbs per vessel per day to the end of the season)
- Commercial quotas decreased the following year if Total ACL is exceeded and stock is overfished

Since approval of the Omnibus Amendment, several changes (described below) have been made to the federal FMP that are not currently reflected in the Commission management through the Omnibus Amendment. The Board has been informed of these changes and will likely consider changes to better align Commission and federal management documents following the approval of the 2022 stock assessment.

Amendment 18 (Federal)

In August 2011, the Gulf of Mexico and South Atlantic, Fishery Management Councils approved Amendment 18 to the joint FMP for Coastal Migratory Pelagics. The primary action under consideration established Annual Catch Limits (ACLs) and Accountability Measures (AMs) for the cobia, king mackerel, and Spanish mackerel. The amendment designates ACLs and Annual Catch Targets (ACTs) for each of the two migratory groups of Spanish mackerel (Atlantic and Gulf). For the Atlantic migratory group, the commercial sector ACL is set equivalent to the commercial sector quota of 3.13 million pounds. The AM for the commercial sector is that the commercial sector will close when the commercial quota is reached or projected to be reached. In addition, current trip limit adjustments will remain in place. When the commercial sector closes, harvest and possession of Spanish mackerel would be prohibited for persons aboard a vessel for which a commercial permit for Spanish mackerel has been issued.

For the recreational sector, the ACT is set to 2.32 million pounds, while the ACL is set at 2.56 million pounds. Regarding the AM, if the stock ACL is exceeded in any year, the bag limit will be reduced the next fishing year by the amount necessary to ensure recreational landings achieve the recreational ACT, but do not exceed the recreational ACL in the following fishing year. A payback will be assessed if the Atlantic migratory group Spanish mackerel is determined to be overfished and the stock ACL is exceeded. The payback will include a reduction in the sector ACT for the following year by the amount of the overage by that sector in the prior fishing year.

Addendum I (Interstate)

In August 2013, the Commission's South Atlantic State-Federal Fisheries Management Board approved Addendum I to the Omnibus Amendment to for Spanish mackerel, Spot, and Spotted Seatrout.

Addendum I to the Omnibus Amendment establishes a pilot program that would allow states to reduce the Spanish mackerel minimum size limit for the commercial pound net fishery to 11 ½ inches during the summer months of July through September for the 2013 and 2014 fishing years only. The measure is intended to reduce waste of these shorter fish, which are discarded dead in the summer months, by converting them to landed fish that will be counted against the quota.

The Addendum responds to reports about the increased incidence of Spanish mackerel ¼ to ½ inch short of the 12-inch fork length minimum size limit in pound nets during the summer months. While the fish are alive in the pound, once the net is bunted and bailing commences, they die before being released. This may be due to a combination of temperature, stress and crowding. While individual fishermen have experimented with different wall or panel mesh sizes depending on the target species, there is no consistent use of cull panels. Those who have used cull panels have noted the difficulty and lack of success in being able to release the undersized fish quickly enough to prevent dead discards during this time of year.

The measures in Addendum I only applied for the 2013 and 2014 fishing seasons. The South Atlantic Board formally extended the provisions of Addendum I for the 2015 through 2018

fishing seasons. After 2018, North Carolina, the only state to implement the reduced minimum size limit, stopped requesting approval of the program due to no further request from pound net fishermen to continue the program, and due to recent closures in federal waters.

Amendment 20A (Federal)

Effective July 2014, this Amendment addresses the sale of bag limit caught Spanish mackerel. The amendment rose from concerns that the recreational sales of bag limit caught fish, which are counted toward commercial quotas, are contributing to early closures of the commercial sector. In addition potential double counting of these fish could be causing erroneous landings estimates. In response, the Amendment prohibits bag limit sales with the exception of recreationally caught fish from state permitted tournaments in the South Atlantic region. This amendment also included an action to remove income requirements for federal CMP permits.

South Atlantic CMP Framework Action (Federal)

Effective December 2014, this action allows Spanish mackerel, harvested with gillnet gear in the South Atlantic EEZ off Florida (north of the Miami-Dade/Monroe County line) that is in excess of the trip limit, to be transferred to another federally permitted vessel that has not yet harvested the trip limit. The Framework stipulates that the transfer can only occur if: 1) allowable gillnet gear was used to harvest Spanish mackerel; 2) the transfer takes place in federal waters between vessels with valid commercial permits; 3) the receiving vessel does not have more than 3 gillnets aboard after the transfer; 4) all fish remain entangled in the meshes of the net until the transfer; 5) the quantity of the fish transferred does not exceed the daily trip limit; and 6) there is only one transfer per vessel per day.

CMP Framework Amendment 1 (Federal)

This Framework Amendment, effective December 2014, increases the Atlantic Spanish mackerel ACL to 6.063 million pounds. The modification to the ACL followed the 2013 stock assessment which concluded that the stock is not overfished and overfishing is not occurring. The Amendment divides the ACL between the commercial sector (3.33 million pounds) and the recreational sector (2.727 million pounds).

Amendment 20B (Federal)

Effective March 2015, this Amendment separates commercial quotas of Atlantic Spanish mackerel between a Northern zone (north of NC/SC line) and a Southern zone (South of NC/SC line). The Amendment arose from concerns that the commercial quota could be filled by fishermen in one state before fish are available to fishermen in another state. In order to prevent this from happening, a zone is closed when its respective quota is met. Quota for each zone was based on landings from 2002/2003-2011/2012.

CMP Framework Amendment 2 (Federal)

Implemented July 2015, this Amendment modifies the commercial trip limit system in the Southern zone. The rule establishes a trip limit of 3,500 lbs for Spanish mackerel in Federal waters offshore of South Carolina, Georgia, and Florida. When 75% of the adjusted southern zone commercial quota is caught, the commercial trip limit is reduced to 1,500 lbs. When 100%

of the adjusted southern zone commercial quota is met, the commercial trip limit is further reduced to 500 lbs. This limit remains until the end of the year or the total Southern zone commercial quota is met.

CMP Framework Amendment 5 (Federal)

Implemented August 2017, this Framework Amendment allows commercially permitted vessels to operate as private recreational vessels when the commercial season is closed for Spanish or king mackerel.

Amendment 34 (Federal; pending final rulemaking by NOAA Fisheries)

Amendment 34 was recently approved by the SAFMC in March 2022 and by the Gulf of Mexico Fishery Management Council in April 2022. Council staff are currently working on finalizing the amendment to be transmitted to NMFS for rulemaking. Amendment 34 for federal waters would allow cut-off (damaged by natural predation) Atlantic Spanish mackerel caught under the recreational bag limit, which comply with the minimum size limits, to be possessed, and offloaded ashore.

VII. Implementation of FMP Compliance Requirements for 2021

All states must implement the requirements specified in section 5 of the Omnibus Amendment (5.1 Mandatory Compliance Elements for States; 5.1.1 Mandatory Elements of State Programs; 5.1.1.1 Regulatory Requirements). The PRT found no inconsistencies among states from the FMP.

De Minimis Requests

A state qualifies for *de minimis* status if its previous three-year average combined commercial and recreational landings is less than 1% of the previous three-year average coastwide combined commercial and recreational landings. Those states that qualify for *de minimis* are not required to implement any monitoring requirements, as none are included in the plan.

The states of Rhode Island, New Jersey, and Delaware request *de minimis* status. All states meet the requirements of *de minimis*.

Regulation Changes

Rhode Island declared an interest in Spanish mackerel in 2021 and joined the Coastal Pelagics Management Board at that time. Rhode Island is currently developing regulations through their state public process to meet the FMP requirements for Spanish mackerel.

In North Carolina, a 1,500-yard drift gill net limit was implemented starting May 2, 2021 for the Spanish mackerel commercial fishery in Pamlico Sound and northern Core Sound. The limit was reduced to 800 yards starting June 21, 2021.

Some states implemented reduced commercial trip limits via proclamation or public notice when federal waters closed in 2021 (Table 1).

VIII. Recommendations of the Plan Review Team

Additional research recommendations can be found in the most recent stock assessment found [here](#). The PRT had the following additional research recommendations:

- Understanding the dynamics across the regions is important for future management considering. Consider extending management measures into the New England region (as far north as Massachusetts) as consistent catches and anecdotal sightings of Spanish mackerel have occurred in parts of this area and are increasing in frequency. Also determine whether more northerly fish are of the same stock as fish further south, and the impact of the potential regions in future stock assessments.
- A need for understanding the life history components for Spanish mackerel, particularly from fishery independent surveys. Length, sex, age, and CPUE data are needed for improved stock assessment accuracy. Data collection is needed for all states, particularly from Virginia north. Evaluation of weight and especially length at age of Spanish mackerel.
- Investigate discard mortality in both the commercial and recreational fisheries. Specific information should include an estimate of total amount caught and distribution of catch by area, season, and type of gear.

IX. References

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X. Figures

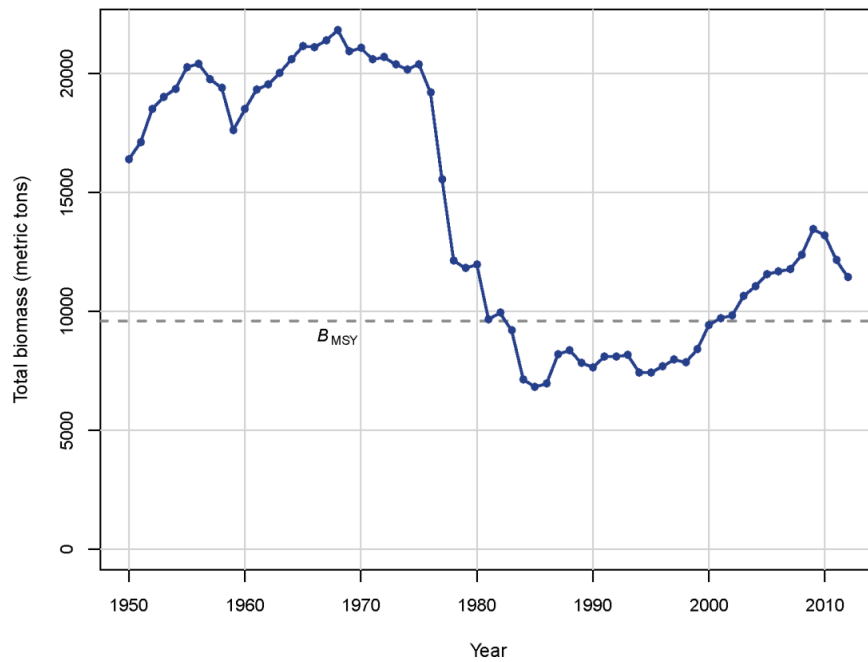


Figure 1. Estimated total biomass (metric tons) at start of year. Horizontal dashed line indicates B_{MSY} (SEDAR, 2012).

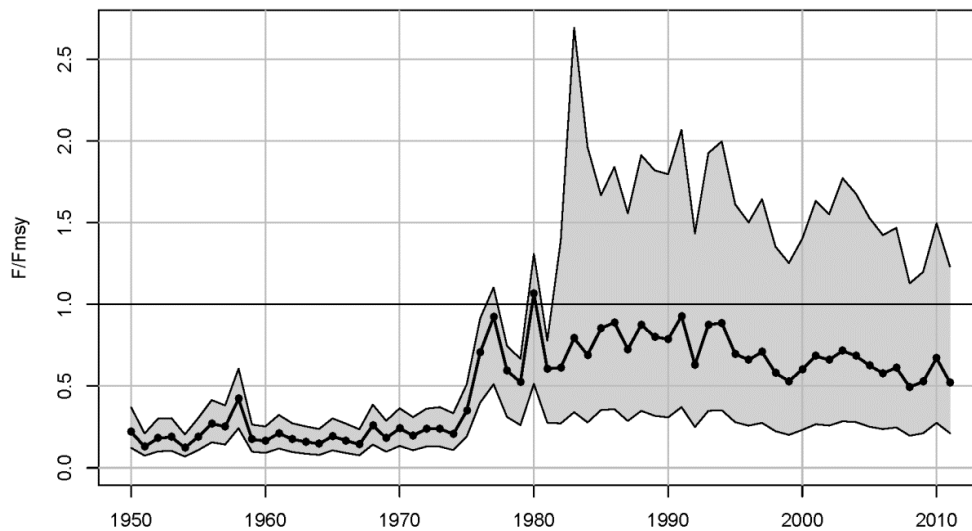


Figure 2. Estimated time series of Atlantic group Spanish mackerel fishing mortality rate (F) relative to F_{MSY} benchmark. Solid line indicates estimates from base run of the Beaufort Assessment Model; gray error bands indicate 5th and 95th percentiles of the Monte Carlo Bootstrap analysis trials (SEDAR, 2012).

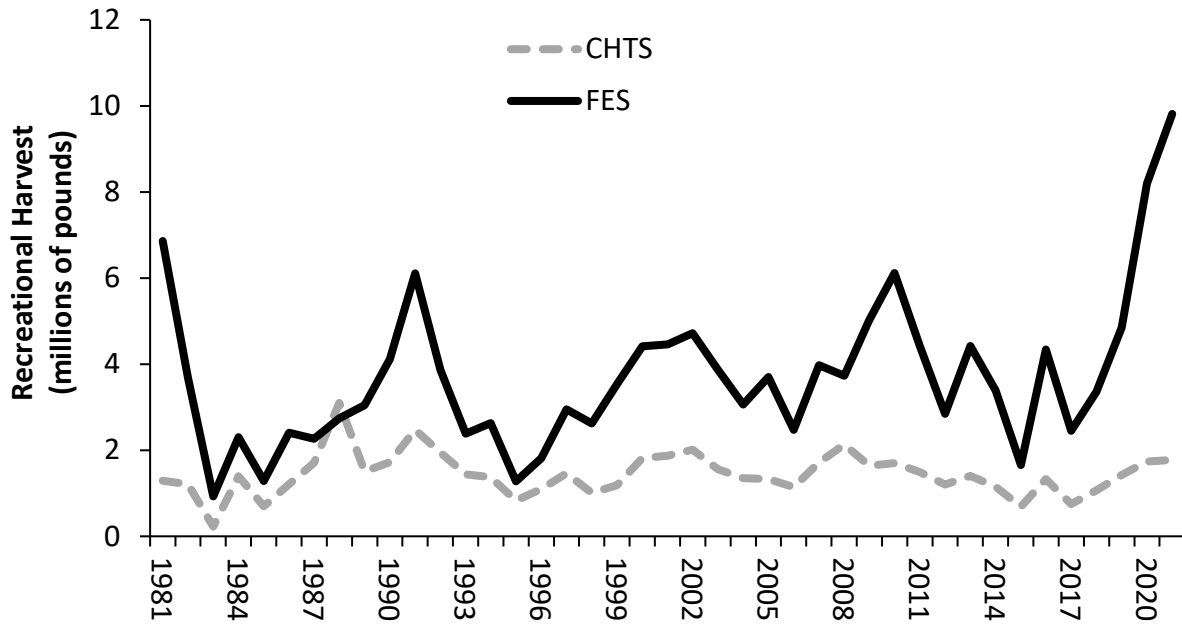


Figure 3. Recreational harvest in pounds, estimated using the Coastal Household Telephone Survey (CHTS) and the mail-based Fishing Effort Survey (FES). (Source: personal communication with NOAA Fisheries, Fisheries Statistics Division. [9/2022])

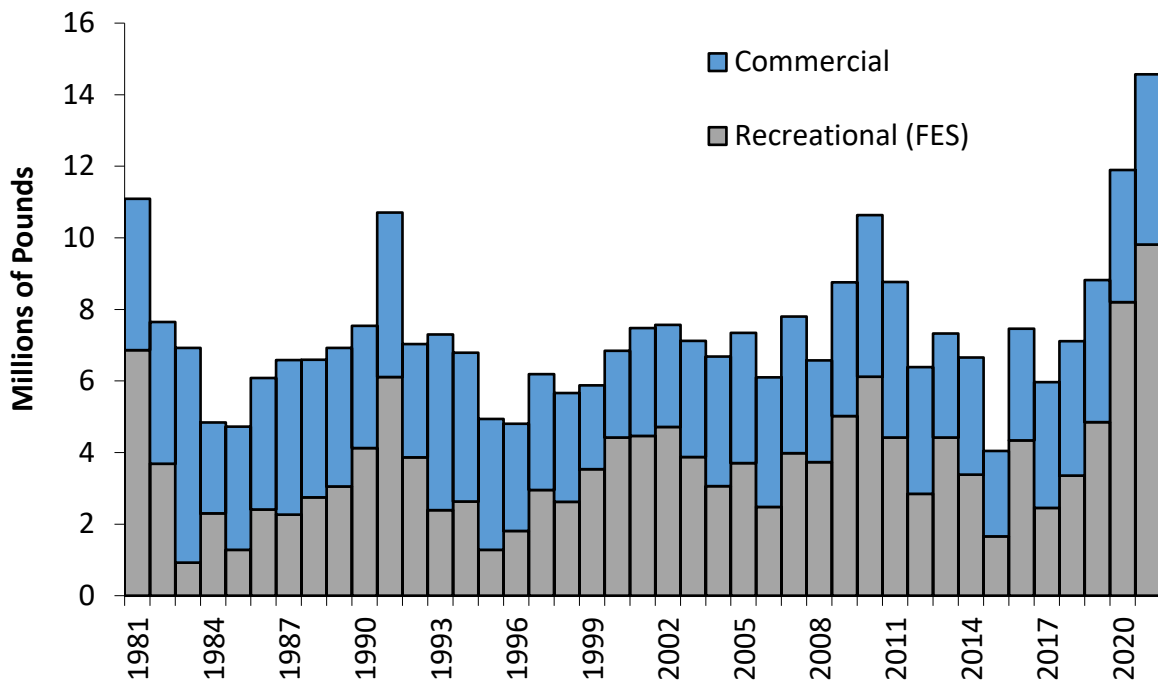


Figure 4. Commercial and recreational harvest (FES) (pounds) of Spanish mackerel, 1981-2021. (Recreational data available from 1981-present only; see Tables 2 and 4 for sources and recent values)

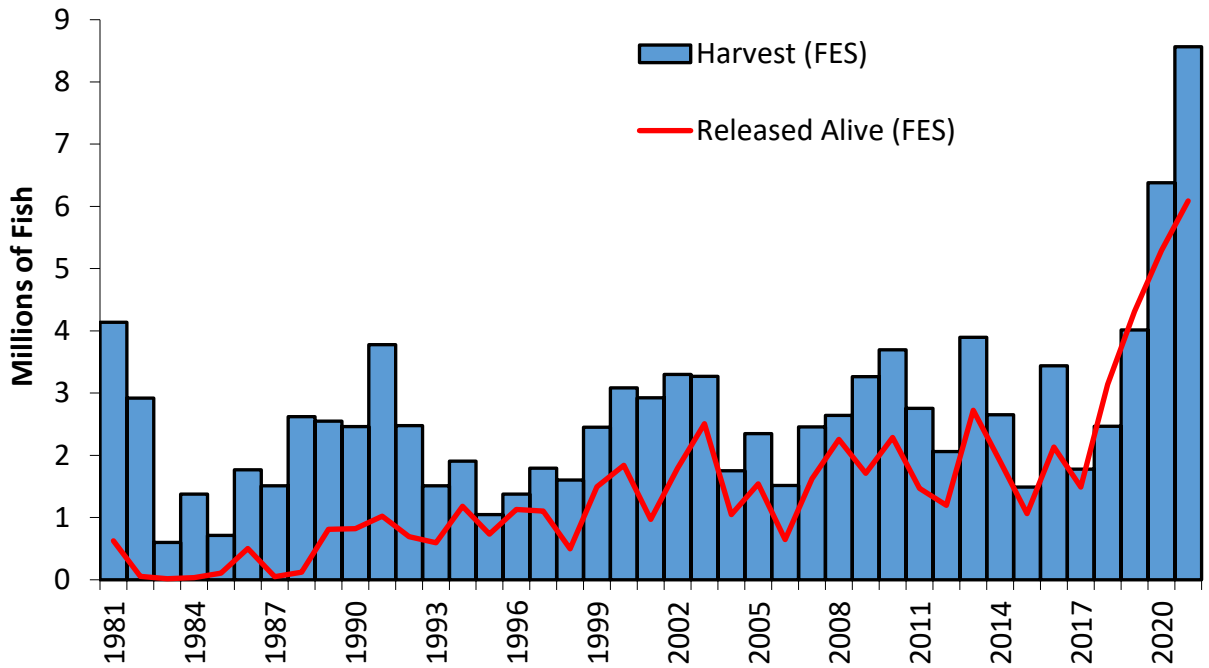


Figure 5. Recreational harvest and releases (numbers of fish; FES) of Spanish mackerel, 1981-2020. (See Tables 3 and 5 for sources and recent values)

Note: Concerns and questions have been raised regarding the 2020 and 2021 Spanish mackerel recreational catch estimates; MRIP is looking further into these estimates.

XI. Tables

Table 1. Summary of state regulations for Spanish mackerel in 2021.

Notes: A commercial license is required to sell Spanish mackerel in all states; other general gear restrictions apply to the harvest of Spanish mackerel. Purse seines, and drift gill nets south of Cape Lookout, NC are prohibited.

State	Recreational	Commercial
RI	<i>Regulations pending:</i> 12" FL/14" TL, 15 fish	<i>Regulations pending</i> 14" TL. 3,500 lbs trip limit.
NY	14" TL, 15 fish	14" TL. 3,500 lbs trip limit.
NJ	14" TL, 10 fish	14" TL. 3,500 lbs trip limit.
DE	14" TL, 15 fish	14" TL. 3,500 lbs trip limit.
MD	14" TL, 15 fish	14" TL. 3,500 lbs trip limit. Public notice 7/9/2021: 500-lb trip limit when harvest in federal waters closed.
PRFC	14" TL, 15 fish	14" TL. Closure if/when both MD and VA fisheries close.
VA	14" TL, 15 fish	12" or 14" TL. 3,500 lb trip limit. 500 lb trip limit if/when harvest in federal waters closed.
NC	12" FL, 15 fish	12" FL; 3,500 lb trip limit for combined Spanish and king mackerel landings. Proclamation 6/28/2021: 500-lb trip limit when harvest in federal waters closed.
SC	12" FL, 15 fish	12" FL. 3500 lbs until 75% of adjusted Atlantic Southern Zone quota taken, then 1500 lbs until 100% of adjusted quota is taken, then 500 lbs. until the end of year or commercial quota is met. If quota is met, then commercial sector is closed to harvest. Requires open access permit for Spanish mackerel.
GA	12" FL, 15 fish	12" FL. 3500 lbs until 75% of adjusted Atlantic Southern Zone quota taken, then 1500 lbs until 100% of adjusted quota is taken, then 500 lbs. until the end of year or commercial quota is met. If quota is met, then commercial sector is closed to harvest.
FL	12" FL, 15 fish. Cast nets less than 14' and beach or haul seines within 2" stretched mesh allowed	12" FL or 14" TL. Trip limits: April 1 until Nov. 30 – 3500 lb; Dec. 1 until 75% of adjusted quota reached – 3500 lb Monday – Friday & 1500 lb Saturday – Sunday; >75% adjusted quota until quota filled – 1500 lb; > 100% of adjusted quota – 500 lb. Restricted Species Endorsement Required Allowed gear: beach or haul seine, cast net, hook and line, or spearing.

Table 2. Commercial landings (pounds, calendar year) of Spanish mackerel by state, 2012-2021. (Source: Annual state compliance reports for 2021 and for all PRFC years; ACCSP for 2020 and earlier. Confidential values are shown as “C”. Coastwide totals and 'Other' totals adhere to the ACCSP rule of 3, i.e., totals are reflective of the true total if 0 or at least 3 states’ data are confidential in a given year. Otherwise, they are sums of non-confidential data.)

Year	Other*	RI	NY	NJ	DE	MD	PRFC
2012		2,135	2,293	2,806		3,634	270
2013	C	C	4,467	265		2,395	302
2014	C	43	2,550	292		1,632	12
2015		C	1,357	2,746		2,222	6
2016		C	813	1,997	C	16,205	548
2017	C	652	1,053	462		815	4,704
2018	C	951	1,283	950		3,071	420
2019	C	1,484	5,683	2,010	C	12,520	45,385
2020	C	602	3,021	1,656	C	6,728	10,092
2021	C	284	5,721	1,620		5,192	20,076
Year	VA	NC	SC	GA	FL [^]	Total	
2012	18,047	916,439			2,597,097	3,542,721	
2013	7,602	620,752			2,265,505	2,901,759	
2014	7,859	673,974	C		2,585,304	3,272,609	
2015	14,472	561,407	C		1,807,967	2,390,178	
2016	32,577	601,526	C		2,461,327	3,115,168	
2017	21,483	816,017	C		2,672,634	3,517,819	
2018	23,609	796,855	C		2,926,285	3,753,425	
2019	169,152	722,396	C	C	3,004,860	3,963,720	
2020	71,953	1,033,526	C	C	2,571,019	3,698,857	
2021	143,376	1,155,289	C		3,417,236	4,752,911	

*Other: states that do not have a declared interest in Spanish mackerel and do not sit on the Coastal Pelagics Board

[^]Atlantic coast landings only for Florida

Table 3. Recreational harvest (numbers, calendar year) of Spanish mackerel by state, 2012-2021. State values shown are the recalibrated estimates using effort information from the mail-based Fishing Effort Survey (FES). Coastwide totals are also shown as estimated from the Coastal Household Telephone Survey (CHTS). (Source: personal communication with NOAA Fisheries, Fisheries Statistics Division. September 2022).

Note: Past FMP Reviews showed state-by-state estimates from the CHTS and cannot be directly compared to the state-by-state totals below.

Year	Other*	RI	NY	NJ	DE	MD	VA
2012						14,531	13,960
2013					41	7,187	126,656
2014						29,713	42,937
2015						15,837	14,950
2016					9	18,559	554,813
2017				8,107	28	9,687	20,000
2018				6,753	797	19,146	132,390
2019	335		21,031	8,787	1,396	109,007	587,683
2020	6,254	3,016	6,096	3,985	92	151,412	374,892
2021	622		3,143	34,323	129	152,829	344,235
Year	NC	SC	GA	FL [^]	FES Total	CHTS Total	
2012	995,852	258,281	2,824	776,659	2,062,107	835,236	
2013	994,599	100,512	2,701	2,665,958	3,897,654	1,119,280	
2014	1,028,925	194,367	5,365	1,348,735	2,650,497	884,490	
2015	835,011	389,923	6,201	229,669	1,491,591	627,632	
2016	918,352	306,235	22,637	1,618,529	3,439,134	964,253	
2017	995,706	45,644	48,633	650,916	1,778,721	631,957	
2018	1,012,889	289,250	49,764	956,741	2,468,046	814,653	
2019	1,478,890	1,046,972	138,756	623,415	4,016,272	1,109,050	
2020	1,286,131	861,349	72,308	3,616,872	6,382,407	1,309,120	
**							
2021	1,312,929	752,570	24,666	5,942,467	8,567,913	1,434,430	
**							

*Other: states that do not have a declared interest in Spanish mackerel and do not sit on the Coastal Pelagics Board

[^]Atlantic coast landings only for Florida

**Concerns and questions have been raised regarding the 2020 and 2021 Spanish mackerel recreational catch estimates; MRIP is looking further into these estimates.

Table 4. Recreational harvest (pounds, calendar year) of Spanish mackerel by state, 2012-2021. State values shown are the recalibrated estimates using effort information from the mail-based Fishing Effort Survey (FES). Coastwide totals are also shown as estimated from the Coastal Household Telephone Survey (CHTS). (Source: personal communication with NOAA Fisheries, Fisheries Statistics Division. September 2022).

Note: Past FMP Reviews showed state-by-state estimates from the CHTS and cannot be directly compared to the state-by-state totals below.

Year	Other*	RI	NY	NJ	DE	MD	VA
2012						37,570	14,053
2013					74	25,099	138,256
2014						72,817	47,601
2015						40,290	13,777
2016					8	30,212	620,147
2017				9,405	43	20,646	30,590
2018				5,702	1,138	41,476	207,551
2019	591		30,177	17,558	1,300	181,994	718,353
2020	10,821	3,991	11,756	4,123	95	223,090	441,654
2021	1,041		3,227	38,116	160	251,273	399,106
Year	NC	SC	GA	FL [^]	FES Total	CHTS Total	
2012	1,327,350	262,932	6,136	1,199,766	2,847,807	1,203,016	
2013	1,242,029	88,783	4,630	2,923,753	4,422,624	1,400,212	
2014	1,193,442	213,864	7,245	1,851,493	3,386,462	1,153,238	
2015	981,867	253,620	22,185	342,598	1,654,337	693,150	
2016	907,400	192,865	39,915	2,552,216	4,342,763	1,326,428	
2017	1,094,778	75,779	72,064	1,146,112	2,449,417	751,053	
2018	1,156,702	513,271	74,910	1,354,426	3,357,009	1,069,043	
2019	1,694,247	847,163	348,469	1,011,804	4,851,656	1,423,876	
2020	1,843,314	556,882	232,439	4,870,363	8,198,528	1,735,197	
**							
2021	1,894,535	503,374	46,879	6,675,421	9,813,132	1,777,420	
**							

*Other: states that do not have a declared interest in Spanish mackerel and do not sit on the Coastal Pelagics Board

[^]Atlantic coast landings only for Florida

**Concerns and questions have been raised regarding the 2020 and 2021 Spanish mackerel recreational catch estimates; MRIP is looking further into these estimates.

Table 5. Recreational releases (numbers, calendar year) of Spanish mackerel by state, 2012-2021. State values shown are the recalibrated estimates using effort information from the mail-based Fishing Effort Survey (FES). Coastwide totals are also shown as estimated from the Coastal Household Telephone Survey (CHTS). (Source: personal communication with NOAA Fisheries, Fisheries Statistics Division. September 2022).

Note: Past FMP Reviews showed state-by-state estimates from the CHTS and cannot be directly compared to the state-by-state totals below.

Year	Other*	RI	NY	NJ	DE	MD	VA
2012							32,563
2013					181		15,005
2014						2,663	19,199
2015						355	4,945
2016					1,038		111,284
2017				14,050		3,747	14,829
2018			11,859	14,372	2	2,166	168,549
2019	4,731		49,390	60,003	2,334	62,881	536,244
2020	40,572		5,395	79,458	1,367	63,467	278,173
2021	3,137	450	2,155	13,309	206	87,479	178,237
Year	NC	SC	GA	FL [^]	FES Total	CHTS Total	
2012	591,792	313,339	4,742	254,415	1,196,851	440,742	
2013	685,692	129,909		1,892,444	2,723,231	684,862	
2014	814,064	136,783	6,967	920,213	1,899,889	490,261	
2015	514,714	321,930	4,185	219,190	1,065,319	406,561	
2016	546,950	333,635	137	1,136,663	2,130,960	416,061	
2017	688,062	300,244	17,408	453,911	1,492,251	390,862	
2018	1,019,418	322,330	18,149	1,584,579	3,141,424	986,450	
2019	1,340,366	1,588,754	14,943	652,727	4,312,373	969,046	
2020	1,267,210	1,060,185	15,301	2,478,780	5,289,908		
**						1,009,308	
2021	1,294,525	647,701	13,733	3,846,881	6,087,813		
**						902,748	

*Other: states that do not have a declared interest in Spanish mackerel and do not sit on the Coastal Pelagics Board

[^]Atlantic coast landings only for Florida

**Concerns and questions have been raised regarding the 2020 and 2021 Spanish mackerel recreational catch estimates; MRIP is looking further into these estimates.

East Coast Climate Change Scenario Planning

Update for Commission and Council Meetings

November 2022



Introduction

The East Coast Climate Change Scenario Planning initiative is being conducted by East Coast fishery management organizations to explore future governance and management issues related to climate change and fishery stock distributions. Scenario planning is a tool that managers can use to test decisions or develop strategy in a context of uncertain environmental, social, political, economic, or technical factors. It is a structured process for managers to explore and describe multiple plausible futures, termed “scenarios,” and consider how to best adapt and respond to them.

The Commission and Councils have been receiving updates on the activities of the initiative. This document provides an overview of what to expect at the upcoming Commission and Council meetings. Additional information is available at: <https://www.mafmc.org/climate-change-scenario-planning>.

Council and Commission Meetings: November/December 2022

At their respective November and December meetings, the ASMFC, MAFMC, SAMFC, and NEFMC will have a workshop for in-depth discussions of the scenarios.

In these workshops, each of the management bodies will consider questions such as:

- Under each scenario, what are the challenges and opportunities that fisheries governance and management would face?
- How well would our current fishery governance and management arrangements cope if these conditions were to occur?
- What needs to change in fisheries governance and management to prepare for these possibilities?
- What are the tools and processes that need to be advanced now to ensure that fisheries are governed and managed affectively in an era of climate change?

Council and Commission members are asked to review two documents in preparation for these discussions. The first is a Scenario Narrative document (**Supplemental Materials**) that outlines each of the four future scenarios in detail. The second is a shorter Summary of Manager Meetings (**Briefing Materials**) document. This contains an initial set of ideas generated by a cross-section of fishery managers from participating management organizations. during brainstorming sessions in September / October 2022. The outcome of discussions at the November / December Council and Commission meetings will be a set of ideas and recommendations from each management body to be considered at a summit meeting in February 2023.

Introduction

This document outlines four draft scenarios that describe different possible futures for east coast fisheries in an era of climate change. The scenario framework is based on initial conversations held at a scenario creation workshop on June 21-23, 2022, attended by approximately 75 east coast fishery stakeholders and support staff. The draft scenarios were subsequently refined, based on comments received at two 'scenario deepening' webinars attended by over 100 fishery stakeholders.

Two core questions about the future - critical uncertainties - form the basis for the scenario framework:

1. What happens to stock production/species productivity by 2040 as climate change continues? Does it result in declining productivity (alongside worsening habitat, and low rates of species replacement), or is productivity mostly maintained (with adequate habitat and sufficient levels of species replacement)?
2. How unpredictable are ocean conditions, and how well is science able to assess and predict stock levels and locations by 2040? Do conditions become far more unpredictable, where existing science is clearly unable to provide much useful information, or are conditions sufficiently predictable to allow science to provide mostly accurate information about stocks and location?

Combining these uncertainties results in a 2x2 matrix that creates four distinct quadrants. None of these quadrants are predictions of what will happen in the next 20 years. Instead, they merely outline what might happen to ocean conditions, stocks and other changes to coastal communities. The scenarios also contain storylines and suggestions as to how fishing industry participants, managers, other ocean use sectors, and seafood consumers might adapt, react to and prepare for such conditions. We have often used specific examples as devices to add detail and color to the scenarios. These are meant as illustrations and not as specific suggestions for what will happen to a particular species, region or management action.

While the scenarios are designed to be divergent from each other, it is also important to acknowledge that there are some aspects that are broadly predictable over the next 20 years, so these elements will be reflected in all of the scenarios.

Across the scenarios, we can assume that ocean temperatures will increase in the next 20 years which will affect marine species biology and distribution. Regions are likely to exhibit differences in seasonal temperatures, and primary production will vary across different regions. We can expect that sea levels will rise. In terms of economic and social changes, it is likely that the coastal population will grow, and new and changing ocean

uses will create more competition - for space and labor - for fisheries. These factors are features of each of the scenarios, but their impact might be different across quadrants.

How to Read and Use these Scenarios

The scenarios are intended to be used as a platform from which we can imagine whether and how fishery management and governance might need to change in future. Below, we pose four categories of questions to consider while reviewing the scenarios.

1) Management and Industry Adaptability / Flexibility / Nimbleness

- a) What does successful adaptability/nimbleness look like in this scenario for managers? For industry?
- b) What are the main barriers to effective adaptability in this scenario?
- c) If you knew this scenario was going to play out, what actions would you propose now, so that operators, communities and managers could adapt to cope with conditions in this scenario?

2) Data & Science

- a) What are the biggest data & science challenges facing fishery managers in this scenario?
- b) What new data & science opportunities emerge in this scenario?
- c) If you know this scenario was the future, what actions should fishery managers take now to ensure that data & science contribute to fisheries' success (data collection, coordination of existing streams, data usage, data sharing)?

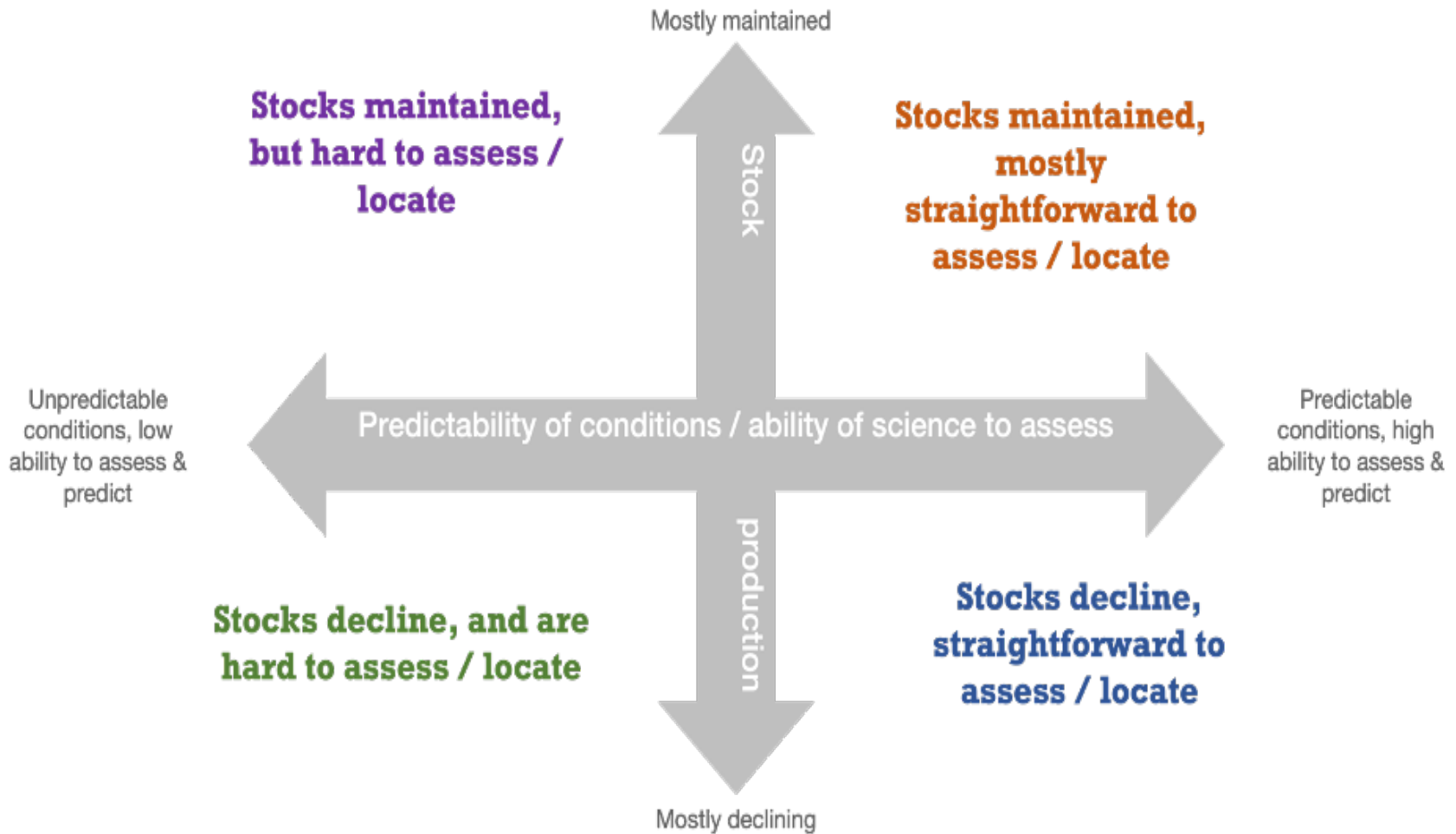
3) Alternative Ocean Uses

- a) What are the most significant challenges for fishery managers posed by new ocean uses (aquaculture, offshore wind, shipping, tourism) in this scenario?
- b) What opportunities are presented by new ocean uses in this scenario?
- c) If you knew this scenario was going to play out, what would you do now to ensure that alternative ocean uses resulted in a positive or minimal impact on fisheries?

4) Cross-Jurisdictional Management & Governance

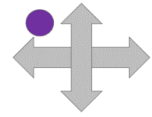
- a) What major stresses would be placed on existing cross-jurisdictional (Council/Commission/State) governance arrangements in this scenario?
- b) Would current approaches for updating management authority over a fishery work well? Here, management authority refers to the entity (Council(s), Commission, or NOAA) responsible for developing the management plan.
- c) What mechanisms for changing management authority need to be considered? For example, automatic triggers based on changes in stock distribution?
- d) What management challenges are present for species that move across jurisdictional boundaries?
- e) What actions/changes are needed to better manage species that move across jurisdictional boundaries?

Final Scenario Framework



Main Themes of Each Scenario

<p>OCEAN PIONEERS “Weird weather and crazy conditions.” That’s what fishing operators and fishery managers are facing in 2040. Life on the ocean is remarkably different compared to 20 years ago. Climate change has prompted more investment in alternative energy and aquaculture. Seasons and locations of fisheries change unpredictably, and traditional science is unable to make accurate assessments. Despite this, fishermen report they are encountering plenty of seemingly healthy stocks. Ocean pioneers thrive in these turbulent conditions. Success doesn’t come easy - it requires taking risks (such as investments in new data-gathering technology), deep pockets and an ability to ride out the storms of uncertainty. There are shifts in social and cultural connections and those who are able to work together and adapt can often improve their economic outcomes.</p>	<p>CHECKS AND BALANCE Good science, smart collaboration and tolerable conditions allow East Coast fisheries to cope with the challenge of climate change in 2040. But nothing is easy: stocks shift and expand their ranges, while busier coasts and new offshore activity create accessibility challenges for both commercial and recreational fishermen. Investments in habitat protection and restoration begin to reverse decades of damage and loss. Science capacity is boosted, delivering improved ocean monitoring, real-time catch reporting and population monitoring. A prosperous ocean economy leads to competition (e.g., between fisheries and aquaculture) but also collaboration (e.g., as fisheries science is boosted by data-gathering sensors on wind energy installations). Changing management approaches help usher in more extensive opportunities and economic benefits for fisheries.</p>
<p>COMPOUND STRESS FRACTURES Several sources of stress have led East Coast fisheries to breaking point by 2040. Shifts in ocean currents and extreme weather events have tipped ecosystems out of balance. Major storms lead to more pollution and degraded habitats. Healthy stocks are scarce. Low abundance leads to reduced harvests and protected species regulations close several fishing grounds. Science is unable to help, as stock assessment data cannot cope with such a changeable and volatile ecosystem. Even fishermen’s local ecological knowledge is unreliable or irrelevant. Trust between stakeholders is in short supply, illustrated by fractious debates over the siting of offshore wind installations. Operators are forced to shift to lower trophic level species, and government support is needed to save a few selected fisheries.</p>	<p>SWEET & SOUR SEAFOOD “The science is good, but the news is bad.” In 2040, climate change is affecting ocean and stock conditions in ways long predicted by scientists. Stocks have shifted their range while productivity and abundance have declined for most relevant species. Better forecasting techniques help fishermen prepare for marine heatwaves and localized die-offs. Aquaculture provides a much-needed alternative as wild-caught seafood declines, and better science ensures that any pollution dangers are minimized. There are signs of a few smart management decisions (such as limits on newly arriving species) and adaptation from fishing operators, but most management approaches have not adapted to the tougher conditions of today, and those on the horizon.</p>



Scenario Narratives

Ocean Pioneers

“Weird weather and crazy conditions.” That’s what fishing operators and fishery managers are facing in 2040. Life on the ocean is remarkably different compared to 20 years ago. Climate change has prompted more investment in alternative energy and aquaculture. Seasons and locations of fisheries change unpredictably, and traditional science is unable to make accurate assessments. Despite this, fishermen report they are encountering plenty of seemingly healthy stocks. Ocean pioneers thrive in these turbulent conditions. Success doesn’t come easy - it requires taking risks (such as investments in new data-gathering technology), deep pockets and an ability to ride out the storms of uncertainty. There are shifts in social and cultural connections and those who are able to work together and adapt can often improve their economic outcomes.

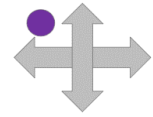
Ocean Conditions and Stock Productivity

In this scenario, ocean waters continue to warm, but rates of warming vary across regions. Environmental conditions and climate drivers are largely unpredictable, complex, and full of shocks and wild card events. Weather patterns and events become increasingly abnormal and harder to predict, including storms, heatwaves, localized warming, and severe weather events. Environmental change is not consistent, and there are spatial and temporal differences in the direction of climate drivers. Seasonal patterns and timing are changing, but with limited interannual predictability. Annual variability in currents and the cold pool contributes to the unpredictability of conditions.

Primary production is high due to increased upwelling and storms. Habitat generally remains of sufficient quality and quantity to support productive stocks. For some stocks, habitat is enhanced by the addition of more structure from wind farms on the continental shelf. Overall, fish stocks are doing well and the food web structure remains robust. Many species distributions have shifted, but species leaving an area are largely replaced by new species of similar economic value moving in. Most areas along the coast see changing and sometimes fluctuating species composition, but fishermen report that they are still encountering seemingly healthy stocks.

Science and Stock Assessments

The volatility in environmental conditions increases seasonal variability which makes it difficult to assess and forecast the health of specific marine resources in the current manner as stock availability and distributions are impacted. While overall productivity remains high, individual stock productivity is variable, with many species experiencing boom and bust years and frequent pendulum swings. Increased alternative energy and other ocean uses contribute to difficulties with stock assessments, as associated structures restrict traditional trawl survey areas. Seasonal management regulations become more difficult to set and less successful as it becomes harder to predict where fish will be at a given time of year.



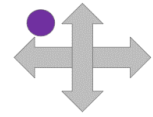
Mismatches arise between how data is collected and where the fish are, both spatially and temporally. Assessments have a difficult time keeping up, and eventually it becomes difficult to assume that stock assessments are robust. It is also difficult to determine “sustainable” biomass and fishing levels given changing distributions and fluctuating productivity of species. Because there is little baseline information about how stocks may fare under new ranges and conditions, it is often unclear what targets are appropriate. Managers suspect that for some species, changes in productivity and stock size are not being captured adequately by traditional assessments; in other cases, assessments indicate large fluctuations in biomass that may not be occurring in reality. Overall productivity seems to be high yet the concerns about the accuracy of assessments leads some to consider if scientific uncertainty buffers should be reevaluated. A new paradigm for determining sustainable fishing parameters emerges, with many ‘historic’ stock assessments being replaced with more ‘pragmatic’ methods for setting catch limits. It is also difficult for scientists to predict species range changes, as it seems to vary by species and region, and there are few consistent trends across years.

In general, scientists and managers struggle to keep up with changing conditions and increasing management needs. In many situations the traditional scientific process is too slow to provide advice on management-relevant time scales. Technology helps address some issues arising under this scenario, but isn’t able to solve all problems. Increased use of transparent technology such as electronic monitoring and transmission of real time fishing data are able to give managers more information when traditional scientific methods and surveys struggle to keep up. While fishing industry and citizen science data are seen as increasingly critical, managers are still grappling with the best ways to use it, and tackling complicated questions around ownership of data. New data streams can also change conclusions about stock health, compounding uncertain and fluctuating estimates of biomass.

Fishing Practices and Pressures

Local ecological knowledge and innovative technological expertise is at a premium as fishermen adapt. Their data provides critical on-the-water observations and catch information. Management begins to rely more on the data and information collected and transmitted from fishermen on the water, as well as shoreside data collection at docks. Industry participants continue to push for this data to be used to its full potential.

Variations and unpredictability in environmental conditions and fish distributions lead to variable fishing success from year to year, creating “boom” and “bust” years for commercial and recreational fishing communities. In addition, sometimes harvesters must work around dangerous fishing conditions created by unexpected and extreme weather events. In the commercial sector, this creates market swings that cause frustration in the industry - it is hard to create stable seafood markets under these conditions. However, this is partially offset by increased public demand and willingness



to pay a premium for sustainable seafood. Some smaller niche businesses succeed in adapting to fluctuating markets and new supply chain dynamics, but that requires courage, risk-taking, and a good amount of luck. The fishing industry faces a constant struggle to bring in new players given so much variability and uncertainty about future income potential. The next generation generally pulls back on investing in fishing industry businesses, aside from a few players who try to take advantage of new opportunities in a markedly different fisheries world.

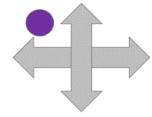
Recreational for-hire businesses suffer in many areas as demand for trips drops: it is difficult to keep clients coming back with inconsistent catch and less familiar target species as local availability changes. However, a few recreational for-hire communities positioned in an area with an influx of popular for-hire target species are doing well. Private anglers are more adaptable as information about locally abundant fish populations travels through the angling community quickly enough to provide quality fishing opportunities for anglers with access to private boats or productive shore fishing sites.

Winners and Losers

Patterns of who is catching what have changed quickly. Inequity issues are prominent as differences in adaptability, largely driven by access to capital, have become clearer. For both commercial and recreational fisheries, those with access to more capital are able to ride out difficult times and take advantage of good stock conditions. Many others - often with fewer resources - struggle to cope with such uncertainty. There is a trend toward consolidation in the industry.

Winners are those who participate in highly mobile fleets as well as those who are able to invest in fleet and gear technology to adjust to fishing in deeper waters and/or to traveling further distances. But the longer travel times come at a cost for fishermen and their families, especially those with children. Investing in more fuel-efficient vessels contributes to success, given fluctuations in the cost of fuel. But such new technology is more expensive, even if over time it pays for itself. More complex business models adapt better to a different species composition, changing environmental conditions and weather patterns, and market conditions. Operators that are less able to diversify their target species and/or less able to travel to find fish are struggling. Those who cannot fish further offshore or by traveling longer distances along the coast find their local ecological knowledge, gathered in some cases over multiple generations, has become less useful as the ocean and the stocks change. For some gear types, smaller, more nimble vessels are at an advantage.

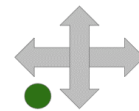
Extreme weather also creates winners and losers at the shoreside community level. Depending on local resources and wealth, some communities struggle to reinvest after major storms, while others use these events as an opportunity to invest in improved



infrastructure. Ports that have already invested early in the protection of the coastline, driven by sea level rise and previous storms, are benefitting. Regional factors also influence vulnerability to sea level rise and extreme weather events. For example, ports in Virginia are subsiding which accelerates sea level rise impacts while the rocky shoreline of Maine is rebounding and less vulnerable to erosion from storms. On the other hand, coastal areas off of the Chesapeake Bay, Delaware Bay, and Hudson Bay are more vulnerable to water quality changes due to freshwater and storm runoff. Meanwhile, smaller fishing communities, especially those that had become dependent on a small range of climate-at-risk species, are having trouble adapting. Some suffer a loss of cultural identity, social bonds, and sense of place. However, some of these communities find ways to work together to adapt and thus strengthen their social and cultural connections.

Alternative Ocean Uses

While stocks are overall productive, many players have lost access to historically important fishing grounds due to space competition with new ocean uses, compounding industry struggles to maintain consistent access to shifting stocks and making it difficult to use accumulated local ecological knowledge. Extensive offshore wind and other ocean energy uses are changing access to traditional fishing grounds, so many fleets have shifted effort to less productive fishing grounds or expanded into previously un-fished areas. Shifts in the location of fishing effort combined with shifts in the range of marine species leads to changes in patterns of interactions with protected resources, which are now more difficult to predict. In some cases, increased interactions with whales and other protected species place further constraints on where fishing can occur. In addition, reduced available fishing area leads to increased user conflicts, between and among different gear types and between the fishing industry and adjacent uses. These changes have excluded participants who were unable or unwilling to modify their fishing practices.



Compound Stress Fractures

Several sources of stress have led East Coast fisheries to breaking point by 2040. Shifts in ocean currents and extreme weather events have tipped ecosystems out of balance. Major storms lead to more pollution and degraded habitats. Healthy stocks are scarce. Low abundance leads to reduced harvests and protected species regulations close several fishing grounds. Science is unable to help, as stock assessment data cannot cope with such a changeable and volatile ecosystem. Even fishermen's local ecological knowledge is unreliable or irrelevant. Trust between stakeholders is in short supply, illustrated by fractious debates over the siting of offshore wind installations. Operators are forced to shift to lower trophic level species, and government support is needed to save a few selected fisheries.

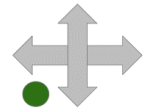
Ocean Conditions and Stock Productivity

This is a world in which ocean temperatures are increasing, sea levels are rising, currents are unpredictable, and marine heatwaves have increased in frequency and duration. There is a climate tipping point where the Atlantic Meridional Overturning Current, AMOC, becomes unstable. Severe storms have increased in frequency, which creates brown water and temporary dead zones nearshore, which in turn disrupts spawning events. Despite targeted restoration efforts, coverage of submerged aquatic vegetation, a climate-vulnerable coastal habitat upon which many species depend, is reduced. Temperature and pH changes vary, with some areas warming and/or acidifying more rapidly than others. Unpredictability is a hallmark.

Under these conditions, fisheries production and habitat quality has declined. Species distributions are shifting, and for some regions, there is little replacement of important commercial and recreational species that have moved into other areas or declined in abundance. Generally, species diversity has declined, while range expansion and contraction are extremely variable. Overall, the fish community looks quite different from today. Undesirable or low dollar value species that have traditionally been discarded (e.g., sculpins and searobins) are common. Abundance of lower trophic level species increases as top predators decline. Generalist species that occupy a range of habitats and do not rely on particular prey are more successful.

Many fishermen need to change stocks and/or traditional fishing grounds and find their decades-long or even intergenerational local ecological knowledge is unreliable or irrelevant. Even for those traditional species that remain, fishermen switching to a traditional species they had not previously fished need to learn new local ecological knowledge. Fishermen already fishing those species do not easily share knowledge and the newcomers' catches (and income) suffer during that learning period.

Estuaries, which are important fish nursery grounds, are experiencing declines in productivity due to habitat degradation. This is caused by several factors, including sea level rise and changes in salinity due to alterations of freshwater outflows. There is less



larval dispersal and increased larval mortality. Saltmarsh areas are reduced due to droughts, and coastal population growth leads to increased demands for coastal armoring to protect infrastructure, which prevents natural landward migration of these habitats. Coral habitats, which support some southeastern species, decline in quality.

Changes in the distribution and abundance of plankton lead to shifts in where large whales occur. Efforts to conserve listed fish species, such as Atlantic sturgeon and Atlantic salmon, continue, but populations remain depleted.

Science and Stock Assessments

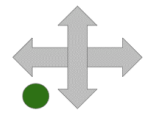
Science is not able to predict the changes occurring in this complex and unpredictable ocean - and partly as a result, funding does not keep pace with ever-increasing demands. Stock assessment and status determination suffer. For most stocks, data streams and assessments lag behind current conditions, and are not useful for predicting dynamics. Scientists' assessments often clash with the experience of fishermen, leading to a lack of trust in the data. New fisheries emerge, targeting species lower on the food web, but a lack of knowledge of these stocks often leads to overexploitation. In some cases there is limited ability to obtain permits to target locally available and abundant species. Many stocks experiencing range shifts are incorrectly classified as overfished, and these false flags undermine trust in the management process. Over time, there is less funding for science and fishery management in general.

In a few fisheries, scientists and managers eventually learn to use novel, real-time data streams from some stocks to conduct more frequent management track assessments. Through advances in electronic monitoring (EM) some fleets have adopted 100% monitoring coverage. These fleets are able to provide more real-time data to managers and scientists, allowing for more nimble management of stocks, both in-season and annually. While many fishery management plans and regulations remain inflexible and are slow to change, those with enhanced monitoring have started to develop new approaches to better suit the needs of the changing fisheries.

Social and Economic Conditions

The costs of harvesting fish continue to rise and profit margins shrink. Fuel prices are volatile, and costs for other items such as ice, fishing gear, and other provisions increase regularly. Vessels are more transient, chasing fish northward and offshore, which increases transit times from home ports. This places stress on crew members and their families and leads to higher fuel consumption. Commercial harvesters find it difficult to retain and recruit crew. Current crew are aging and retiring fishermen are not replaced - fishing is not an attractive industry for most, especially young people. Some young people from fishing families still want to enter the industry, and manage to leverage family vessels and social capital to stay in the industry. But overall, the employment picture is grim. Processors are also having trouble retaining workers, given that cutters





often specialize in certain species and the species landed are changing, often unpredictably.

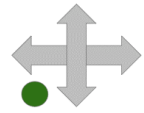
There are other stresses facing fishing operators. Precautionary management of protected species (including large whales) constrains fixed gear fisheries. Discards of diseased fish are problematic. Significant atrophy occurs within some fleets. Damage from more frequent and extreme weather events has a compounding negative impact on some coastal communities, including fishing ports. As it becomes harder to succeed within existing fishery laws and regulations, trust and open communication between the fishing and management communities erodes.

More people move to the coast to gain relief from higher inland temperatures, exacerbating pre-existing gentrification problems. This causes ever-growing development-related stresses on nearshore habitats. Climate impacts on agriculture lead to rises in food prices, and ultimately, this leads to higher demand for seafood protein. While this provides opportunities for fisheries, consumers are primarily concerned with price and taste and are willing to buy imported or tissue cultured products so long as they are inexpensive and enjoyable to eat. There is limited broadscale emphasis on locally caught seafood, though some consumer-supported fisheries and other direct marketing businesses retain sufficient customer base to stay afloat or even prosper. Further complicating matters, there are international tensions which also affect seafood trade. Faced with such multiple and mounting pressures, the industry experiences significant consolidation, with marginal players often forced to sell up and move out. This has a damaging effect on fishing communities, with traditional activity shrinking or disappearing. Cultural identity, sense of place, and social bonds deteriorate in some fishing communities, especially those with significant influxes of population from further inland.

Recreational fishing by boat becomes very expensive and is usually only available to the wealthy. Some of the more sought-after species move further offshore and occur at lower densities, making them harder to target. As a result, new community groups form to lobby for government support to maintain access for lower-income recreational fishermen. The profile of shoreside angling changes in many areas of the Southeast, where reductions in fish habitat and water quality render coastal waters unsuitable for species that were previously common there. This has ripple effects for bait and tackle shops and other recreational fishing infrastructure. It especially impacts those fishing for food, as the lower value species they had traditionally depended on are less common or being landed by more purely recreational fishermen in place of their traditional recreational species that are not as available.

Alternative Ocean Uses

As fishing activity declines due to uncertainty and stock changes, fishing is no longer the dominant activity in the ocean. Offshore energy and shipping now take up more



space and, despite good intentions, these industries don't need to rely on a healthy ocean ecosystem. Wind installations and shipping create damaging effects on nearshore and offshore fish and fisheries.

More funding is directed to these new ocean uses, with managers and scientists focusing their attention towards these new opportunities sometimes at the expense of researching changes in fisheries. Atrophy in the fishing industry allows ports to expand and change to accommodate offshore wind and shipping, but this does little to support fishing operations. Smaller fishing ports are lost without targeted interventions. Such interventions are successful where the right mix of resources come together, and a few ports experience a renaissance, where hub ports with diverse fishery support services remain accessible and the number of fishing vessels increases for the first time in decades. But many other fishing communities lose local waterfront space, leading fishing families to struggle to remain in fishing. In some cases, fishing families are pushed even further inland than they had been by previous gentrification issues. Fishing families from a single community end up scattered across several communities, losing their sense of place and sometimes their cultural identity as fishing families. This leads to social disruption as former fishermen struggle to find other work that is as fulfilling as fishing.

Responses to Difficult Conditions

As a short-term response to these extreme harvesting and marketing stresses, the Federal government acknowledges fisheries disasters and increases support for selected domestic fisheries. It supports the development of domestic markets for fish and reduces imports through tariffs. This includes market development, advertising, science, technology, and workforce training. Workforce training is especially valuable when it builds on and expands existing programs with proven track records. Given limited resources, specific fisheries are targeted for these interventions because they likely have staying power under new environmental conditions. In fisheries that receive these interventions, there are successes around reduced operational costs, new markets, and innovative science programs. Some fisheries and fleets do not survive the cataclysm. Some fishing communities lose vessels that depended on those fisheries and fleets, and eventually fishing infrastructure and population. This frays the social bonds, cultural identity and sense of place in those towns.

Despite these fractures, there are some bright spots on the horizon for the industry. Battery technology improves to allow some vessels to switch to more efficient electric vessels and improvements in radar systems allow for safer navigation. Offshore aquaculture expands to both supplement and enhance wild capture fisheries. Because both wild capture fisheries and aquaculture require processing infrastructure, aquaculture-related enhancements benefit wild capture fisheries as well. Shellfish aquaculture mitigates coastal water quality concerns in some specific areas, improving habitat for many species.

Sweet and Sour

“The science is good, but the news is bad.” In 2040, climate change is affecting ocean and stock conditions in ways long predicted by scientists. Stocks have shifted their range while productivity and abundance have declined for most relevant species. Better forecasting techniques help fishermen prepare for marine heatwaves and localized die-offs. Aquaculture provides a much-needed alternative as wild-caught seafood declines, and better science ensures that any pollution dangers are minimized. There are signs of a few smart management decisions (such as limits on newly arriving species) and adaptation from fishing operators, but most management approaches have not adapted to the tougher conditions of today, and those on the horizon.

Ocean Conditions and Stock Productivity

The earth and oceans continue to warm, particularly in the Gulf of Maine, where the average temperature has risen by ~1.5 degrees since 2022. The Gulf Stream has continued to become more prominent, bringing warmer water along the east coast, and edging out the cooler waters from the north. The cold pool historically present off of the mid-Atlantic is now a rare occurrence. New primary production varies with latitude, but generally, across all areas, we are seeing larger plankton being replaced by smaller species, resulting in lower fish productivity.

There is an increase in stronger and more frequent storms that impact coastal communities most acutely. While predictive capabilities for these storms are good, impacts to fish habitat and infrastructure are high due to the lack of time between storms to repair and restore. Along with storms, increased pollution plus continued warming have impacted habitat type and function, resulting in decreased abundance and a comprehensive shift in available fish stocks in each region. Some towns are faring well, despite these changes, because of the efforts made to develop living shorelines, while providing incentives to private marina owners for ensuring a proportion of the marina is available for commercial and for-hire vessel access.

Despite similar climatic influences, the biological impacts vary between regions due in a large part to local adaptation efforts. Stock distributions have continued to shift, sizes of individual fish are smaller, and productivity of most stocks has decreased. Continued degradation of estuaries and other habitats has contributed to impacts to spawning areas and decreased recruitment.

Science and Stock Assessments

In this scenario, scientific understanding of the oceanographic and biological conditions is very strong, even if the news is not good. Researchers are able to closely track changes in water temperature and stock distribution using a variety of methodologies. These include enhancements to the Federal trawl survey, cooperative research with the fishing, offshore energy, and aquaculture industries, and new techniques to better model and predict future changes. Marine heat waves continue to

be important, but scientists are able to predict them in enough time for fishermen to prepare. Scientists track changes in the environment and share them with management using robust indicators within ecosystem status reports. Their findings indicate declining stocks and worsening habitat, but at least the accuracy of the information provides opportunities for managers to address such problems. Generally, effective management is able to keep pace with new information and identify how to use it to inform timely decisions. But some management is constrained by slow decision-making processes and incongruent approaches along the East Coast.

Management Responses

Unregulated access to species in new areas before the broader management program can respond is problematic. This leads to distrust across fishing communities, as groups who have the permits are unable to benefit from expanded stock availability due to complex regulations. However, proactive efforts by one of the region's fishing industry groups resulted in healthy and productive fisheries despite these changes. For example, their actions to limit fishing on the few newly arriving species allowed the establishment of reproducing populations that have generally replaced the cod, Atlantic mackerel, and lobster that have moved north into Canada. However, no trans-boundary agreements were forged to allow New England fishermen to follow the stocks into Canada; this, in addition to a continued market focus on these historical species, led to increased imports of these species rather than focusing on new species in the area. For example, tourists still insist on lobster rolls along the coast of Maine, rather than adjusting to eating the black sea bass that local fishermen are harvesting now.

Adapting to New Conditions

Aquaculture has seen significant growth in the area, driven by demand for protein as the abundance of wild caught seafood declines. Advances in science and technology have led to less pollution from net pens and less reliance on wild caught fish for aquaculture feed. Streamlining of the regulatory process has allowed for aquaculture businesses, including offshore finfish farms and sea ranching, to expand, yet their small ocean footprint does not impact wild fishing to the same extent as other alternative ocean uses.

Fish stock distributions have changed what is available for day-boat fishermen, but their ability to catch those species has stalled the shifts, with a few exceptions. Some fishermen have been able to adjust to fishing for different species, despite the expense associated with acquiring the gear necessary to make those changes. For example, one group has been able to capitalize on turning previously low value, bycatch species into animal feed and fertilizer. Importantly, a shift toward "boutique fisheries" allowed some small-scale fishermen to adapt to the reduced catch limits and new stocks yet still remain economically viable. This occurred because an Alternative Ocean Use area reopened to commercial and for-hire hook and line fishing, primarily targeting highly migratory species such as Atlantic cobia. The previous closure of this area had allowed for this

previously southern stock to establish a strong sub-population without exploitation. The management body added this species to an existing FMP, with provisions limiting access to previously permitted small vessels only.

Unfortunately, similar efforts were not implemented throughout the region, leading to varying levels of protection for newly arriving stocks, and limited establishment of new populations. This has been especially problematic as the loss of forage fish biomass has impacted all levels of the food web in these areas. Continuation of historical fishing methods and sales, along with poor articulation of priorities or values, has led to the loss of many small-scale fishermen in some areas because they are being replaced by large corporations able to focus on quantity over quality. In such areas, changes in the management process have been far behind the timetable necessary to allow smarter and more cost-efficient permitting changes. This has resulted in an industrialization of the fleet, edging out owner operators with less capital. The variable management response between regions has also led to increased conflict between regions and sectors. Fishermen have also struggled to establish solid marketing of locally sourced fish because consumers are still able to access the historically popular stocks through imports.

Access to fishing areas and stocks by commercial and recreational fishermen is not just impacted by the availability of permits and gear. Privatization of marinas, docks, and other ocean access sites has made it difficult for low and average income commercial and recreational fishermen to take advantage of new opportunities. These access restrictions have also led to substantial and disproportionate impacts on subsistence (food/cultural heritage) fishing, greatly limiting the ability of poorer communities to supplement food sources and of some groups from acquiring specialty species for religious/cultural practices.

As the ocean gets busier, commercial and recreational fishing participation is limited by the physical space available to fish in. New offshore energy and aquaculture structures have narrowed the fishable areas in ways that are not aligned with shifting habitat preferences of target species. Some participants in recreational fisheries have enjoyed an increased access to previously unavailable stocks closer to home, but most struggle to afford the ability to fish in deeper, colder waters. Many recreational fishermen have also been impacted by the loss or diminishing of longtime or even generational family traditions associated with annual or seasonal trips to the shore.

Checks & Balance

Good science, smart collaboration and tolerable conditions allow East Coast fisheries to cope with the challenge of climate change in 2040. But nothing is easy: stocks shift and expand their ranges, while busier coasts and new offshore activity create accessibility challenges for both commercial and recreational fishermen. Investments in habitat protection and restoration begin to reverse decades of damage and loss. Science capacity is boosted, delivering improved ocean monitoring, real-time catch reporting and population monitoring. A prosperous ocean economy leads to competition (e.g., between fisheries and aquaculture) but also collaboration (e.g., as fisheries science is boosted by data-gathering sensors on wind energy installations). Changing management approaches help usher in more extensive opportunities and economic benefits for fisheries.

Ocean Conditions and Stock Productivity

This is a world where societal and policy choices are firmly focused on emissions reduction. This has not yet had noticeable impacts on ocean conditions (temperatures continue to warm and sea levels rise), but more investment and attention is now placed on addressing climate change and environmental concerns. This has resulted in increased funding for science and innovations in data that have improved the ability to predict and assess the impacts of climate change.

Ocean temperatures have increased, leading to extensive shifting stocks and range expansions. Science has been able to accurately predict the changing location of abundant stocks, which is critical to the ability of commercial and recreational fishermen to plan for adaptation.

Public and private investments in estuarine conservation, restoration, and enhancement have created a more robust, foundational support for the ecosystem, food web, and forage and estuarine-dependent managed species. Habitats have improved, enhancing the production of many stocks. Storms are more frequent and intense, but science is able to better forecast and understand the impact of such events, increasing safety in what has historically been one of the highest risk occupations in the U.S.

Fishing Practices and Pressures

Despite advancements in science, commercial fisheries still struggle to thrive, faced with high operational costs and a decrease in product prices. Fishermen travel long distances for their catch, increasing their fuel costs and placing increasing burdens on fishermen and fishing families due to longer absences from home. Meanwhile, some fishermen have further diversified their employment across the seasons, with some adding aquaculture to their seasonal rotations and others periodically driving boats servicing offshore wind platforms. Some fishery participants have adapted well to changing conditions by reconfiguring their vessels, moving to the new locations of their traditional species, utilizing new technologies to find fish more effectively and/or using

less fuel and other resources. But this is a significant amount of work at a time when fishermen are already spread thin trying to keep track of changing oceans, changing ocean infrastructure, and changing management.

Despite a broad abundance of stocks, some commercial fishery participants have decided that the fishing activity is not worth the effort. Many of these fishermen have sold their interest in fishing to corporations and are no longer involved in the industry or have gone to work as captains or crew for corporate fleets where their income is more secure and they no longer have the sole responsibility of responding to the changing fishery conditions. The result has been a general loss of small-scale commercial operators and an increase in corporate interests and aquaculture. Corporations have had better flexibility to sustain larger operations over a wider geographic area.

The recreational sector is strong thanks to abundant production and relatively predictable ocean conditions. Wealth has increased along the coastlines, encouraging expansion of recreational fishing. However, the accessibility to recreational fishing has diminished as the effects of sea level rise, coastal development and gentrification have reduced public access to the ocean via piers, docks, and beaches. Many recreational fishermen must have the income to either fish on for-hire vessels or travel offshore on personal vessels. Those unable to do this are losing access to fish for food, cultural practices, and/or fishing as a family tradition. The for-hire sector adapts to new species and continues to expand, creating an increase in overall recreational fishing. Fishermen in the Southeast have transitioned to different species such as harvesting yellowtail snapper off the reefs of Georgia or conch in North Florida. In the Northeast, recreational trips target black sea bass and spotted sea trout.

As society becomes more concerned with climate change impacts, science is well funded, and its efficiency has improved. Effective ocean monitoring, real time fisheries reporting, and food web and population monitoring are all regular sources of information for fishery participants. Smarter surveys are able to identify changes in species compositions, the habitats both new and traditional species are utilizing, and oceanographic characteristics, all of which lead to a better understanding of the changes in the food web. With proactive and increasingly effective science, species productivity is better assessed, distribution shifts and range expansions are forecast and tracked, and interactions with protected species and bycatch fall to historically low levels. Interactions with protected species and bycatch are further reduced by advances in gear technology developed in both corporate and cooperative research fleets.

As science improved, stock production increased and management evolved. Fishing operators and communities have started to successfully adapt to a range of changing conditions. New markets have been developed, helping to sustain more commercial fisheries and increased recreational opportunities. White and brown shrimp now compete with Maryland crab cakes in popularity and the grouper sandwich has now

become a tourist draw in New Jersey. But the successful evolution of commercial and recreational fisheries was only possible because of changes in management approaches. When effective, such changes provided for a full and flexible balanced use of available stocks, leading to a more diverse array of marketable species along the coast. Without changes to management, extensive opportunities and economic benefits for the commercial and recreational fisheries may not have been realized and there would have been greater impacts to fishing communities and fishing as a way of life.

Alternative Ocean Uses

East Coast waters are now being used for multiple purposes, including extensive wind energy areas and aquaculture. These competing uses have created significant tensions related to fishing rights, opportunities, working waterfronts, and equity. Zoning issues on land combined with impacts of sea level rise create user conflicts. For example, the expansion of wind power has led to a decrease of commercial spaces in working waterfronts, causing commercial fishermen to have issues finding dock space and local dealers. This also exacerbates an already ongoing consolidation of dockside services in hub ports rather than being scattered along the coast.

Gentrification continues to create concerns over accessibility for both recreational and commercial fishermen. Where commercial fishing access is lost, some fishing community members end up moving to other towns, losing their unique sense of place and some of their cultural identity. These communities then lose any remaining commercial fishing infrastructure. Local businesses such as ice vendors and grocery stores lose revenue. Where recreational fishing access is lost, local businesses such as bait & tackle shops have to close, as do some local restaurants and businesses catering to tourists. Some fishing communities, though, find ways to push back against gentrification through new town, county, or state laws that preserve their unique heritage.

More alternative energy activity has resulted in less political leverage for fishermen as energy users become more powerful. However, many fishery and coastal stakeholders have benefited from this new influx of attention and investment. Ocean research and monitoring activity is improved by using offshore wind platforms. Aquaculture and offshore wind drive more infrastructure spending in coastal towns. More generally, fisheries benefit from improved coordination with alternative energy operations, assisted by effective regulatory and management approaches. In addition, aquaculture has expanded and is included in the suite of marketable seafood products.



Scenarios As Platforms for Thinking About Adaptability

The scenarios above represent four different futures influenced by varying levels of stock productivity/abundance and the level or predictability of ocean conditions. Within each of these four stories, the success of players in the system varied according to whether they (and the system in general) were adaptable to the new and different sets of conditions.

Different degrees of adaptability were in evidence in the scenarios. Sometimes, the stories explained how some regions were more adaptable than others. Sometimes players in the system learned over time, so adaptability was higher in later years compared to earlier. In other storylines, adaptability was determined by the level of capital investment, or sometimes by the willingness to use technology.

It seems clear that the secret to success (for most players) in an era of climate change is an ability to adapt to changing conditions. But what does adaptability mean? Across the scenarios, ideas about adaptability were discussed across several dimensions.

- Many of the scenario stories recognize that fishing operators are inherently adaptable, as they have reacted to changing conditions over many years. Stock availability has varied, fish have changed their ranges, economic challenges have emerged from unexpected sources (like the pandemic). But a future of climate change will put even more pressure on the ability of operators to adapt. The optimistic see no reason why operators won't continue to adapt. The pessimists see that climate change alters conditions so much that it could get more difficult to do so.
- Elements of the scenarios also reflect the fact that operators have only so much influence over their ability to adapt. They might be constrained by external factors, such as "too much change," a lack of resources, technology, or politics. They might also be constrained by more internal factors such as existing skills and conventional attitudes.
- The scenarios also raise questions about who adapts. In some situations, new players come into the market for ocean resources. Energy and aquaculture companies might innovate and become more powerful players, creating a highly adaptable environment that poses real challenges for fishing operators. This links back to the question of the resources and attitudes available for adaptation.
- During scenario creation conversations, fishing operators saw their ability to adapt being constrained by existing fishery management and governance approaches. In a future of climate change, where stocks might move, ranges might expand, and new challenges could emerge from year to year, it is imperative that governance and management recognize the need for their own

approaches to adapt. There is a major concern that current arrangements will limit success, given the need for operators to travel further, catch different stocks, etc., etc.

- Adaptability was also referenced in terms of the legal and regulatory apparatus (mostly the MSA, but also including other federal and state regulatory constraints). At this stage, the scenarios have been written in a way that assumes that the legal and regulatory apparatus remains broadly intact. However, this should not constrain the next stages of the process from generating ideas based on possible changes in the legal and regulatory environment.

To sum up, these scenarios describe ways in which various players and places might adapt (or fail to adapt) to a range of new and different conditions in an era of climate change. The descriptions outline some of the broad contours of possible changes - to fishing practices, use of technology, governance and management etc. -- but they stop short of suggesting specific actions. That is the purpose of the next stage in the overall process. These scenarios should be used merely as platforms, containing hints and provocations to help stakeholders discuss the actions to come.

Next Step

Applications Summit Meeting: February 2023

An in-person summit meeting is planned for February 2023, targeting approximately 50 participants from the participating management organizations. The summit meeting will serve as a venue to discuss the input from manager sub-group and individual management body sessions, with the goal of developing a set of governance, management, and monitoring potential actions from the scenario planning process. Potential actions generated at the summit will be refined into a final report following the meeting. These potential actions may include both near-term and long-term priorities. Some may be actions that could be undertaken by individual management bodies while others may be recommendations for policy changes that would require interjurisdictional coordination and/or legislative changes.

Atlantic States Marine Fisheries Commission

Executive Committee

November 9, 2022

8:00 – 10:00 a.m.

Hybrid Meeting

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 (*S. Woodward*)
2. Board Consent
 - Approval of Agenda
 - Approval of Meeting Summary from August 3, 2022
3. Public Comment
4. Review and Consider Approval of FY2022 Audit **Action** (*J. Cimino*)
5. CARES Update (*R. Beal*)
6. Review Draft *De Minimis* Policy (*T. Kerns*)
7. Review Spending Strategy for North Atlantic Right Whale/Lobster Funding (*R. Beal*)
8. Update on the Review of the Conservations Equivalency Process (*T. Kerns*)
9. Future Annual Meetings Update (*L. Leach*)
10. Other Business/Adjourn

The meeting will be held at The Ocean Place (1 Ocean Boulevard Long Branch, NJ; 732.571.4000) and via webinar; click [here](#) for details

Atlantic States Marine Fisheries Commission

Draft De Minimis Policy

November 2022

The Atlantic States Marine Fisheries Commission (Commission) includes *de minimis* provisions in interstate fishery management plans (FMP) to reduce the management burden for states whose measures would have a negligible effect on the conservation of a species. The ISFMP Charter includes a definition of *de minimis* and the requirement to include *de minimis* provisions in FMPs.

Definition: De Minimis – A situation in which, under existing conditions of the stock and the scope of the fishery, conservation and enforcement actions taken by an individual state would be expected to contribute insignificantly to a coastwide conservation program required by an FMP or amendment.

FMP Provisions: ... and provided that each fishery management plan shall address the extent to which states meeting de minimis criteria may be exempted from specific management requirements of the fishery management plan to the extent that action by the particular states to implement and enforce the plan is not necessary for attainment of the fishery management plan's objectives and the conservation of the fishery.

De minimis provisions within FMPs are designed to reduce the management burden for states whose measures would have a negligible effect on the conservation of a species. This Draft Policy outlines *de minimis* standards for FMPs. A species board may deviate from these standards to address unique characteristics of a fishery. If a board deviates from the Policy's standards, a rationale must be provided within the FMP. It is noted that federal FMPs do not recognize *de minimis* standards; therefore, any *de minimis* measure implemented in a FMP for jointly managed species could result in inconsistent measures between state and federal waters.

This Policy does not automatically change the provisions of current FMPs. In order to change *de minimis* standards, an addendum or amendment process must be completed, unless the FMP specifies a different process.

Minimum Standards

By definition, states that meet *de minimis* standards would have a negligible effect on the conservation of a species, therefore, those states should not have to change regulations year-to-year to meet FMP requirements. Each FMP will establish a set of measures for *de minimis* states to implement that would not have to change annually. These measures must provide a minimal level of species conservation as well as prevent regulatory loop holes. These measures can be the same for both the commercial and recreational fishery or different measures could

be set for each fishery. Boards should review the standard *de minimis* standard measures after each benchmark stock assessment to determine if they still providing a minimal level of species conservation.

***De Minimis* Fishery Designation**

De minimis provisions will be considered separately for commercial and recreational fisheries or combined. There must be a designation that takes into account both sectors of the fisheries. Whether they are combined or separate is a decision for the species board. If there is no commercial or recreational fishery a board can clarify there is no significant fishery, therefore, no *de minimis* designation for that sector is necessary.

***De Minimis* Thresholds**

De minimis thresholds will be based on the average landings from the previous three years of landings. The averaging of multiple years of data prevents a state from taking action as a result of a rare event. A state can be considered *de minimis* if the average landings for the last three years is less than 1% of the coastwide landings.

Sampling Requirements

De minimis states are exempt from sampling requirements because it may be difficult to meet the sampling requirements of the plan when landings are minimal. For stock assessments, it may important to have some biological samples on the outer edges of a species range where *de minimis* states often fall. For data poor species, it may be necessary for states to collect biological samples, even with minimal landings. Species boards will have the stock assessment subcommittee or technical committee review the sampling requirements for *de minimis* states to determine what level, if any, is appropriate.

Proposed State allocations of the \$14 Million NARW/Lobster funding to support gear marking/modification, vessel trackers, and future research.

State	Active Permits (number)	Percent Permits (number)	Adjusted Percents (NH & NJ increased to 4%)	Allocation of \$10M with 1% ASMFC Overhead	Allocation of \$14M with 1% ASMFC Overhead
ME	1226	71.0313%	69.0262%	\$6,834,282	\$9,567,994
NH	67	3.8818%	4.0000%	\$396,039	\$554,455
MA	317	18.3662%	17.8477%	\$1,767,102	\$2,473,943
RI	70	4.0556%	4.0000%	\$396,038	\$554,454
CT	3	0.1738%	0.1689%	\$16,723	\$23,413
NY	11	0.6373%	0.6193%	\$61,319	\$85,847
NJ	26	1.5064%	4.0000%	\$396,039	\$554,455
DE and MD	6	0.3476%	0.3378%	\$33,447	\$46,825
Total	1726	100.0000%	100.0000%	\$9,900,990	\$13,861,386

MEETING OVERVIEW

Coastal Sharks Management Board

Wednesday, November 9, 2022

11:30 – 12:00 p.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: Erika Burgess (FL)	Advisory Panel Chair: Vacant	Previous Board Meeting: May 4, 2022
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 May 2022

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 2023 Specifications (11:40-11:50 a.m.) Final Action

Background

- NOAA Fisheries published proposed 2023 Coastal Sharks Specifications in September. The proposed rule includes a season start date of January 1 and quotas for the Atlantic Region and No Regional Quota Management Groups for 2023 are unchanged from 2022 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 2023 Specification by D. Colson Leaning

Board actions for consideration at this meeting

- Set the 2023 coastal shark specifications including commercial opening dates and commercial possession limit by management group.

5. Consider Fishery Management Plan Review and State Compliance of the 2020 Fishing Year (11:50 a.m.-12:00 p.m.) Action

Background

- State Compliance Reports are due annually on August 1st.
- The Plan Review Team reviewed each state report and compiled the annual FMP Review for the 2020 fishing year.
- Massachusetts has requested *de minimis* status and the TC recommends that *de minimis* status be granted.

Presentations

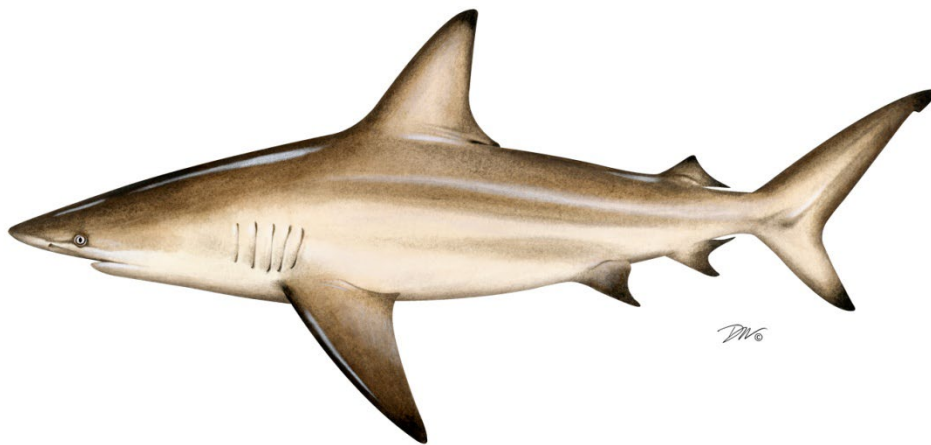
- Overview of the FMP Review Report by D. Colson Leaning (**Briefing Materials**)

Board actions for consideration at this meeting

- Accept 2020 FMP Review and State Compliance Reports.
- Approve *de minimis* requests from Massachusetts.

6. Other Business/Adjourn

ATLANTIC STATES MARINE FISHERIES COMMISSION
REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN
FOR COASTAL SHARKS
2020 FISHING YEAR



Prepared by the Coastal Sharks Plan Review Team

Revised (10.26.22)

June 2022

**REVIEW OF THE ASMFC FISHERY MANAGEMENT PLAN AND STATE COMPLIANCE FOR
COASTAL SHARKS FOR THE 2020 FISHERY**

Management Summary

<u>Date of FMP Approval:</u>	August 2008
<u>Amendments:</u>	None
<u>Addenda:</u>	Addendum I (September 2009) Addendum II (May 2013) Addendum III (October 2013) Addendum IV (August 2016) Addendum V (October 2018)
<u>Management Unit:</u>	Entire coastwide distribution of the resource from the estuaries eastward to the inshore boundary of the EEZ
<u>States With Declared Interest:</u>	Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida
<u>Active Boards/Committees:</u>	Coastal Shark Management Board, Advisory Panel, Technical Committee, and Plan Review Team

I. Status of the Fishery Management Plan

The Atlantic States Marine Fisheries Commission (ASMFC; Commission) adopted its first [fishery management plan \(FMP\) for coastal sharks in 2008](#). Coastal sharks were initially managed under this plan as six different complexes: prohibited, research, small coastal, non-sandbar large coastal, pelagic and smooth dogfish. The Board does not actively set quotas for any shark species. The Commission follows National Oceanic and Atmospheric Administration’s (NOAA Fisheries) openings and closures for small coastal sharks, non-sandbar large coastal shark, and pelagic sharks. Species in the prohibited category may not be possessed or taken. Sandbar sharks may only be taken with a shark fishery research permit. All species must be landed with their fins attached to the carcass by natural means. This was adjusted through subsequent addenda listed below. The Interstate Fishery Management Plan for Coastal Sharks (FMP) established the following goals and objectives.

GOAL

The goal of the Interstate Fishery Management Plan for Coastal Sharks is “to promote stock rebuilding and management of the coastal shark fishery in a manner that is biologically, economically, socially, and ecologically sound.”

OBJECTIVES

In support of this goal, the following objectives for the FMP include:

1. Reduce fishing mortality to rebuild stock biomass, prevent stock collapse, and support a sustainable fishery.
2. Protect essential habitat areas such as nurseries and pupping grounds to protect sharks during particularly vulnerable stages in their life cycle.
3. Coordinate management activities between state and federal waters to promote complementary regulations throughout the species' range.
4. Obtain biological and improved fishery related data to increase understanding of state water shark fisheries.
5. Minimize endangered species bycatch in shark fisheries.

The FMP has been adapted through the following addenda:

[Addendum I \(September 2009\)](#)

Approved in September 2009, Addendum I modified the FMP to allow commercial fishermen to process (remove the fins of) smooth dogfish at sea from March – June of each year, but also requires a 5-95% fin to carcass ratio for all dressed smooth dogfish carcasses. This Addendum also removed recreational smooth dogfish possession limits, as well as the 2-hour gill-net check requirement for commercial fishermen, which applied to all shark species.

[Addendum II \(May 2013\)](#)

Approved in May 2013, Addendum II modified Addendum I to allow commercial fishermen to process (remove the fins of) smooth dogfish at sea year-round but requires a 12-88% fin-to-carcass ratio for all dressed smooth dogfish carcasses. This ratio was consistent with the Shark Conservation Act of 2010. Addendum II also allocates state-shares of the upcoming federal smoothhound shark quota based on historical landings from 1998-2010.

[Addendum III \(October 2013\)](#)

Addendum III modifies the species groups to ensure consistency with NOAA Fisheries. It creates two new species groups (Blacknose and Hammerhead Species Groups). The addendum also increases the recreational minimum size limit for all hammerhead species to 78" fork length.

[Addendum IV \(August 2016\)](#)

Addendum IV allows smooth dogfish carcasses to be landed with corresponding fins removed from the carcass as long as the total retained catch, by weight, is composed of at least 25 percent smooth dogfish, consistent with federal management measures.

[Addendum V \(October 2018\)](#)

Addendum V allows the Board to respond to changes in the stock status of coastal shark populations and adjust regulations through Board action rather than an addendum, ensuring greater consistency between state and federal shark regulations. Addendum V allows the Board to change a suite of commercial and recreational measures, such as recreational size and possession limits, season length, and area closures (recreational and commercial), in addition to the current specifications for just the commercial fishery, throughout the year when needed.

Under this provision, if the Board chooses to adjust measures through Board action, the public will be able to provide comment prior to Board meetings, as well as at Board meetings at the discretion of the Board Chair. Additionally, the Board can still implement changes in shark regulations through an addendum.

In 2019, in response to measures implemented by NOAA Fisheries through Amendment 11 for Federal Highly Migratory Species (HMS) Permit Holders, the Board approved changes to the recreational size limit for Atlantic shortfin mako sharks in state waters, specifically, a 71-inch straight line fork length (FL) for males and an 83-inch straight line FL for females. These measures were implemented in response to the 2017 Atlantic shortfin mako stock assessment that found the resource is overfished and experiencing overfishing. The states were required to implement the changes to the recreational minimum size limit for Atlantic shortfin mako by January 1, 2020.

Additionally in 2019, the Board moved to require non-offset circle hooks for the recreational shark fishery in state waters with an implementation date of July 1, 2020. The Board chose to do so after NOAA Fisheries requested that the states implement a circle hook requirement for the recreational fishery consistent with the measures approved in HMS Amendment 11.

Table 1. List of commercial shark management groups

Species Group	Species within Group
Prohibited	Sand tiger, bigeye sand tiger, whale, basking, white, dusky, bignose, Galapagos, night, reef, narrowtooth, Caribbean sharpnose, smalltail, Atlantic angel, longfin mako, bigeye thresher, sharpnose sevengill, bluntnose sixgill and bigeye sixgill sharks
Research	Sandbar sharks
Non-Blacknose Small Coastal	Atlantic sharpnose, finetooth, and bonnethead sharks
Blacknose	Blacknose sharks
Aggregated Large Coastal	Silky, tiger, blacktip, spinner, bull, lemon, and nurse sharks
Hammerhead	Scalloped hammerhead, great hammerhead and smooth hammerhead
Pelagic	Shortfin mako*, porbeagle, common thresher, oceanic whitetip and blue sharks
Smoothhound	Smooth dogfish and Florida smoothhound sharks

*Final rule for zero retention of shortfin mako sharks is expected to be posted in July of 2022.

II. Status of the Stocks

Stock status is assessed by species or by species complex if there are not enough data for an individual assessment. Nine species have been assessed domestically, three species have been assessed internationally, and the rest have not been assessed. Table 2 describes the current stock status of all assessed shark species along with references for the stock assessments.

In December 2020, Southeast Data and Assessment Review SEDAR completed a benchmark assessment of the Atlantic blacktip shark (*Carcharhinus limbatus*) stock ([SEDAR 65](#)), which indicates the stock is not overfished and not experiencing overfishing.

In June 2020, the [International Commission on the Convention of Atlantic Tunas \(ICCAT\)'s Standing Committee on Research and Statistics \(SCRS\)](#) completed an assessment of Porbeagle sharks (*Lamna nasus*), which indicates the stock is overfished and not experiencing overfishing. As a result of the previous 2009 assessment, NOAA Fisheries established a 100-year rebuilding plan for porbeagle sharks; the expected rebuilding date is 2108.

The 2017 ICCAT assessment of the North Atlantic population of shortfin mako (*Isurus oxyrinchus*) indicates that the stock is overfished and overfishing is occurring. Multiple models were explored and new data sources were integrated. Combined probability of overfishing occurring and the stock being in an overfished state was 90% across all models.

The 2017 stock assessment ([SEDAR 54](#)) for sandbar sharks (*Carcharhinus plumbeus*) indicates the stock is overfished and not experiencing overfishing. This assessment used a new approach (Stock Synthesis) instead of the State Space Age Structure Production Model that was used in the previous assessment ([SEDAR 21](#)). A replication analysis conducted using the prior model (updated with data through 2015) resulted in the same stock status as the new model (overfished, no overfishing occurring). The rebuilding date for sandbar sharks is 2070.

The 2016 stock assessment update ([SEDAR 21](#)) for Atlantic dusky sharks (*Carcharhinus obscurus*) indicates the stock is overfished and experiencing overfishing. This latest review functioned as an update to the 2011 assessment, so no new methodology was introduced. However, all model inputs were updated with more recent data (i.e., 2010-2015 effort, observer, and survey data). The rebuilding plan for dusky sharks is 2107.

In 2015, a benchmark stock assessment ([SEDAR 39](#)) was conducted for the smoothhound complex, including smooth dogfish (*Mustelus canis*), the only species of smoothhound occurring in the Atlantic. The assessment indicates Atlantic smooth dogfish are not overfished and not experiencing overfishing.

The North Atlantic blue shark (*Prionace glauca*) stock was assessed by [ICCAT's SCRS](#) in 2015. Similar to the results of the previous 2008 stock assessment, the assessment indicated the stock is not overfished and not experiencing overfishing. However, scientists acknowledge there is a high level of uncertainty in the data inputs and model structural assumptions; therefore, the assessment results should be interpreted with caution.

[SEDAR 34](#) (2013) assessed the status of Atlantic sharpnose sharks (*Rhizoprionodon terraenovae*) and bonnetheads (*Sphyrna tiburo*). The Atlantic sharpnose shark stock is not overfished and not experiencing overfishing. The stock status of bonnethead stocks (Atlantic and Gulf of Mexico) is considered unknown. Assessment results indicated the stock is not overfished with no

overfishing occurring, however all available data pointed towards separate stocks. As the assessment framework would not allow stocks to be split, the assessment continued under a single stock scenario. The results of the assessment were rejected by reviewers noting that the stocks need to be assessed independently. A benchmark assessment is recommended for both stocks of bonnetheads.

A 2011 benchmark assessment ([SEDAR 21](#)) of blacknose sharks (*Carcharhinus acrontus*) indicated the stock is overfished and experiencing overfishing. As described in the Magnuson-Stevens Act, NOAA Fisheries must establish a rebuilding plan for an overfished stock. As such, the rebuilding date for blacknose sharks is 2043.

The 2007 [SEDAR 13](#) assessed the SCS complex, finetooth (*Carcharhinus isodon*), Atlantic sharpnose (*Rhizoprionodon terraenovae*), and bonnethead (*Sphyrna tiburo*) sharks (SEDAR 2007). The SEDAR 13 peer reviewers considered the data to be the 'best available at the time' and determined the status of the SCS complex to be adequate. Finetooth, Atlantic sharpnose, and bonnethead were all considered to be not overfished and not experiencing overfishing.

A 2009 stock assessment for the Northwest Atlantic and Gulf of Mexico populations of scalloped hammerhead sharks (*Sphyrna lewini*) indicated the Northwest Atlantic stock is overfished and experiencing overfishing (Hayes et al. 2009). This assessment was reviewed by NOAA Fisheries and deemed appropriate to serve as the basis for U.S. management decisions. In response to the assessment findings, NOAA Fisheries established a scalloped hammerhead rebuilding plan that will end in 2023. However, since the assessment, research has determined that in the U.S. Atlantic, a portion of animals considered scalloped hammerheads are actually a cryptic species, recently named the Carolina hammerhead (*Sphyrna gilberti*; Quattro et al. 2013). Little to no species-specific information exists regarding the distribution, abundance and life history of the two species, therefore for now, both species are currently managed under the name scalloped hammerhead. A research track assessment of the hammerhead complex ([SEDAR 77](#)) is ongoing.

Table 2. Stock Status of Atlantic Coastal Shark Species and Species Groups

Species or Complex Name	Stock Status		References/Comments
	Overfished	Overfishing	
Pelagic			
Porbeagle	Yes	No	Porbeagle Stock Assessment, ICCAT Standing Committee on Research and Statistics Report (2020); Rebuilding ends in 2108 (HMS Am. 2)
Blue	No	No	ICCAT Standing Committee on Research and Statistics Report (2015)
Shortfin mako	Yes	Yes	ICCAT Standing Committee on Research and Statistics Report (2017)
All other pelagic sharks	Unknown	Unknown	
Aggregated Large Coastal Sharks (LCS)			
Atlantic Blacktip	No	No	SEDAR 65 (2020)
Aggregated Large Coastal Sharks - Atlantic Region	Unknown	Unknown	SEDAR 11 (2006); difficult to assess as a species complex due to various life history characteristics/ lack of available data
Non-Blacknose Small Coastal Sharks (SCS)			
Atlantic Sharpnose	No	No	SEDAR 34 (2013)
Bonnethead	Unknown	Unknown	SEDAR 34 (2013)
Finetooth	No	No	SEDAR 13 (2007)
Hammerhead			
Scalloped	Yes	Yes	SEFSC Scientific Review by Hayes et al. (2009); Rebuilding ends in 2023 (HMS Am. 5a)
Blacknose			
Blacknose	Yes	Yes	SEDAR 21 (2010); Rebuilding ends in 2043 (HMS Am. 5a)
Smoothhound			
Atlantic Smooth Dogfish	No	No	SEDAR 39 (2015)
Research			
Sandbar	Yes	No	SEDAR 54 (2017); Rebuilding ends 2070 (HMS Am. 2)
Prohibited			
Dusky	Yes	Yes	SEDAR 21 update (2016); Rebuilding ends in 2108 (HMS Am. 5b)
All other prohibited sharks	Unknown	Unknown	

III. Status of the Fishery

Specifications (Opening, closures, quotas)

NOAA Fisheries sets quotas for coastal sharks through the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan and its amendments. The opening dates, closure dates, and quotas are detailed in Table 3. All non-prohibited coastal shark management groups opened on January 1, 2020. NOAA Fisheries closes commercial shark fisheries when 80% of the available quota is reached. When the fishery closes in federal waters, the Interstate FMP dictates that the fishery also closes in state waters. For 2020, the fishery did not close for any of the species groups before December 31.

Table 3. Commercial quotas and opening dates for 2020 shark fishing season

Species Group	Region	2020 Annual Quota (mt dw)	Season Opening Dates
Aggregated Large Coastal Sharks (LCS)	Atlantic	168.9	January 1, 2020
Hammerhead Sharks	Atlantic	27.1	
Non-Blacknose Small Coastal Sharks (SCS)	Atlantic	264.1	January 1, 2020
Blacknose Sharks (South of 34° N. Latitude only)	Atlantic	17.2	
Smoothhound sharks	Atlantic	1,802.6	January 1, 2020
Blue Sharks	No regional quotas	273.0	January 1, 2020
Porbeagle Sharks		1.7	
Pelagic Sharks other than Porbeagle or Blue		488.0	
Shark Research Quota (Aggregated LCS)		50.0	
Sandbar Research Quota		90.7	

Commercial Landings

Preliminary commercial landings of Atlantic large coastal shark species in 2020 were 227,783 pounds (lbs) dressed weight (dw), roughly a 30% increase from 2019 landings (Table 4; Figure 1). Commercial landings of small coastal shark species in 2020 were 234,557 lbs dw, a 28% decrease from 2019 landings (Table 5; Figure 1). Landings for small coastal shark species in 2016 were the lowest for the time series over the last 10 years and a result of the early closure of both blacknose and non-blacknose sharks south of 34°00' N latitude on May 29, 2016.

Commercial landings of Atlantic pelagic sharks in 2020 were 98,514 lbs dw, which represents an approximate 6% decrease from 2019 landings (Table 6; Figure 1).

Table 4. Commercial landings of authorized Atlantic large coastal sharks by species (lbs dw), 2012-2020. Source: NOAA Fisheries Stock Assessment and Fisheries Evaluation Report, March 2022. Confidential landings denoted with a "C".

Species	2012	2013	2014	2015	2016	2017	2018	2019	2020
Great hammerhead	371	7,406	13,538	36,892	20,454	17,646	22,881	26,410	27,529
Scalloped hammerhead	15,800	27,229	24,652	13,197	12,329	4,919	5,927	C	12,024
Smooth hammerhead	3,967	1,521	601	304	125	1,193	530	661	0
Unclassified	9,617	0	0	0	0	0	0	0	0
Hammerhead Total	29,755	36,156	38,791	50,393	32,908	23,758	29,338	<35,000	39,553
Blacktip	215,403	256,277	282,009	229,823	248,470	205,138	125,129	88,655	131,962
Bull	24,504	33,980	32,372	33,737	31,417	23,802	16,707	14,677	17,703
Lemon	21,563	16,791	13,047	18,158	19,205	12,005	8,910	5,096	4,479
Nurse	81	0	0	24	0	0	0	C	0
Silky	29	186	289	1,246	446	702	175	495	223
Spinner	10,643	26,892	25,716	33,002	55,610	62,314	58,347	59,066	71,094
Tiger	23,245	16,561	29,062	28,460	14,896	6,324	4,073	4,685	2,232
Unclassified	53,705	0	0	0	0	0	0	0	90
Aggregated LCS Total	349,173	350,687	382,495	344,450	370,045	310,286	213,341	<175,000	227,783
Sandbar	46,446	46,868	82,308	112,610	114,871	121,074	132,688	150,010	49,989

Table 5. Commercial landings of authorized Atlantic small coastal sharks by species (lbs dw), 2012-2020. Source: NOAA Fisheries Stock Assessment and Fisheries Evaluation Report, March 2022.

Species	2012	2013	2014	2015	2016	2017	2018	2019	2020
Blacknose	37,873	33,382	38,437	45,405	26,842	17,241	11,335	18,910	10,644
Bonnethead	19,907	22,845	13,221	5,885	1,688	6,077	4,240	4,134	1,818
Finetooth	15,922	19,452	19,026	8,712	5,647	19,874	17,071	9,688	7,793
Atl. Sharpnose	345,625	183,524	198,568	293,128	175,890	251,289	268,395	292,694	214,303
SCS Total	419,819	259,203	269,252	353,130	210,067	294,481	301,041	325,426	234,557

Table 6. Commercial landings of authorized pelagic sharks by species off the Atlantic coast of the United States (lbs dw), 2012-2020. Source: NOAA Fisheries Stock Assessment and Fisheries Evaluation Report, March 2022. Confidential landings denoted with a “C”.

Species	2012	2013	2014	2015	2016	2017	2018	2019	2020
Blue	17,200	9,767	17,806	1,114	607	4272	C	0	0
Porbeagle	4,250	54	6414	0	0	C	811	C	0
Shortfin Mako	198,841	199,177	218,295	141,720	160,829	184,993	57,719	53,573	36,029
Unclassified Mako	0	0	0	0	0	0	0	0	0
Oceanic whitetip	258	62	22	0	0	0	0	0	0
Thresher	63,965	48,768	116,012	72,463	78,219	61,990	63,805	51,170	62,485
Unclassified pelagic	28,932	0	0	0	0	0	0	0	0
Pelagic Total	313,446	257,828	358,549	215,297	239,655	<255,000	<125,000	<105,000	98,514

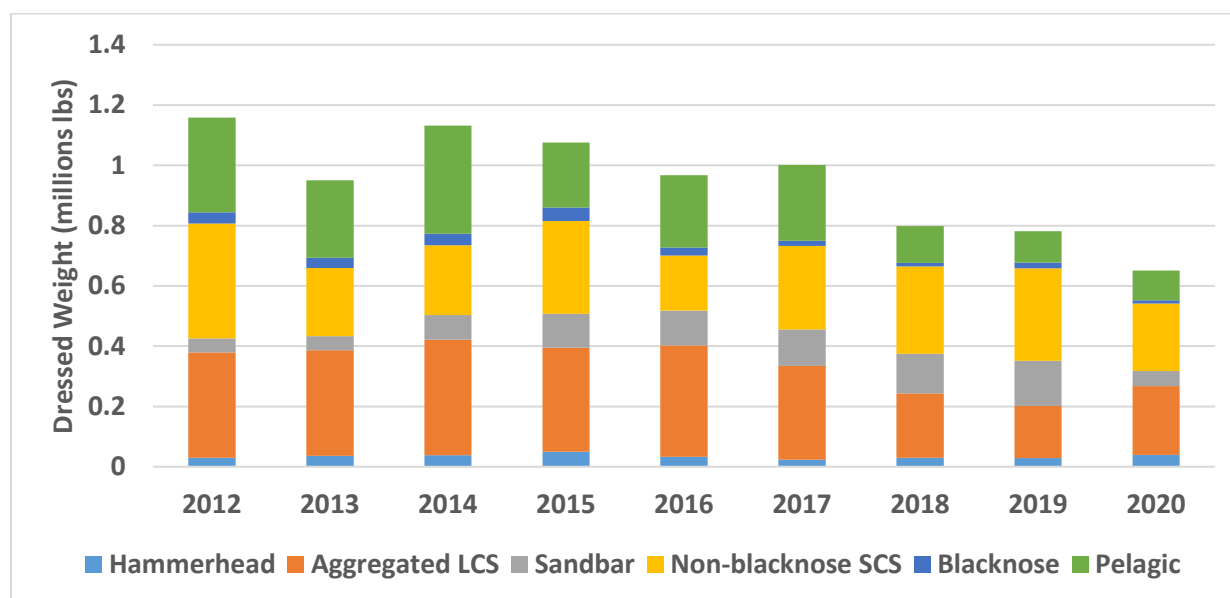


Figure 1: Commercial landings of coastal sharks off the east coast of the United States by species group, 2012-2020. Source: NOAA Fisheries Stock Assessment and Fisheries Evaluation Report, March 2022.

Recreational Landings

By species group, 39,342 LCS, 5 hammerhead, 63,891 SCS, 61,129 smoothhound, and 237 sandbar sharks were harvested during the 2020 recreational fishing season (Table 7; Figure 2). Pelagic shark data for 2016-2020 are reported in metric tons whole weight, and in 2020 91.9 mt of pelagic sharks were harvested. In 2020, recreational harvest of prohibited Atlantic shark species was 58, reaching a 5-year low (Table 8).

Table 7. Estimated recreational harvest of Atlantic shark species by species group in numbers of fish, 2012-2020. Source: NOAA Fisheries Stock Assessment and Fisheries Evaluation Report, March 2022.

Species	2012	2013	2014	2015	2016	2017	2018	2019	2020
Blacktip	1,164	962	1,730	1,718	6,520	1,527	500	224	1,506
Bull	68	77	3	2	26	3,750	32	0	17
Lemon	0	0	0	144	1,207	764	0	4	0
Nurse	706	13	418	298	21	2	5	13	2
Spinner	1,145	390	847	82	761	623	153	66	27
Tiger	2	8	324	417	2,061	0	1	0	0
Unclassified	6,070	97	4,513	153	732	625	7,544	83,129	37,790
LCS Total	9155	1547	7835	2814	11328	7291	8235	83436	39342
Hammerhead Total	41	600	900	1	799	0	0	2	5
Blue shark¹	0	4,165	3,449	9,421	30.8	21.9	15.2	16.7	8.4
Mako, shortfin¹	1,314	6,856	16,531	12,835	167.5	192.4	125.1	25.2	24.5
Oceanic whitetip¹	0	0	0	132	0	0	0	0	0
Porbeagle¹	0	0	0	0	4.3	7.7	2.8	11.8	4.9
Thresher¹	0	0	3,164	12,274	74.3	92	96.6	108.8	54.1
Pelagic Total¹	1314	11021	23144	34662	276.9	314	239.7	162.5	91.9
Blacknose	0	70	4,146	1,211	225	13	13	83	661
Bonnethead	9,798	14,376	28,532	2,870	37,832	18,239	37,168	31,086	28,861
Finetooth	0	0	2,896	326	0	1,219	0	176	113
Atlantic sharpnose	23,207	44,832	56,052	28,869	155,023	38,784	24,468	40,144	34,256
SCS Total	33005	59278	91626	33276	193,080	58,255	61,649	71,489	63,891
Smoothhound	31,669	17,308	49,835	43,721	145,689	58,446	40,736	56,375	61,129
Sandbar²	857	399	1,873	1,252	0	2,604	0	792	237

¹Pelagic shark data for 2012-2015 includes Gulf of Mexico landings in numbers of fish. Pelagic shark data for 2016-2020 is Atlantic only, but reported in metric tons whole weight.

²Sandbar shark data for 2016-2020 were pulled from the Marine Recreational Information Program.

Table 8. Estimated recreational harvest of prohibited Atlantic shark species in numbers of fish, 2012-2020. Source: NOAA Fisheries Stock Assessment and Fisheries Evaluation Report, March 2022.

Species	2012	2013	2014	2015	2016	2017	2018	2019	2020
Atlantic angel	0	0	0	0	113	98	31	29	24
Basking	0	0	0	0	8	4	8	3	3
Bigeye sand tiger	0	0	0	0	0	0	0	0	0
Bigeye sixgill	0	0	0	0	0	0	0	0	0
Bigeye thresher	0	0	0	0	28	21	13	24	2
Bignose	0	0	0	0	1	0	0	0	1
Caribbean reef	0	0	0	0	0	0	1	0	0
Caribbean sharpnose	0	0	0	0	0	0	0	0	0
Dusky	15	16	2	0	29	22	121	19	4
Galapagos	0	0	0	0	0	0	0	0	0
Longfin mako	0	0	0	0	15	14	4	14	0
Narrowtooth	0	0	0	0	0	0	0	0	0
Night	0	0	0	0	8	31	74	83	0
Sand tiger	0	0	0	0	26	9	48	20	23
Sevengill	0	0	0	0	0	0	0	0	0
Sixgill	0	0	0	0	0	1	0	0	0
Whale	0	0	0	0	0	0	0	0	0
White	0	0	0	0	0	10	5	3	1
Prohibited Total	15	16	2	0	228	210	305	195	58

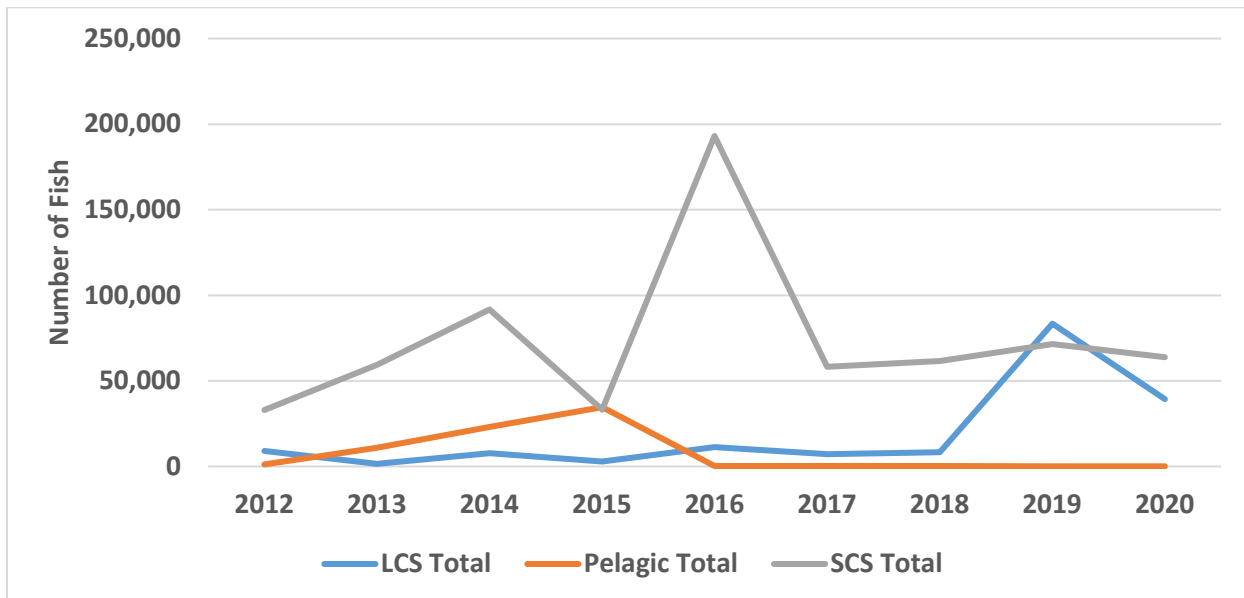


Figure 2: Estimated recreational harvest for LCS, pelagic, and SCS by species group, in numbers of fish, 2012-2020. Source: NOAA Fisheries Stock Assessment and Fisheries Evaluation Report, March 2022.

IV. Status of Research and Monitoring

Under the Interstate Fishery Management for Coastal Sharks, the states are not required to conduct any fishery-dependent or independent studies; however, states are encouraged to submit any information collected while surveying for other species. This section describes the research and monitoring efforts through the 2020 fishing year, where available.

The Cooperative Atlantic States Shark Pupping and Nursery (COASTSPAN) Survey appears in multiple state monitoring efforts. The survey monitors the presence of young-of-year and juvenile sharks along the east coast. It is managed and coordinated by NOAA's Northeast Fisheries Science Center (NEFSC) through the Apex Predators Program based at the NEFSC's Narragansett Laboratory in Rhode Island. Longline and gillnet sampling, along with mark-recapture techniques are used to determine relative abundance, distribution, and migration of sharks utilizing nursery grounds from Massachusetts to Florida. In 2020, COASTSPAN program participants were the Virginia Institute of Marine Science, South Carolina Department of Natural Resources, and University of North Florida (samples Georgia and north Florida state waters). In addition, the survey is conducted in summer months in Narragansett and Delaware Bays. Standardized indices of abundance from COASTSPAN surveys are used in the stock assessments for large and small coastal sharks.

Massachusetts

DMF intensified its research on the fine-scale predatory behavior of white sharks off the coast of Massachusetts using a variety of methods. First, the existing acoustic receiver array was expanded to fill gaps around Cape Cod and to include the majority of towns along the Massachusetts coastline. Second, tagging and survey efforts were expanded into Cape Cod Bay. Third, two gridded acoustic arrays were deployed off Head of the Meadow Beach (Truro) and Nauset (Orleans) beaches with the Center for Coastal Studies to examine fine-scale movements of sharks as they relate to the habitat. Fourth, five real-time acoustic receivers were deployed off popular Outer Cape swimming beaches including: Newcomb Hollow and Lecounts (Wellfleet), Head of the Meadow (Truro), Nauset Trail (Orleans), and North Beach (Chatham). The receivers provided beach managers and lifeguards with immediate notifications when acoustically-tagged white sharks were detected close to these beaches. Fifth, acceleration data logging camera tags were deployed on white sharks to record very fine-scale movements at sub-second intervals, including tailbeat frequency, amplitude, body posture, and swimming depth. These data will be used to examine swimming patterns (e.g., traveling, resting, hunting, foraging, mating), bioenergetics, and, ultimately, provide estimates of the intensity of white shark predation on gray seals. Sixth, a fixed aerial camera system was tested in Orleans as a potential tool to observe nearshore white shark behavior.

As a result, 38 white sharks were tagged with acoustic transmitters off the Outer Cape in 2020; eight of these also carried acceleration data logging camera tags for up to two days. This brings the total to 230 individuals tagged since 2009. These efforts were conducted with funding and logistical support from local nonprofits, including the Atlantic White Shark Conservancy. Data

collected in 2020 will be used to enhance our understanding of white shark predatory behavior in these areas of high shark-human overlap to better inform public safety practices.

Rhode Island

Fishery-independent monitoring is limited to coastal shark species taken in the RI Division of Fish & Wildlife, Marine Fisheries Section (RIDEM DMF) monthly and seasonal trawl survey. Smooth dogfish are the only coastal shark species captured in the trawl survey regularly. A summary of fishery-independent monitoring for coastal sharks is summarized in Figure 3 below.

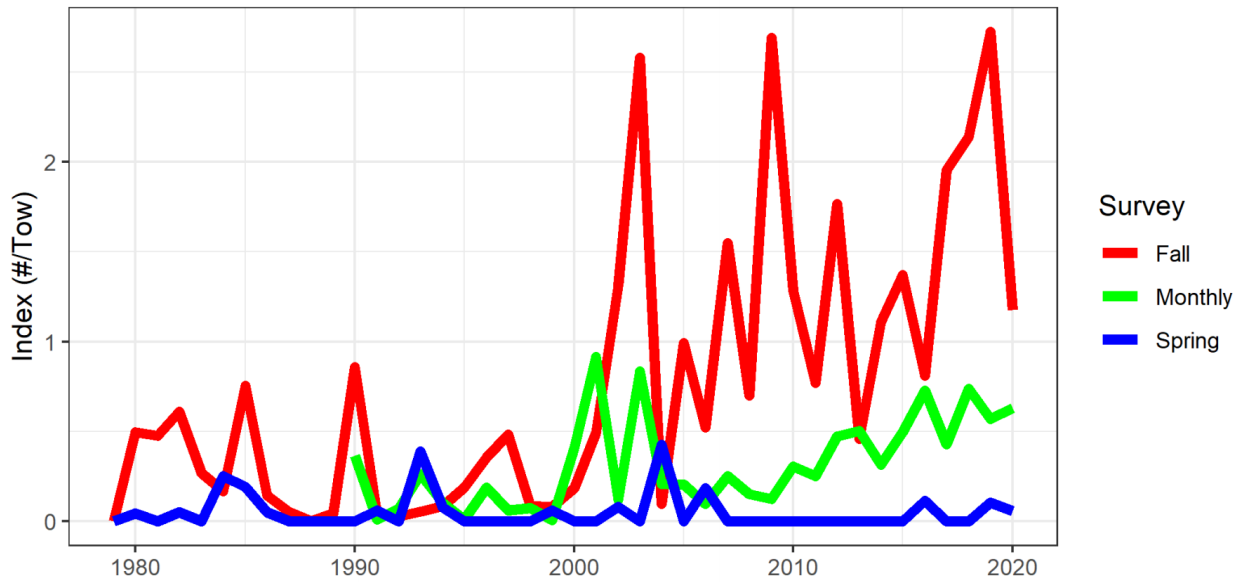


Figure 3. Smooth dogfish (*Mustelus canis*) annual mean number per tow from the RIDEM DMF bottom trawl surveys.

Connecticut

The Connecticut Department of Energy and Environmental Protection (CT DEEP) monitors the abundance of marine resources in nearby coastal waters with the Long Island Sound Trawl Survey. Spring (April, May and June) and fall (September and October) surveys are conducted each year. Other than smooth dogfish, coastal sharks are not encountered by the Long Island Sound Trawl Survey. Smooth dogfish are caught most often in the fall and the fall indices are presented below (Table 9; Figure 4). Due to the COVID-19 pandemic, the Long Island Sound Trawl Survey was not conducted in 2020. More information on the Long Island Sound Trawl Survey report can be found [here](#).

Table 9. Long Island Trawl Survey Fall Smooth Dogfish indices (geometric mean catch/tow)

Year	Kg/tow	Count/tow
1984		2.47
1985		1.92
1986		1.43

1987		0.81
1988		0.91
1989		0.41
1990		0.55
1991		0.46
1992	1.20	0.78
1993	1.75	0.95
1994	0.76	0.49
1995	0.85	0.46
1996	1.16	0.80
1997	1.09	0.59
1998	1.32	0.72
1999	1.27	0.93
2000	2.85	1.88
2001	3.02	1.69
2002	6.09	3.58
2003	6.18	3.10
2004	2.95	1.44
2005	2.70	1.41
2006	2.46	0.94
2007	6.23	2.27
2008	1.25	0.63
2009	2.8	1.13
2010	-	-
2011	3.66	1.43
2012	4.69	2.41
2013	7.93	4.13
2014	11.05	5.78
2015	11.70	7.30
2016	8.30	5.24
2017	14.82	8.29
2018	9.57	7.17
2019	10.66	6.01
2010	-	-

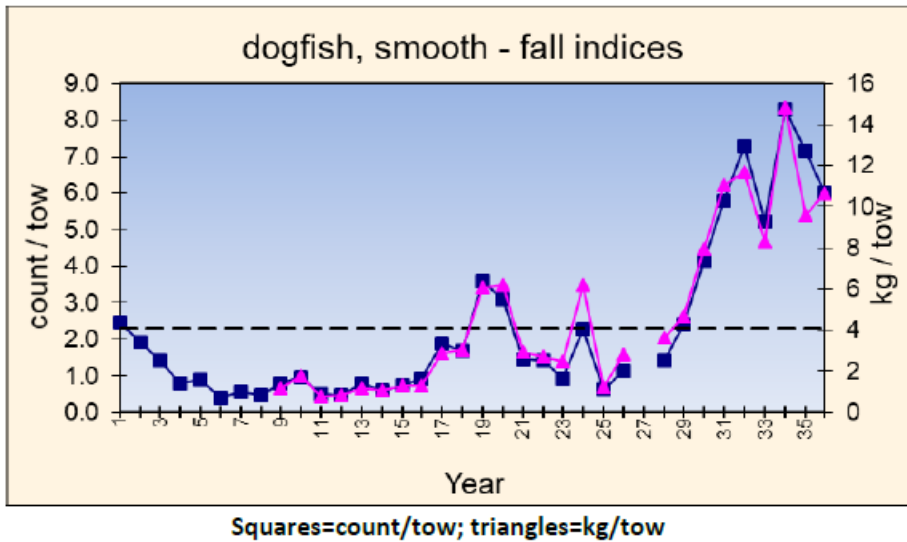


Figure 4. CT DEEP Smooth Dogfish Long Island Sound Trawl Survey

New York

While the New York Department of Environmental Conservation (NY DEC) does not currently conduct fishery-independent monitoring programs for Atlantic coastal sharks, multiple research permits were issued in 2020 for the collection of information on sand tiger sharks, blue sharks, sandbar sharks, shortfin mako sharks, dusky sharks, smooth hammerhead sharks, common thresher sharks, blacktip sharks, and white sharks by the Wildlife Conservation Society (WCS)/New York Aquarium; Stony Brook University; South Fork Natural History Museum; and the O’Seas Conservation Foundation. In 2020, WCS/New York Aquarium caught and released 5 sandbar sharks, 4 dusky sharks, 2 sand tiger sharks; Stony Brook University caught and sampled 8 sandbar sharks, 4 blue sharks, 3 dusky sharks, 2 sand tiger sharks, 1 white shark, 1 shortfin mako shark, 1 smooth hammerhead shark, and 1 blacktip shark; the South Fork Natural History Museum captured, tagged, and released 1 thresher shark, 1 dusky shark, 1 sandbar shark, and 1 white shark; the O’Seas Conservation Foundation collected and tagged 100 smooth dogfish sharks, 2 sandbar sharks, 1 spinner shark, 1 white shark, and 1 blue shark. Information on each shark (morphometrics and sex), as well location, date, biological samples collected, telemetry gear deployed, and final disposition of the animals were recorded.

New Jersey

New Jersey does not currently conduct any fishery-independent monitoring programs specifically for Atlantic coastal sharks, but does encounter sharks from the state’s Ocean Stock Assessment Survey. In 2020, the Survey caught less than 1lb. of smooth dogfish only and no other coastal sharks (Figures 5 and 6). This amount is far less than normal as the survey was stalled due to COVID safety restrictions.

Sharks sampled by the New Jersey Ocean Stock Assessment Survey are collected by a 30-meter otter trawl every January, April, June, August, and October since 1989. Tows are approximately

1 nautical mile and are performed via a stratified random sampling design. Latitudinal strata are identical to those used by the National Marine Fisheries Service groundfish survey. Longitudinal boundaries are defined by the 18-30, 30-60, and 60-90-foot isobaths. Smooth Dogfish are cumulatively weighed and measured by total length in centimeters. All other shark species are sorted by gender, weighed individually, and measured by total length in centimeters.

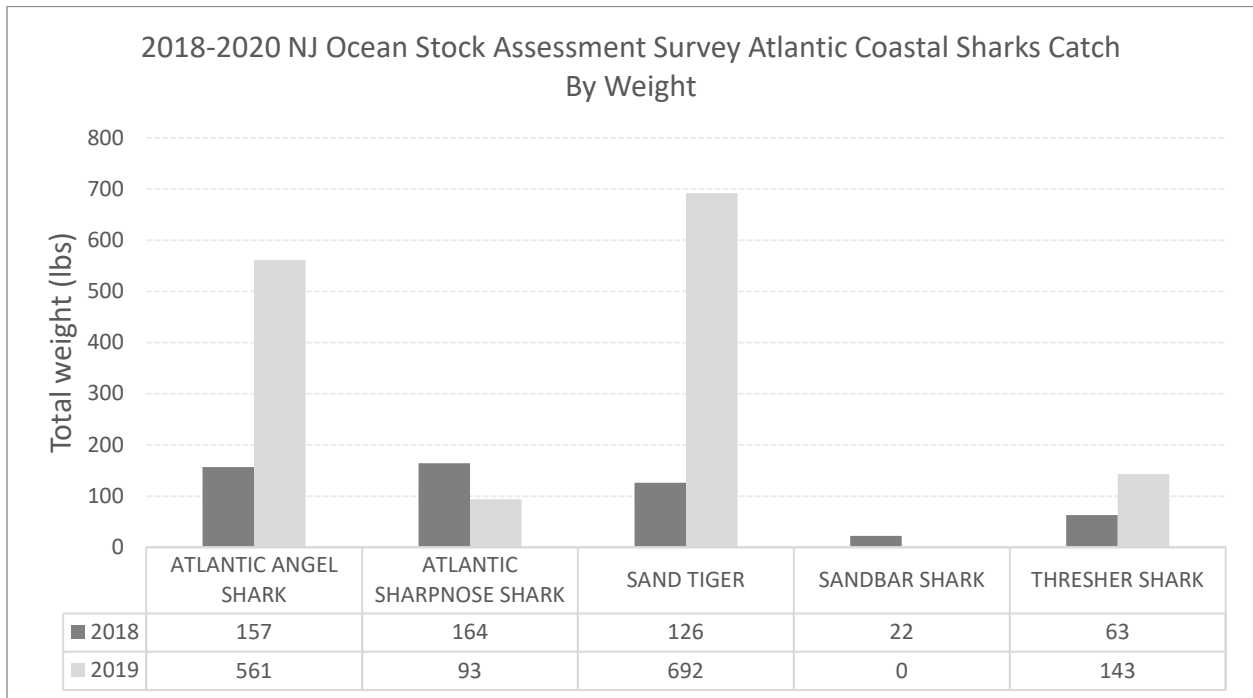


Figure 5. NJ 2018-2020 Ocean Stock Assessment Survey, Atlantic Coastal Sharks excluding Smooth Dogfish

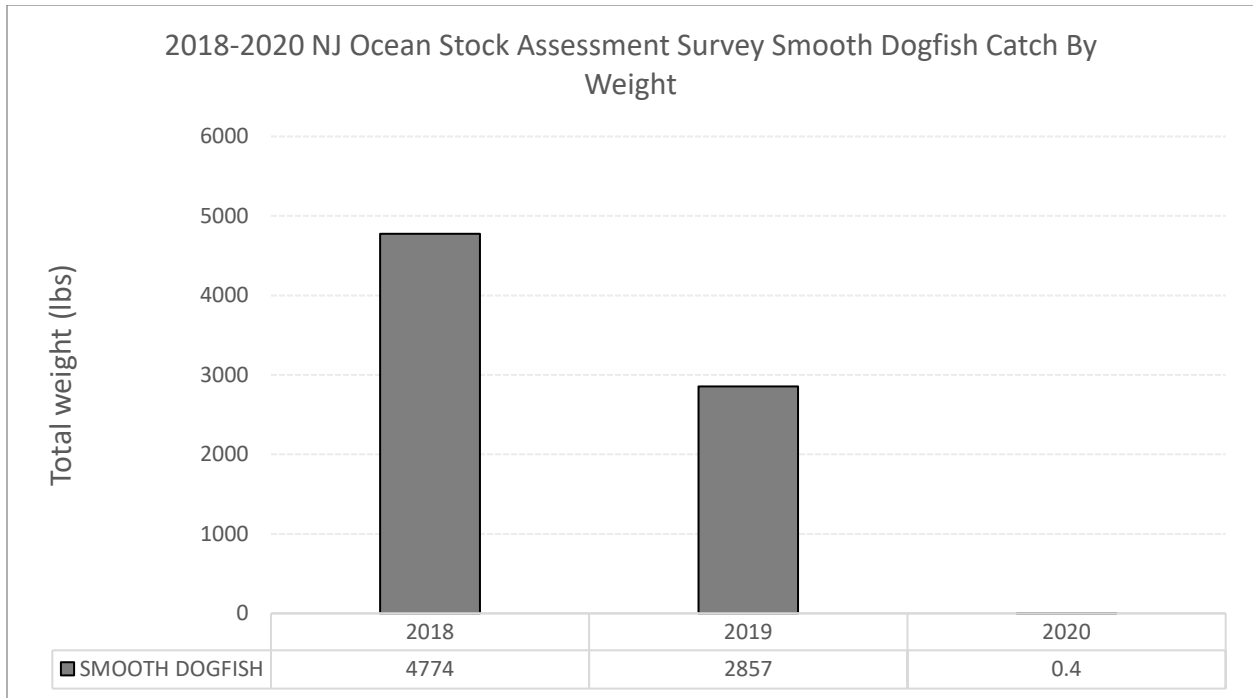


Figure 6. NJ 2018-2020 Ocean Stock Assessment Survey Atlantic, Smooth Dogfish

Delaware

Delaware conducts a 30' adult trawl survey and a 16' juvenile trawl survey in the Delaware Bay. In the adult trawl survey, smooth dogfish are the most common shark species caught (Figure 7), with sand tiger shark (Figure 8) and sandbar sharks (Figure 9) taken in low numbers. Thresher, Atlantic angel, Atlantic sharpnose (Figure 10) and dusky shark were caught in the past, but rarely. Sand tiger shark catch per nautical mile decreased in 2020 from a historical high in 2019. Sandbar shark catch per nautical mile increased in 2020 relative to 2019 and was at the seventh highest level of abundance for the time series. Smooth dogfish catch per nautical mile decreased in 2020 and is still relatively low compared to the early 2000's. In the juvenile trawl, the species caught include sand tiger shark (Figure 11), sandbar sharks (Figure 12) and smooth dogfish (Figure 13). Apart from smooth dogfish, the capture of coastal sharks in the juvenile trawl is a rare occurrence.

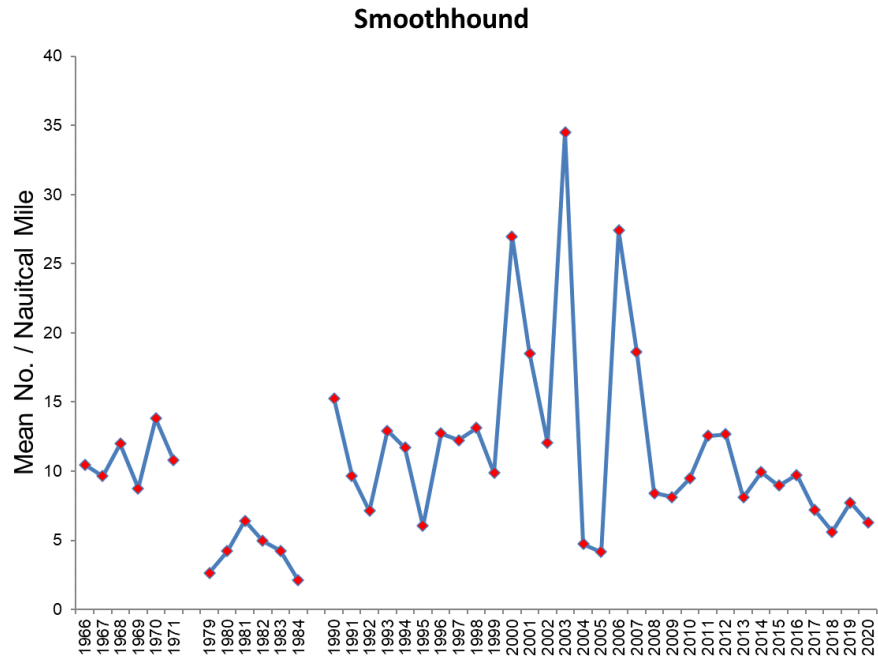


Figure 7. Smooth dogfish relative abundance (mean number per nautical mile), time series (1966 – 2020) as measured in 30-foot trawl sampling in the Delaware Bay.

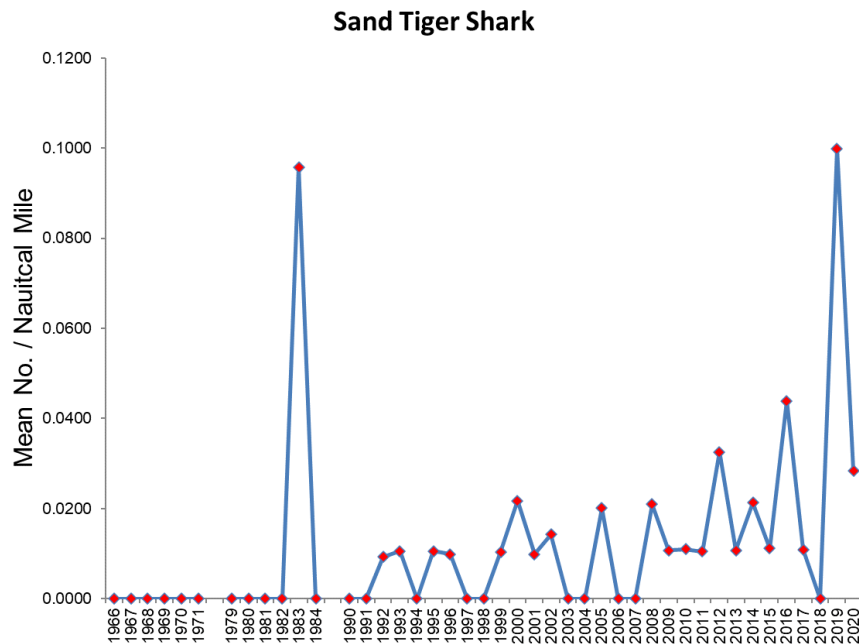


Figure 8. Sand tiger shark relative abundance (mean number per nautical mile), time series (1966 – 2020) as measured in 30-foot trawl sampling in the Delaware Bay.

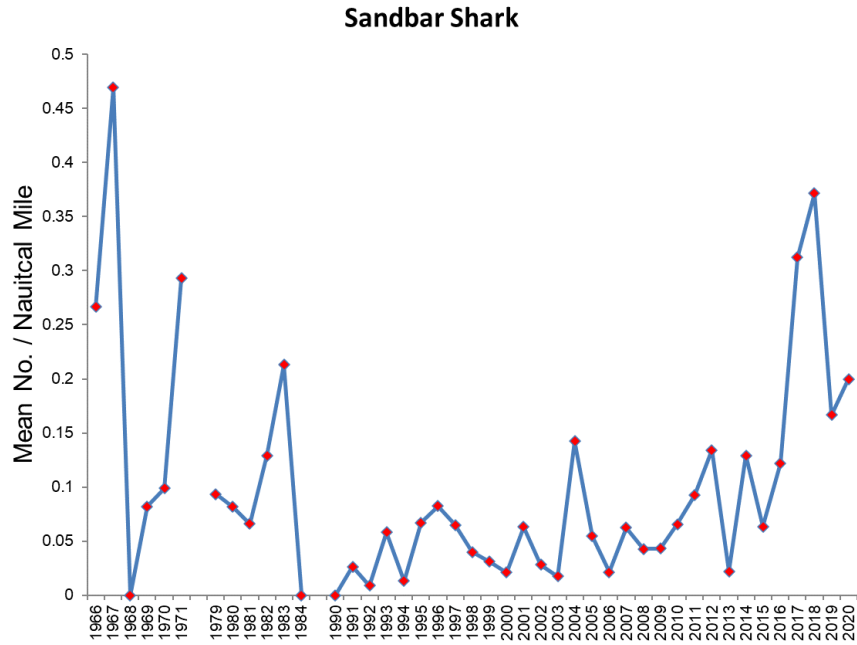


Figure 9. Sandbar shark relative abundance (mean number per nautical mile), time series (1966 – 2020) as measured in 30-foot trawl sampling in the Delaware Bay.

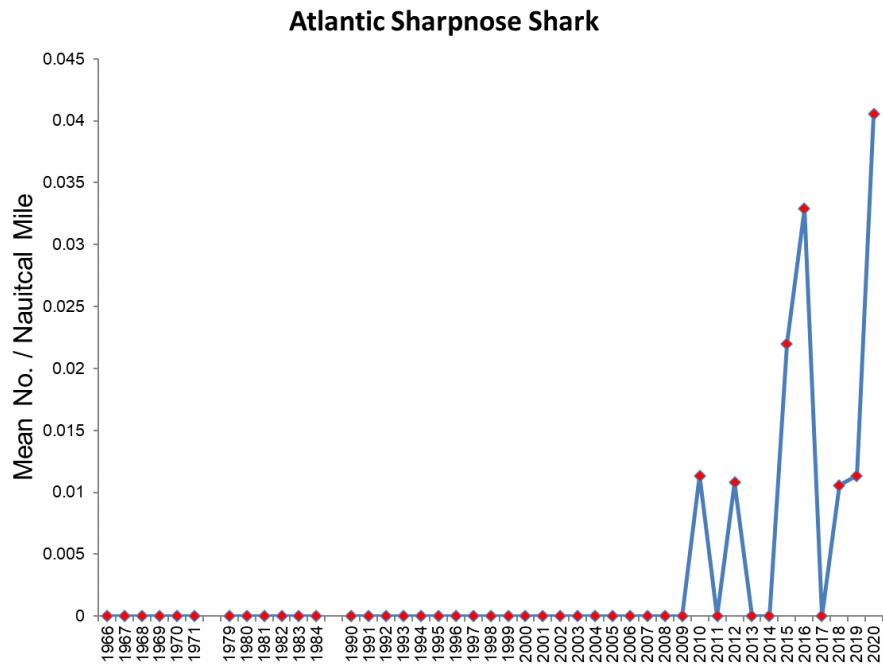


Figure 10. Atlantic sharpnose shark relative abundance (mean number per nautical mile), time series (1966 – 2020) as measured in 30-foot trawl sampling in the Delaware Bay.

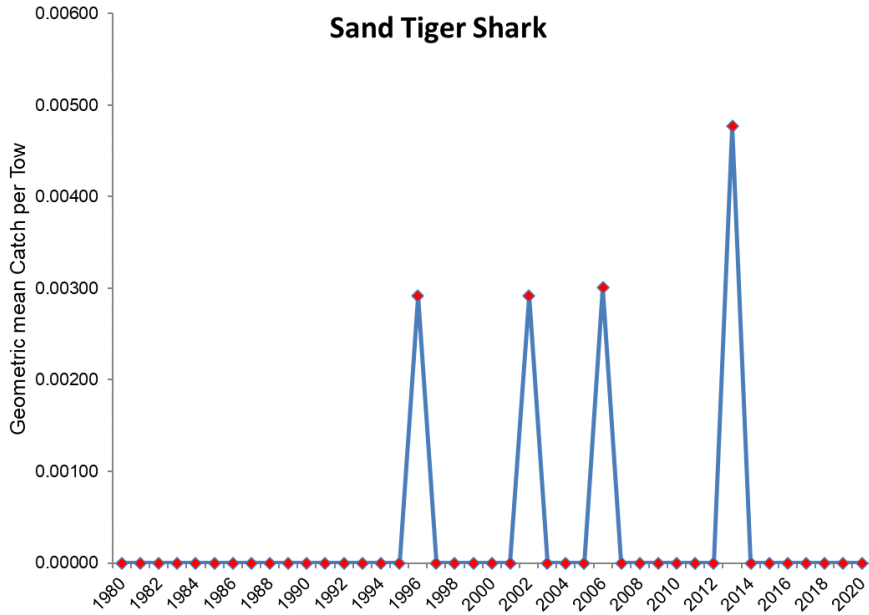


Figure 11. Index of sand tiger shark, time series (1980 – 2020) as measured by 16-foot trawl sampling in the Delaware Estuary.

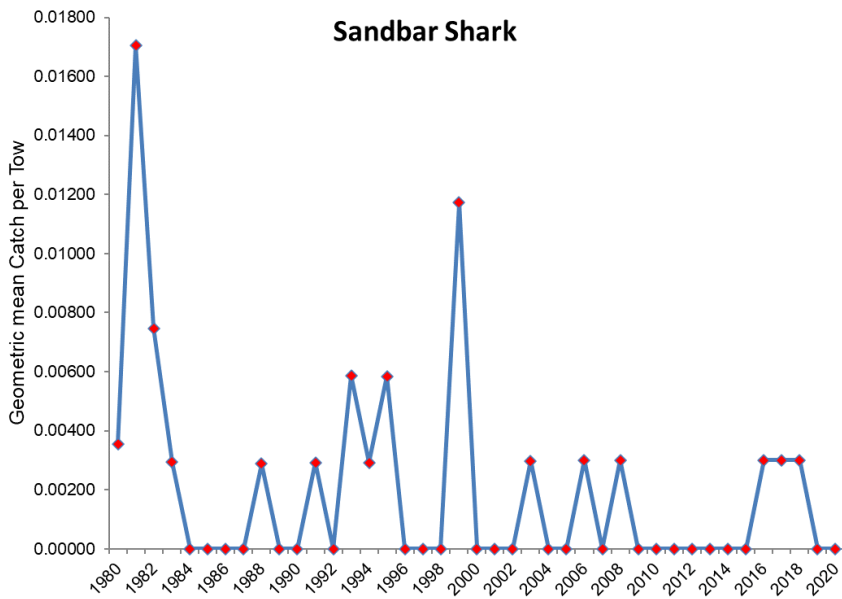


Figure 12. Index of sandbar shark, time series (1980 – 2020) as measured by 16-foot trawl sampling in the Delaware Estuary.

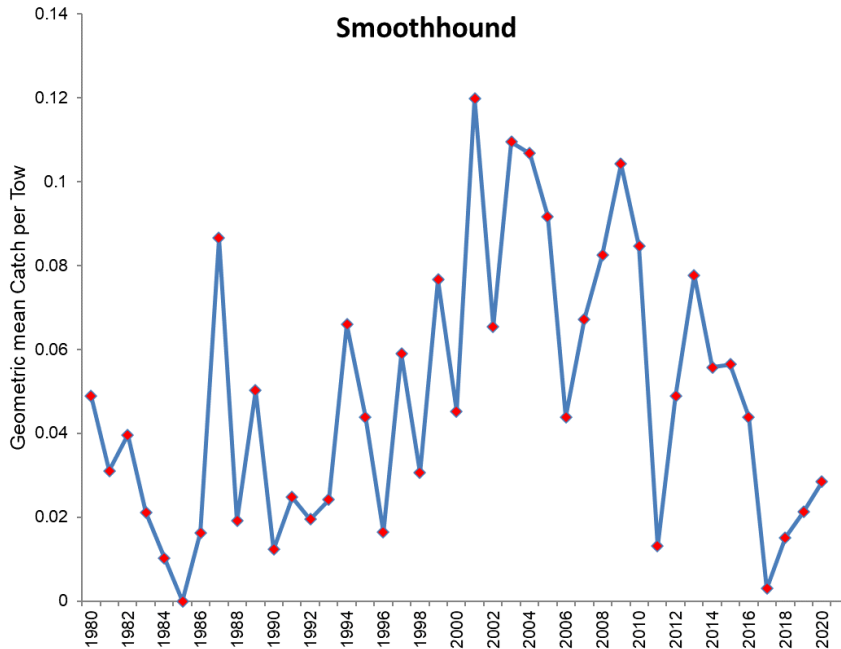


Figure 13. Index of young-of-year smooth dogfish abundance, time series (1980 – 2020) as measured by 16-foot trawl sampling in the Delaware Estuary.

Maryland

No fishery-independent monitoring for Atlantic coastal sharks was conducted in Maryland state waters.

Virginia

The Virginia Institute of Marine Science Shark Research Program began in 1973 and is one of the longest running longline surveys in the world. The program has provided data on habitat utilization, age, growth, reproduction, trophic interactions, basic demographics, and relative abundance for dominant shark species. Cruise times have been variable over the time series, but generally sampling has occurred monthly from May through October. The survey utilizes a fixed station design with nine core sampling locations, although additional auxiliary locations have been sampled frequently over the years.

Beginning in 2012, a separate longline survey conducted by the Virginia Institute of Marine Science designed specifically to target young-of-year sandbar sharks in the lower Chesapeake Bay and Eastern Shore was initiated. The new survey follows a stratified random sampling design, rather than a fixed survey design, and falls under the broader COASTSPAN umbrella survey.

In 2020, Atlantic sharpnose shark was the most commonly encountered species by the offshore survey followed by sandbar shark, blacktip shark, spinner shark, blacknose shark, sand tiger shark, tiger shark, bull shark, dusky shark, scalloped hammerhead, and silky shark (Table 1).

Seasonal patterns in survey catches were also evident with June and July showing higher overall catches of sharks when compared to August and September.

COASTSPAN catches of neonate sandbar shark (≤ 71 cm total length) were highest in magnitude during August in the lower Chesapeake Bay, followed by equal catch in June and July. In the coastal lagoons of the Eastern Shore, peak neonate catch occurred in August followed by July and June (Table 12). For 2020, neonate total catch was notably higher in the coastal lagoons of the Eastern Shore when compared to that of the lower Chesapeake Bay.

Table 11. Monthly catch summaries for key shark species encountered during offshore longline cruise conducted by VASMAP, 2020 pooled across the standard six sampling sites. Effort is expressed as total longline soak time of 100 hooks

Month	Effort (hrs)	Sand Tiger	Sandbar	Tiger	Atlantic Sharpnose	Spinner	Dusky	Blacknose	Blacktip	Scalloped Hammerhead	Bull	Silky
Jun	31.1	2	16	2	27	3	0	4	23	0	0	0
Jul	28.1	0	6	2	55	0	0	1	14	0	1	0
Aug	32.2	1	4	0	19	0	0	2	12	0	0	0
Sep	29.0	3	29	0	1	5	1	0	0	1	0	1
Total		6	55	4	102	8	1	7	49	1	1	1

	Blacktip	Scalloped Hammerhead	Bull	Silky
	23	0	0	0
	14	0	1	0
	12	0	0	0
	0	1	0	1
Total	49	1	1	1

Table 12. Neonate catch summaries for each monthly COASTSPAN cruise, 2020, pooled across the sampling sites with the lower Chesapeake Bay and coastal lagoons of the Eastern Shore. Effort is expressed as total longline soak time of 50 hooks.

Lower Chesapeake Bay

Month	Effort (hrs)	Neonate
Jun	10.0	35
Jul	10.0	35
Aug	10.0	44
Total		

Lagoons, Eastern Shore

Month	Effort (hrs)	Neonate
Jun	4.5	76
Jul	7.5	93
Aug	7.5	117
Total		

North Carolina

Fishery-Dependent

Fishery-dependent sampling of North Carolina commercial fisheries has been ongoing since 1982 (conducted under Title III of the Interjurisdictional Fisheries Act and funded in part by the U.S. Department of Commerce, National Marine Fisheries Service). Predominate fisheries sampled includes the ocean gill net, estuarine gill net, ocean trawl, long haul seine/swipe net, beach seine, and pound net fisheries. Fishery-dependent sampling did not occur from April to May 2020 due to COVID-19 concerns but resumed in June 2020. Shark species were sampled

from 57 commercial trips in 2020 with February having the highest number of sampled trips (Table 13). Seventy-one sharks comprised of six species were sampled (Table 14).

Table 13. North Carolina 2020 fishery-dependent shark sampling summary by month.

Month	Total Trips Sampled
January	7
February	15
March	7
April	0
May	0
June	12
July	4
August	1
September	1
October	6
November	2
December	2
Total	57

Table 14. North Carolina 2020 fishery-dependent shark sampling summary by species for total number of individuals and total sampled weight.

Shark Species	#Total Individuals	Weight (kg)
Atlantic Sharpnose	32	51
Blacktip	10	63
Bonnethead	1	3
Hammerhead	2	138
Smoothhound	28	35
Spinner	8	168

Total	71	458
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Fishery-Independent

The NCDMF has two fishery-independent surveys that collect coastal sharks: A gill net survey (Program 915) and a red drum long line survey (Program 365). Program 915 was initiated in 2001. The objective of this project is to provide annual relative abundance indices for key estuarine species in the near shore, Pamlico Sound, Pamlico, Pungo, Neuse, New, and Cape Fear rivers. The survey employs a stratified random sampling design and utilizes multiple mesh gill nets (3.0 inch to 6.5 inch stretched mesh, by 0.5 inch increments). Program 365 was initiated in 2007 for developing an index of abundance for adult red drum. This project also allows for capture and tagging of Atlantic coastal sharks in collaboration with the NOAA Fisheries Cooperative Shark Tagging Program.

For the 2020 sampling year, the red drum long line survey and the gill net survey did not occur due to the COVID pandemic. Executive Order (EO) 116, issued on March 10, 2020, declared North Carolina under a State of Emergency and was soon followed by EO 120 which implemented a statewide Stay at Home Order for all non-essential State employees.

South Carolina

Data related to the presence and movement of sharks in South Carolina’s coastal waters will continue to be collected as encountered within the context of existing fishery dependent or fishery independent programs conducted by the SCDNR. Currently, data are collected from estuarine waters by the SCDNR Cooperative Atlantic States Shark Pupping and Nursery Habitat survey (COASTSPAN) and the SCDNR trammel net survey. The COASTSPAN survey monitors the presence and abundance of young-of-year and juvenile sharks in the estuaries and bays of South Carolina. The survey operates from April-September using gillnets, longlines and drumlines to sample index stations. Species captured are measured, sexed, tagged and released, and physical and water quality parameters are recorded (Table 15).

The SCDNR trammel net survey is designed to sample recreationally important species in shallow estuarine waters. Sharks are not a target species, but their abundance as well as length and sex data are recorded (Table 15). Stations selected based on suitable habitats are randomly sampled using a multi-panel net to encircle a section of marsh. Species captured are measured, sexed if possible, and released. In addition, physical and water quality data are recorded for each sample location.

The presence and abundance of juvenile and adult coastal sharks in the bays, sounds and coastal waters of South Carolina are documented by the Coastal Longline Survey. This survey uses a stratified-random approach to sample for adult red drum and coastal sharks. The survey operates annually from August to December using longlines to sample suitable habitat for targeted species. Species captured are measured, sexed, tagged, and released, and physical and

water quality parameters are recorded. Species encountered and tagged for all surveys are reported in Table 15. The data gathered from these programs are shared with the NMFS Apex Predators Program and are utilized in stock assessments and management decisions in South Carolina.

Table 15. Number of sharks captured and tagged by South Carolina Department of Natural Resources' Cooperative Atlantic States Shark Pupping and Nursery Habitat Survey (COASTSPAN), Trammel Net Survey, and Coastal Longline survey in 2020.

Shark Species	COASTSPAN		Trammel Net		Coastal Longline Survey	
	Captured	Tagged	Captured	Tagged	Captured	Tagged
Atlantic Sharpnose	65	0	6	0	1007	0
Blacknose	0	0	0	0	130	125
Blacktip	249	93	11	0	54	42
Bonnethead	189	126	97	0	65	65
Bull	7	6	0	0	3	3
Dusky	0	0	0	0	0	0
Finetooth	351	47	18	0	78	72
Great Hammerhead	0	0	0	0	2	1
Lemon	13	9	7	0	5	1
Nurse	0	0	0	0	1	1
Sandbar	215	196	4	0	195	166
Sand Tiger	0	0	0	0	0	0
Scalloped/Carolina Hammerhead	201	17	0	0	6	3
Smooth Dogfish	0	0	0	0	0	0
Spinner	0	0	0	0	33	28
Tiger	0	0	0	0	1	0

Georgia

Fishery-Dependent

Although a directed fishery for sharks does not exist in Georgia waters, there is a fishery-dependent sampling project conducted by the Coastal Resources Division (CRD) that can result in the incidental capture of coastal sharks. The Marine Sportfish Carcass Recovery Project, a partnership with recreational anglers along the Georgia coast, is used to collect biological data from finfish such as Red Drum, Spotted Seatrout, Southern Flounder, Sheepshead, and Southern Kingfish. Participating anglers deposit fish carcasses in chest freezers located at public access points along the Georgia coast. In 2020, a total of 5,037 fish carcasses were donated through this program. No coastal shark species were included.

Fishery-Independent

Georgia has several fishery-independent surveys that sample in areas where coastal shark species are encountered and one survey specifically designed to sample sub-adult sharks in Georgia's inshore waters.

Coastal Longline Survey (SEAMAP)

The Coastal Longline Survey is designed to sample adult Red Drum and coastal sharks. Sampling occurs in inshore and nearshore waters of southeast Georgia from mid-June through mid-December. Sampling gear consists of a bottom set 926 m, 600 lb. test monofilament mainline configured with 60, 0.5 m gangions made of 200 lb. test monofilament. Each gangion consists of a longline snap and a 15/0 circle hook. Thirty hooks were baited with squid, and thirty were baited with mullet. Soak time for each set is 30 minutes. During 2020, CRD staff deployed 54 sets consisting of 3,236 hooks and 27 hours of soak time. A total of 253 sharks were captured, representing ten species (Table 16).

Shark Nursery Survey (COASTSPAN)

The University of North Florida assumed field operations for this survey in 2016. Data for the complete time series are maintained by the NMFS Apex Predators Program in Narragansett, RI (contact: Cami McCandless).

Ecological Monitoring Trawl Survey (EMTS)

The EMTS is designed to sample penaeid shrimp, blue crab, and other marine organisms typically encountered in the trawl for management and monitoring purposes. Each month, a 40 ft flat otter trawl with neither a turtle excluder device nor bycatch reduction device is deployed at 36 stations across six estuaries. At each station, a standard 15-minute tow is made. During this report period, 336 tows/observations were conducted, totaling 84.29 hours of tow time. A total of 85 sharks, representing 5 species, were captured during 2020 (Table 16).

Marine Sportfish Population Health Survey (MSPHS)

The MSPFIS is a multi-faceted ongoing survey used to collect information on the biology and population dynamics of recreationally important finfish. The Altamaha River System and the Wassaw Estuary has been sampled since 2003 using entanglement gear. The St. Andrew Estuary was added in 2019.

During the June to August period, young-of-the-year Red Drum in the Altamaha River System and Wassaw and St. Andrew estuaries are collected using gillnets to gather data on relative abundance and location of occurrence. During the September to November period, fish populations in the Altamaha River System and Wassaw Estuary are monitored using monofilament trammel nets to gather data on relative abundance and size composition. In 2020, a total of 320 gillnet and 225 trammel net sets were made, resulting in the capture of 415 individuals representing 6 species of coastal sharks (Table 16).

Table 16. Numbers of coastal sharks captured in Georgia fishery-independent surveys in 2020 by species and by survey.

	SEAMAP	EMTS	MSPHS
SHARK, ATLANTIC SHARPNOSE	131	29	122
SHARK, BLACKNOSE	55	---	---
SHARK, BLACKTIP	22	2	16
SHARK, BONNETHEAD	23	49	245
SHARK, BULL	---	---	---
SHARK, FINETOOTH	6	---	5
SHARK, LEMON	---	---	4
SHARK, SANDBAR	11	2	---
SHARK, SCALLOPED HAMMERHEAD	2	3	---
SHARK, SPINNER	2	---	23
SHARK, TIGER	1	---	---
ALL SPECIES COMBINED	253	85	415

Florida

Florida Fish and Wildlife Conservation Commission had no fisheries-independent monitoring programs for coastal sharks during the 2020 calendar year.

V. Status of Management Measures and Issues

Fishery Management Plan

Coastal Sharks are managed under the Interstate FMP for Coastal Sharks, which was adopted in August 2008 and effective in January 1, 2009, Addendum I (2009), Addendum II (2013), Addendum III (2013), Addendum IV (2016), and Addendum V (2018). The FMP addresses the management of 41 species and establishes a suite of management measures for recreational and commercial shark fisheries in state waters (0 – 3 miles from shore). Addendum V provided the Board the ability to respond to changes in the stock status of coastal shark populations and adjust regulations through Board action rather than an addendum, ensuring greater consistency between state and federal shark regulations.

In April 2019, the Board approved changes to the recreational size limit for Atlantic shortfin mako sharks in state waters, specifically, a 71-inch straight line fork length (FL) for males and an 83-inch straight line FL for females. These measures are consistent with those required for federal highly migratory species (HMS) permit holders under HMS Amendment 11, which was implemented in response to the 2017 Atlantic shortfin mako stock assessment that found the resource is overfished and experiencing overfishing.

In October 2019, the Board approved changes to the gear requirements for recreational shark fishing. For recreational shark fishing in state waters, anglers are required to use non-offset, corrodible, non-stainless steel circle hooks, except when fishing with flies or artificial lures. This measure has been in effect since July 1, 2020 and are intended to promote consistency with those approved through HMS Amendment 11.

ASMFC will continue to respond to changes in the Atlantic Highly Migratory Species FMP and make changes as necessary to the interstate FMP.

VI. Implementation of FMP Compliance Requirements for 2020

Addendum III to the Coastal Sharks FMP was implemented in March 2014, which modified the recreational minimum size limits and the commercial species groupings in the FMP. In 2019, the Board also adjusted the recreational minimum size for shortfin mako and approved the requirement for non-offset, corrodible, non-stainless steel circle hooks, except when fishing with flies or artificial lures. All states must demonstrate through the inclusion of regulatory language that the following management measures were implemented.

i. Recreational Minimum Size Limits

This modifies Section 4.2.4 Recreational Minimum Size Limits in the FMP.

Sharks caught in the recreational fishery must have a minimum fork length of 4.5 feet (54 inches) with the exception of smooth hammerhead, scalloped hammerhead, great hammerhead, shortfin mako, smoothhound, Atlantic sharpnose, blacknose, finetooth, and bonnethead sharks.

Smooth hammerhead, scalloped hammerhead and great hammerhead sharks must have a minimum fork length of 6.5 feet (78 inches). Male Shortfin mako sharks must have a minimum fork length of 71 inches and females must have a minimum fork length of 83 inches.

Smoothhound, Atlantic sharpnose, blacknose, finetooth and bonnethead sharks do not have recreational minimum size limits.

Table 17 Recreational minimum size limits, 2020.

No Minimum Size	Minimum Fork Length		Minimum Fork Length 71/83 inches	Minimum Fork Length 78 inches
	54 inches			
Smoothhound	Tiger	Nurse	Shortfin mako (male/female)	Great hammerhead Scalloped hammerhead Smooth hammerhead
Atlantic sharpnose	Blacktip	Porbeagle		
Finetooth	Spinner	Thresher		
Blacknose	Bull	Oceanic whitetip		
Bonnethead	Lemon	Blue		

ii. Commercial Species Groupings

This modifies Section 4.3.3 Commercial Species Groupings (and the appropriate sub-sections, outlined below). Two new species groups ('Blacknose' and 'Hammerhead') are created.

This FMP establishes eight commercial 'species groups' for management (Table 1): Prohibited, Research, Smoothhound, Non-Blacknose Small Coastal, Blacknose, Aggregated Large Coastal, Hammerhead, and Pelagic. These groupings apply to all commercial shark fisheries in state waters.

VII. PRT Recommendations

State Compliance

- New Jersey’s rulemaking process has delayed implementation of the non-offset stainless steel circle hooks until January 2023. The PRT expressed some concern regarding the delay and the potential biological impacts the delayed regulation may have due to increased post-release mortality of sharks. Even after a rule is implemented, education and outreach efforts are needed to increase compliance, which further lengthens the timeline of full implementation.
- Georgia’s compliance report doesn’t provide any regulations regarding the variable possession limits for the aggregated large coastal and hammerhead management groups. However, Georgia limits commercial fishermen to the same daily creel and size limits that the recreational sector is subject to, and no commercial landings occurred in 2020.
- Georgia’s recreational regulations allows for the landing of 1 hammerhead, 1 shortfin mako, and 1 “other” shark, which is in excess of what is allowed under the FMP (1 shark

per person/vessel plus one Atlantic sharpnose and one bonnethead). This issue has been raised with Georgia Department of Natural Resources staff and they have indicated that the regulations will be updated accordingly.

- With the three exceptions noted above, the PRT determined that all states have implemented regulations consistent with the FMP requirements.

General Comments

- It has come to the attention of the PRT that some states have been requiring individuals and organizations request for federal approval for the scientific capture of sharks in state waters. While it is an FMP requirement that the scientific capture of sharks be monitored and permitted by each state, it is not a requirement that federal approval be given if the capture occurs within state waters.

De Minimis Status

This FMP does not establish specific *de minimis* guidelines that would exempt a state from regulatory requirements contained in this plan. *De minimis* shall be determined on a case-by-case basis. *De minimis* often exempts states from monitoring requirements in other fisheries but this plan does not contain any monitoring requirements.

De minimis guidelines are established in other fisheries when implementation and enforcement of a regulation is deemed unnecessary for attainment of the fishery management plan's objectives and conservation of the resource. Due to the unique characteristics of the coastal shark fishery, namely the large size of sharks compared to relatively small quotas, the taking of a single shark could contribute to overfishing of a shark species or group. Therefore, exempting a state from any of the regulatory requirements contained in this plan could threaten attainment of this plans' goals and objectives.

Massachusetts is the only state that has been granted *de minimis* status. Massachusetts can continue to have *de minimis* status until their landings patterns change or they request a discontinuation.

In some cases, it is unnecessary for states with *de minimis* status to implement all regulatory requirements in the FMP.

- A. Massachusetts has implemented all regulations with two exceptions: it is exempt from the possession limit and closures of the aggregated large coastal and hammerhead shark fisheries.

VIII. Research Recommendations

Research recommendations were identified in 2018 in the Commission's [Fisheries Research Priorities document](#) (p. 42).

References

Hayes, C.G., Jiao, Y., Cortés, E. 2009. Stock assessment of scalloped hammerheads in the western North Atlantic Ocean and Gulf of Mexico. *North American Journal of Fisheries Management*. 29(5): 1406-1417

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Quattro, J.M., Driggers, W.B.I., Grady, J.M., Ulrich, G.F., Roberts, M.A. 2013. *Sphyrna gilberti* sp. nov., a new hammerhead shark (Carcharhiniformes, Sphyrnidae) from the western Atlantic Ocean. *Zootaxa*. 3702(2): 159-178.

APPENDIX 1. OVERVIEW OF COASTAL SHARK REGULATIONS

Coastal Sharks FMP Regulatory Requirements

1. Recreational seasonal closure (Section 4.2.1)
 - a. Recreational anglers are prohibited from possessing silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead in the state waters of Virginia, Maryland, Delaware and New Jersey from May 15 through July 15—regardless of where the shark was caught.
 - b. Recreational fishermen who catch any of these species in federal waters may not transport them through the state waters of VA, MD, DE, and NJ during the seasonal closure.
2. Recreationally permitted species (Section 4.2.2)
 - a. Recreational anglers are allowed to possess aggregated large coastal sharks, hammerheads, tiger sharks, SCS, and pelagic sharks. Authorized shark species include: aggregated LCS (blacktip, bull, spinner, lemon, and nurse); hammerhead (great hammerhead, smooth hammerhead, scalloped hammerhead); tiger sharks; SCS (blacknose, finetooth, Atlantic sharpnose, and bonnethead sharks); and, pelagic sharks (blue, shortfin mako, common thresher, oceanic whitetip, and porbeagle). Sandbar sharks and silky sharks (and all prohibited species of sharks) are not authorized for harvest by recreational anglers.
3. Landings Requirements (Section 4.2.3)
 - a. All sharks (with exception) caught by recreational fishermen must have heads, tails, and fins attached naturally to the carcass. Anglers may still gut and bleed the carcass by making an incision at the base of the caudal peduncle as long as the tail is not removed. Filleting sharks at sea is prohibited.
 - b. All sharks (with exception) harvested by commercial fishermen within state boundaries must have the tails and fins attached naturally to the carcass through landing. Fins may be cut as long as they remain attached to the carcass (by natural means) with at least a small portion of uncut skin. Sharks may be eviscerated and have the heads removed. Sharks may not be filleted or cut into pieces at sea.
 - c. Exception: Fishermen holding a valid state commercial permit may process smooth dogfish sharks at sea out to 50 miles from shore, as long as the total weight of smooth dogfish shark fins landed or found on board a vessel does not exceed 12 percent of the total weight of smooth dogfish shark carcasses landed or found on board.
4. Recreational Minimum Size Limits (Section 4.2.4)
 - a. Sharks caught in the recreational fishery must have a fork length of at least 4.5 feet (54 inches) with the exception of Atlantic sharpnose, blacknose, finetooth,

bonnethead and smoothhound which have no minimum size. Hammerhead species must have a fork length (FL) of 6.5 feet (78 inches).

- b. Recreational size limit for Atlantic shortfin mako sharks in state waters is 71-inch straight line FL for males and 83-inch straight light FL for females.

5. Authorized Recreational Gear (Section 4.2.5)

- a. Recreational anglers may catch sharks only using a handline or rod & reel. Handlines are defined as a mainline to which no more than two gangions or hooks are attached. A handline must be retrieved by hand, not by mechanical means.
- b. Non-offset, corrodible, non-stainless steel circle hooks are required when fishing for sharks recreationally, in state waters. The only exception is when fishing with flies or artificial lures

6. Possession limits in one twenty-four hour period (Section 4.2.7 and 4.3.6)

- a. Recreational and commercial possession limits as specified in Table 9.
- b. Smooth dogfish harvest is not limited in state waters and recreational shore-anglers may harvest an unlimited amount of smooth dogfish.

7. Commercial Seasonal Closure (Section 4.3.2)

- a. All commercial fishermen are prohibited from possessing silky, tiger, blacktip, spinner, bull, lemon, nurse, scalloped hammerhead, great hammerhead, and smooth hammerhead in the state waters of Virginia, Maryland, Delaware and New Jersey from May 15 through July 15. Fishermen who catch any of the above species in a legal manner in federal waters may transit through the state waters listed above if all gear is stowed.

8. Quota Specification (Section 4.3.4)

- a. When NOAA Fisheries closes the fishery for any species, the commercial landing, harvest, and possession of that species will be prohibited in state waters until NOAA Fisheries reopens the fishery.

9. Permit requirements (Section 4.3.8)

- a. State: Commercial shark fishermen must hold a state commercial license or permit in order to commercially catch and sell sharks in state waters.
- b. Federal: A federal Commercial Shark Dealer Permit is required to buy and sell any shark caught in state waters.
- c. Display and research permit is required to be exempt from seasonal closure, quota, possession limit, size limit, gear, and prohibited species restrictions. States are required to include annual information for all sharks taken for display throughout the life of the shark.

10. Authorized commercial gear (Section 4.3.8.3)

- a. Commercial fishermen can only use one of the following gear types (and are prohibited from using any gear type not listed below) to catch sharks in state waters.
 - i. **Rod & reel.**
 - ii. **Handlines.** Handlines are defined as a mainline to which no more than two gangions or hooks are attached. A handline is retrieved by hand, not by mechanical means, and must be attached to, or in contact with, a vessel.
 - iii. **Small Mesh Gillnets.** Defined as having a stretch mesh size smaller than 5 inches.
 - iv. **Large Mesh Gillnets.** Defined as having a stretch mesh size equal to or greater than 5 inches.
 - v. **Trawl nets.**
 - vi. **Shortlines.** Shortlines are defined as fishing lines containing 50 or fewer hooks and measuring less than 500 yards in length. A maximum of 2 shortlines are allowed per vessel.
 - vii. **Pounds nets/fish traps.**
 - viii. **Weirs.**

11. Bycatch Reduction Measures (Section 4.3.10)

- a. Any vessel using a shortline must use corrodible circle hooks. All shortline vessels must practice the protocols and possess the recently updated federally required release equipment for pelagic and bottom longlines for the safe handling, release, and disentanglement of sea turtles and other non-target species, all captains and vessel owners must be certified in using handling and release equipment.

12. Smooth Dogfish

- a. Each state must identify their percentage of the overall quota (Addendum II, 3.1)
- b. Smooth dogfish must make up at least 25%, by weight, of total catch on board at time of landing. Trips that do not meet the 25% catch composition requirement can land smooth dogfish, but fins must remain naturally attached to the carcass (Addendum IV, 3.0; modifies Addendum II Section 3.5).

Table 18. Possession/retention limits for shark species in state waters

Recreational	<i>Shore-angler</i>	1 shark (of any species except prohibited) per person per day; plus one Atlantic sharpnose, and one bonnethead. No limit on smoothhound
	<i>Vessel-fishing</i>	1 shark (of any species except prohibited) per vessel per trip; plus one Atlantic sharpnose, and one bonnethead per person per vessel. No limit on smoothhound

Commercial	<i>Directed permit</i>	Variable possession limit for aggregated large coastal sharks and hammerhead shark management groups. The Commission will follow NMFS for in-season changes to the possession limit. The possession limit range is 0-55, the default is 45 sharks per trip. No limit for SCS or pelagic sharks.
	<i>Incidental permit</i>	3 aggregated LCS per vessel per trip and 16 pelagic or SCS (combined) per vessel per trip

Atlantic States Marine Fisheries Commission

Atlantic Menhaden Management Board

November 9, 2022

1:30 – 5:30 p.m.

Hybrid Meeting

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.

This meeting will include a 10-minute break.

1. Welcome/Call to Order (*M. Bell*) 1:30 p.m.
2. Board Consent 1:30 p.m.
 - Approval of Agenda
 - Approval of Proceedings from August 2022
3. Public Comment 1:35 p.m.
4. Set 2023 Specifications **Final Action** 1:45 p.m.
 - Review Technical Committee Report of Stock Projections (*J. Newhard*)
5. Consider Addendum I to Amendment 3 on Commercial Allocations, Episodic Event Set Aside Program, and Incidental Catch/Small-scale Fisheries for Final Approval **Final Action** 3:15 p.m.
 - Review Public Comment Summary (*J. Boyle*)
 - Review Advisory Panel Report (*M. Lapp*)
 - Consider Final Approval of Addendum I
6. Other Business/Adjourn 5:30 p.m.

The meeting will be held at The Ocean Place (1 Ocean Boulevard, Long Branch, NJ; 732.571.4000) and via webinar; click [here](#) for details

Atlantic States Marine Fisheries Commission

MEETING OVERVIEW

Atlantic Menhaden Management Board

Wednesday, November 9, 2022

1:30 p.m. – 5:30 p.m.

Hybrid Meeting

Chair: Mel Bell (SC) Assumed Chairmanship: 10/21	Technical Committee Chair: Josh Newhard (USFWS)	Law Enforcement Committee Representative: Robert Kersey (MD)
Vice Chair: Conor McManus (RI)	Advisory Panel Chair: Meghan Lapp (RI)	Previous Board Meeting: August 3, 2022
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 3, 2022

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 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. 2023 Menhaden Specifications (1:45–3:15 p.m.) Final Action

Background

- The Board sets an annual or multi-year TAC using the best available science.
- The TC completed projection runs for the 2023-2025 years based on recommendations from the Board (**Briefing Materials**).

Presentations

- Review of 2023-2025 stock projections by J. Newhard

5. Consider Addendum I to Amendment 3: *Commercial Allocations, Episodic Event Set Aside Program, and Incidental Catch/Small-scale Fisheries* for Final Approval (3:15-5:30 p.m.) Final Action

Background

- In August 2021, 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 (IC/SSF) based on the Board work group report.

Atlantic States Marine Fisheries Commission

- | |
|---|
| <ul style="list-style-type: none">• The Board approved Draft Addendum I for public comment in August 2022. Public hearings were held for ME, NH, MA, RI, NY, NJ, DE-MD-PRFC, VA, and NC (Briefing Materials).• The Advisory Panel met via webinar on October 18th to provide recommendations regarding Addendum I (Supplemental Materials). |
|---|

Presentations

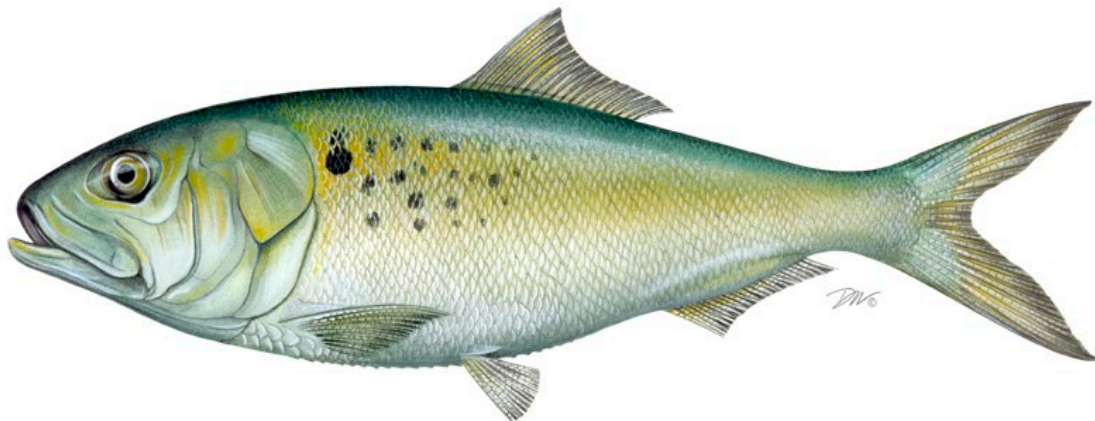
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|---|
| <ul style="list-style-type: none">• Overview of options and public comment summary by J. Boyle• Advisory Panel Report by M. Lapp |
| <ul style="list-style-type: none">• Select management options and implementation dates• Approve final document |

6. Other Business/Adjourn

Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM I TO AMENDMENT 3 OF THE ATLANTIC MENHADEN INTERSTATE FISHERY MANAGEMENT PLAN FOR BOARD REVIEW

*Commercial Allocations, Episodic Event Set Aside Program,
and Incidental Catch/Small-Scale Fisheries*



Sustainable and Cooperative Management of Atlantic Coastal Fisheries

November 2022

Draft Document for Board Review

Atlantic States Marine Fisheries Commission Seeks Your Input on Atlantic Menhaden Management

The public is encouraged to submit comments regarding this document during the public comment period. Comments will be accepted until **11:59 p.m. EST on September 30, 2022**. Regardless of when they were sent, comments received after that time will not be included in the official record.

You may submit public comment in one or more of the following ways:

1. Attend public hearings pertinent to your state or jurisdiction; given COVID-19, it is likely most hearings will occur via webinar.
2. Refer comments to your state’s members on the [Atlantic Menhaden Board](#) or [Atlantic Menhaden Advisory Panel](#), if applicable.
3. Mail, fax, or email written comments to the following address:

James Boyle
Senior Fishery Management Plan Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201
comments@asmfc.org (subject line: Atlantic Menhaden Draft Addendum I)

If you have any questions please call James Boyle at 703.842.0740.

Commission’s Process and Timeline

August 2021	Atlantic Menhaden Board Tasks Staff to Develop Draft Addendum I
August 2021 – July 2022	Staff Develops Draft Addendum I for Board Review
August 2022	Atlantic Menhaden Board Reviews Draft Addendum I and Considers Its Approval for Public Comment
September 2022	Board Solicits Public Comment and States Conduct Public Hearings
November 2022	Board Reviews Public Comment, Selects Management Options and Considers Final Approval of Addendum I
TBD	Provisions of Addendum I are Implemented

Draft Document for Board Review

1. INTRODUCTION

The Atlantic States Marine Fisheries Commission (ASMFC) is responsible for managing Atlantic menhaden (*Brevoortia tyrannus*) in state waters (0–3 miles from shore) under the authority of the Atlantic Coastal Fisheries Cooperative Management Act, and has done so through an interstate fishery management plan (FMP) since 1981. The states of Maine through Florida have a declared interest in the fishery and are responsible for implementing management measures consistent with the interstate FMP. Management authority in the Exclusive Economic Zone (3–200 miles from shore) lies with NOAA Fisheries. For the purposes of this Addendum, the term “state” or “states” also includes the Potomac River Fisheries Commission.

At its August 2021 meeting, the ASMFC’s Atlantic Menhaden Management Board (Board) approved the following motion:

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.

The Addendum proposes options to adjust states’ commercial allocation to better align with availability; adjust the percentage of the episodic event set aside (EESA) program; and reduce incidental catch and small-scale fisheries (IC/SSF) landings from recent levels.

2. OVERVIEW

2.1 Statement of the Problem

Since the implementation of Amendment 3 (2017), dynamics in the commercial menhaden fishery have changed, most notably the rise of landings in the Gulf of Maine and an increase in quota transfers to the New England region; an increase in landings under the IC/SSF provision; and an annual reliance by some states on the EESA program. To sufficiently address the issues posed by these changes, the addendum addresses three separate but related components of the management program: 1) commercial allocation, 2) the IC/SSF provision, and 3) EESA program.

2.1.1 Commercial Allocations

The current allocations have resulted in the Total Allowable Catch (TAC) not being fully used coastwide, while some states do not have enough quota to maintain current fisheries. Quota transfers alone are not enough to ameliorate this issue. Some states have become reliant on the EESA and IC/SSF provision to maintain their fishery while other states regularly do not land their allocation.

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2.1.2 Episodic Event Set Aside (EESA) Program

Over 90% of the EESA has been used in all years since 2016. With the increase in Atlantic menhaden availability to the Northeast, the program has become a secondary regional quota for several states to continue fishery operations in state waters. The dependency on the EESA highlights the mismatch of Atlantic menhaden distribution and availability to current commercial allocations.

2.1.3 Incidental Catch and Small-Scale Fisheries (IC/SSF)

The IC/SSF provision was intended to provide continued access for low-volume landings of menhaden once a state's directed fisheries quota was met and reduce regulatory discards. In recent years, menhaden availability at the northern part of its range has resulted in directed fishery quotas being met earlier in the year. Additionally, the coastwide landings under this category have exceeded a number of states directed fishery quotas and ranged from 1-4% of the annual TAC. Landings under this provision have only caused the overall TAC to be exceeded in a single year, 2021 (by 0.56%), but without changes, landings could remain at high levels or increase, potentially leading to more frequent exceedance of the TAC. Finally, the language in Amendment 3 has led to different interpretations of when landings fall under this provision (*i.e.* once a state's sector allocation is met or only once the full state allocation is met) and should be clarified.

2.2 Background

2.2.1 Allocation

Under Amendment 3, each state is allocated a 0.5% minimum quota and the remainder of the TAC is allocated based on a three-year average of landings from 2009-2011. On an annual basis, states have the option to relinquish part of or all of their fixed minimum quota by December 1st of the preceding fishing year. Any quota relinquished by a state is redistributed to other states that have not relinquished their quota, based on landings data from 2009-2011. Any overage of quota allocation is determined based on final allocations (inclusive of transfers), and the overage amount is subtracted from that state's quota allocation in the subsequent year on a pound-for-pound basis.

Amendment 2 (2012) also based state allocations on the three-year average of landings from 2009-2011; however, there was no fixed minimum. Table 1 shows a comparison of state quotas under Amendments 2 and 3, and highlights the influence of the 0.5% fixed minimum on states' allocations.

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Table 1. A comparison of state allocations under menhaden Amendment 2 and Amendment 3. Both Amendments used a 2009-2011 allocation timeframe; Amendment 3 included a 0.5% fixed minimum. While under Amendment 2, Pennsylvania was not a part of the Board and did not have an allocation, therefore is noted with a “-”.

State	Amendment 2 Allocation (%)	Amendment 3 Allocation (%)
Maine	0.04%	0.52%
New Hampshire	0%	0.50%
Massachusetts	0.84%	1.27%
Rhode Island	0.02%	0.52%
Connecticut	0.02%	0.52%
New York	0.06%	0.69%
New Jersey	11.19%	10.87%
Pennsylvania	-	0.50%
Delaware	0.01%	0.51%
Maryland	1.37%	1.89%
PRFC	0.62%	1.07%
Virginia	85.32%	78.66%
North Carolina	0.49%	0.96%
South Carolina	0%	0.50%
Georgia	0%	0.50%
Florida	0.02%	0.52%

From 2018 to 2020, total landings (directed, IC/SSF, and EESA) increased among the New England states of Maine, New Hampshire, and Massachusetts (Table 2). Maine and Massachusetts have both increased their percentage of coastwide total landings in recent years, with Maine’s percentage increasing every year from 2016-2020 and Massachusetts from 2016-2021. A number of states have maintained directed fisheries while their landings have represented less than 0.2% of coastwide total landings (Connecticut, Delaware, North Carolina, and Florida). In 2021, Massachusetts, Rhode Island, Connecticut, Maryland, and PRFC increased their percentage of coastwide total landings, relative to the previous year. Virginia’s percentage of the coastwide landings decreased greatly in 2020 relative to 2019 because the state’s largest fishery and processing plant was shut down for several weeks due to the COVID-19 pandemic.

Draft Document for Board Review

Table 2. State total landings as a percentage of coastwide (CW) landings, 2016-2021. Total landings include directed bait, reduction, IC/SSF, and EESA landings. Amendment 3 allocations for directed bait and reduction landings were implemented beginning in 2018. To protect confidentiality, information for New Hampshire, Pennsylvania, South Carolina, and Georgia have been removed. **These are proportions of the coastwide landings; they do not represent allocations.**

State	% of 2016 CW Landings	% of 2017 CW Landings	% of 2018 CW Landings	% of 2019 CW Landings	% of 2020 CW Landings	% of 2021 CW Landings
Maine	1.50%	2.31%	3.48%	4.91%	6.33%	5.28%
New Hampshire				0.99%	1.02%	
Massachusetts	0.76%	0.96%	1.37%	1.51%	2.17%	2.30%
Rhode Island	0.00%	0.45%	0.17%	0.01%	0.05%	0.83%
Connecticut	0.02%	0.05%	0.20%	0.03%	0.03%	0.04%
New York	0.37%	0.40%	0.11%	0.21%	1.09%	0.77%
New Jersey	11.47%	12.15%	11.97%	10.96%	12.22%	10.60%
Pennsylvania						
Delaware	0.02%	0.02%	0.04%	0.02%	0.04%	0.01%
Maryland	1.40%	0.76%	0.74%	0.73%	0.64%	0.65%
PRFC	0.63%	0.55%	0.79%	0.51%	0.54%	0.59%
Virginia	83.66%	82.08%	80.85%	79.93%	75.66%	77.65%
North Carolina	0.10%	0.20%	0.17%	0.12%	0.15%	0.10%
South Carolina						
Georgia						
Florida	0.07%	0.07%	0.06%	0.05%	0.06%	0.03%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Since implementation of Amendment 3, the number of quota transfers has increased over time with 7, 17, 15, and 16 quota transfers occurring in 2018, 2019, 2020, and 2021, respectively. However, not every state transferred quota consistently; only Maine, Connecticut, Maryland, and Florida either gave or received quota every year from 2018-2021. Maine, New Hampshire, Massachusetts, and New Jersey had a net increase in quota through transfers in all four years. The net increase in quota by state over the four years ranged from 275,000 to 22.86 million pounds (Table 3). While the transfer of quota away from a state does not necessarily represent a decrease in abundance of menhaden, the transfer of quota to the New England states has coincided with increasing availability of menhaden regionally and the need for bait fish as the availability of Atlantic herring has decreased.

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Table 3. Quota transfers in pounds by state for 2013-2021.

State	2013	2014	2015	2016	2017	2018	2019	2020	2021	2018-2021 Net Total	2018-2021 Average
ME				1,800,000	195,180	5,400,000	6,573,592	5,450,000	5,437,698	22,861,290	5,715,323
NH							3,373,592	2,300,000	2,686,318	8,359,910	2,786,637
MA	-500,000	-260,000	-508,685	-35,986			1,300,000	2,350,000	2,492,791	6,142,791	2,047,597
RI	15,000	50,000	33,685	35,986			-400,000	-1,800,000	1,240,675	-959,325	-319,775
CT						-500,000	-2,400,000	-2,000,000	-2,000,000	-6,900,000	-1,725,000
NY	1,000,000	210,000	475,000	492,823	300,000	-1,000,000	-1,900,000	500,000		-2,400,000	-800,000
NJ									275,000	275,000	275,000
PA								-500,000	-1,086,318	-1,586,318	-793,159
DE						-150,000		-100,000		-250,000	-125,000
MD						-1,500,000	-1,000,000	-1,350,000	-1,000,000	-4,850,000	-1,212,500
PRFC									-900,000	-900,000	-900,000
VA				-1,500,000		-1,000,000	-1,000,000			-2,000,000	-1,000,000
NC	-575,000			-877,823	-495,180		-600,000	-1,800,000	-2,000,000	-4,400,000	-1,466,667
SC							-2,347,184	-1,650,000	-1,775,000	-5,772,184	-1,924,061
GA									-1,971,164	-1,971,164	-1,971,164
FL	60,000			85,000		-1,250,000	-1,600,000	-1,400,000	-1,400,000	-5,650,000	-1,412,500

2.2.2 Episodic Event Set Aside Program (EESA)

The EESA Program was first implemented under Amendment 2 and clarified under Technical Addendum I later that year. Amendment 3 made no additional changes to the program. Annually, 1% of the TAC is set aside for episodic events, which are defined as any instance in which a qualified state has reached its quota allocation prior to September 1st and the state can prove the presence of unusually large amounts of menhaden in its state waters. To demonstrate a large amount of menhaden in state waters, a state can use surveys (e.g., aerial, seine) to indicate high biomass; landings information; or information highlighting the potential for fish kills, associated human health concerns, and that harvest would reduce or eliminate the fish kill. The goal of the program is to add flexibility in managing menhaden by allowing harvest during an episodic event, reduce discards, and prevent fish kills. States eligible to participate in the EESA program are limited to Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, and New York. When a state declares into the EESA, they are required to implement daily trip level harvester reporting and submit weekly reports to the ASMFC; restrict harvest and landings to state waters; and implement a maximum daily trip limit no greater than 120,000 pounds per vessel.

From 2013 through July 2022, the EESA has been used by Maine (6 years), Rhode Island (5 years), Massachusetts (2 years), and New York (2 years). Up to three states have participated at the same time. The starting date of states declaring into the program has ranged from mid-May to mid-August, with New York and Rhode Island opting in earlier than Maine and Massachusetts. Over 90% of the set-aside has been used in all years since 2016. In 2018 and 2019, Maine was the only state to declare into the EESA program and landed approximately 4.6 and 4.4 million pounds, respectively. In 2021, Maine, Massachusetts, and Rhode Island declared into the EESA program and combined the three states landed approximately 4.9 million pounds. Multiple states have implemented harvest control measures beyond the FMP's 120,000-pound

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trip limit, including: lower daily landings limits, weekly limits, limited landing days, and biomass thresholds for when the commercial fishery can operate.

The increasing reliance on the EESA program by some states has coincided with the decline in Atlantic herring and the increased availability of Atlantic menhaden in the Gulf of Maine. For more than a hundred years, there is evidence that periodic abundance of menhaden in the Gulf of Maine may last from 1 to 20 years then disappear for 1 to 20 years (Figure 1). In order to use the EESA and minimize disruptions to fishing activities, some states have sought creative ways at keeping their directed fishery open. In 2021, a number of states requested quota transfers as a group while fishing in the EESA, allowing for multiple quota transfers to be processed while the states continued to participate in the EESA program, in an effort to enable their directed fishery to resume after exiting the EESA with minimal interruption.

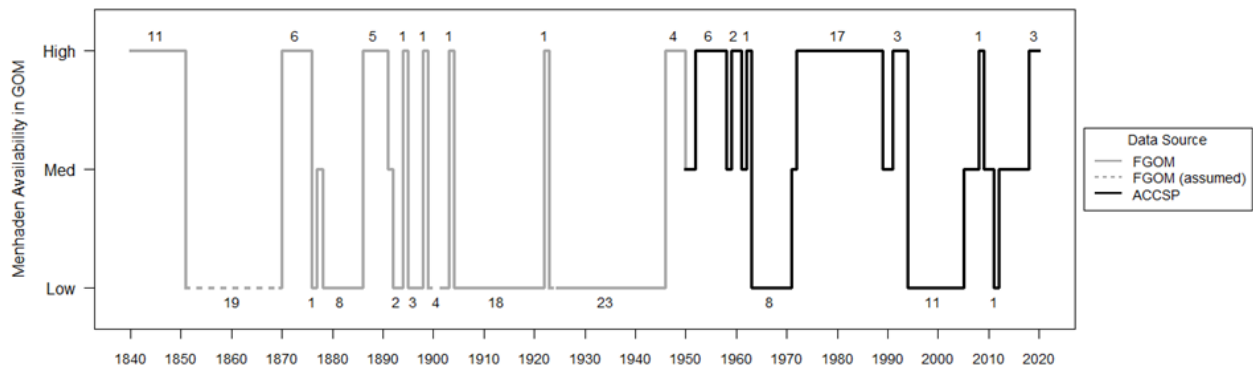


Figure 1. Reconstructed history of availability of Atlantic menhaden to the Gulf of Maine. The number of consecutive years in either a “High” or “Low” availability state are labeled. Data sources: *Fishes of the Gulf of Maine* (Bigelow and Schroeder 2002) and the Atlantic Coastal Cooperative Statistics Program (ACCSP).

2.2.3 Incidental Catch and Small-Scale Fisheries (IC/SSF)

A bycatch allowance was first implemented under Amendment 2, modified under Addendum I to Amendment 2 (2016), and modified again under Amendment 3. As outlined in Amendment 3, under the IC/SSF provision, after a state’s allocation is met, small-scale directed and non-directed gear types may continue to land up to 6,000 pounds of menhaden per trip per day. The following gear types are identified in Amendment 3 as eligible to participate:

Small-scale gears: cast nets, traps (excluding floating fish traps), pots, haul seines, fyke nets, hook and line, bag nets, hoop nets, hand lines, trammel nets, bait nets, and purse seines which are smaller than 150 fathoms long and 8 fathoms deep.

Non-directed gears: pound nets, anchored/stake gillnets, drift gill net, trawls, fishing weirs, fyke nets, and floating fish traps.

Since Amendment 2, not all states transition from a directed fishery to an incidental catch or small-scale fishery under the same conditions. Both New Jersey and Virginia subdivide their

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quotas among sectors and have done so since state quotas were implemented in 2013. Virginia allocates its annual quota to three sectors: the reduction sector, the purse seine bait sector, and the non-purse seine bait sector. New Jersey allocates the majority of its annual quota to the purse-seine fishery, and the remaining quota is allocated to all other gear types. Once the non-purse seine bait sector or “other gears” fishery has harvested its portion of the state’s allocation, that fishery moves into an IC/SSF regardless of whether the entire state’s quota has been harvested. This has resulted in Virginia and New Jersey reporting IC/SSF landings when they have not harvested their overall quota allocation for a given year. Since the inception of the IC/SSF provision, both states have reported landings following the closure of Virginia’s non-purse seine bait fishery and New Jersey’s “other gears” fishery as IC/SSF.

Prior to 2016, several states’ IC/SSF landings are considered confidential, therefore only information from 2016-2021 is included in Table 4. From 2016-2021, 11 different states have had IC/SSF landings, with the most number of states (8) reporting IC/SSF in a year occurring in 2016 and the fewest (1) occurring in 2019. The annual coastwide total IC/SSF landings ranged from approximately 2.1 million pounds to 13.9 million pounds. The highest amount occurred in 2020, when Maine landed the majority at 13.6 million pounds, representing 53% of Maine’s total landings that year. From 2016-2017 and 2018-2019, landings in this category increased by over 200%, with Maine being the only state with IC/SSF landings in 2019. From 2018-2020, the TAC remained constant at 216,000 mt while IC/SSF landings as a percentage of the annual TAC rose from less than 1% (2018) to nearly 3% (2020).

Table 4. IC/SSF landings in pounds from 2016-2021. Only states with these landings in this time period are included in the table. C = confidential (Some states are listed as confidential to protect the confidentiality of other states). Source: state compliance reports

State	2016	2017	2018	2019	2020	2021
Maine		5,373,940	2,995,145	10,750,929	13,605,497	12,508,195
Massachusetts					49,350	172,335
Rhode Island	39,540	135,748				C
Connecticut		126,986				C
New York	281,017	807,392			282,169	425,212
New Jersey	195,523		204,240		20,190	C
Delaware	20,823	29,285				
Maryland	995,698					
PRFC	105,669	670,447				
Virginia	325,692		110,281			
Florida	111,165	263,643				
Total	2,075,127	7,407,441	3,309,666	10,750,929	13,957,206	13,186,879
Percent Change		257%	-55%	225%	30%	-6%

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Since 2013, a majority of landings under this provision occur on trips that land either 1,000 pounds or less (52%), or greater than 5,000 pounds but less than 6,000 pounds (20%). However, landings per trip has increased in recent years (in 2021, 21% of trips < 1,000 pounds; 50% of trips >5,000 pounds; Figure 2). From 2017 to 2021, the majority of these landings have been caught by purse seine (83%, average for the time series). The share of IC/SSF landings using purse seine gear has increased from 57% in 2017 to approximately 88% from 2019 to 2021 (Table 5).

Figure 2. Percent of incidental trips by size in pounds, 2013-2021. Source: state compliance reports

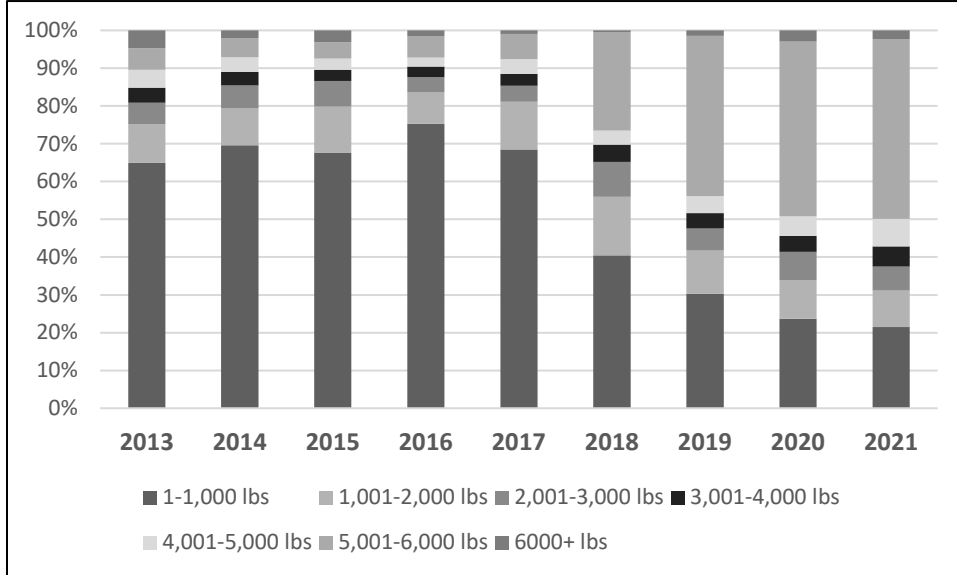


Table 5. Annual summary of total IC/SSF landings in pounds as a fraction of coastwide TAC; and the fraction of total IC/SSF landings coming from small-scale directed purse seine fishing. *2021 Total landings include adjustments from validation but purse seine landings and percentage are based on the compliance report figures. Source: ACCSP; state compliance reports

Year	Total landings	% of TAC	landings from purse seine	% from purse seine
2013	4,376,741	1.20%	0	0%
2014	6,831,462	1.90%	0	0%
2015	5,991,612	1.50%	0	0%
2016	2,075,127	0.50%	0	0%
2017	7,407,441	1.80%	4,291,347	58%
2018	3,290,066	0.70%	2,419,194	74%
2019	10,750,929	2.40%	9,545,747	89%
2020	13,957,206	3.10%	12,332,677	88%
2021*	13,186,879	3.08%	10,850,372	88%

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2.3.0 Social and Economic Impacts

Atlantic menhaden provide social and economic value to a diverse group of stakeholders both directly, to commercial and recreational menhaden fishing communities, and indirectly, to those who derive value from finfish, coastal birds, or marine mammals that predate upon menhaden. Menhaden-specific ERPs were developed and implemented to account for these diverse needs. The ERPs aim to provide sufficient menhaden to support sustainable menhaden fisheries, as well as menhaden's important role as a forage fish. Ensuring a stable forage base could increase the abundance of species that predate upon menhaden, such as other finfish, coastal birds, or marine mammals. An increase in abundance of these species could, in turn, lead to positive social and economic impacts for individuals, groups, or communities which rely on these resources for consumptive (e.g., commercial or recreational harvest) or non-consumptive purposes (e.g., bird or whale watching). Individuals who hold non-use values associated with affected species may also benefit from increased abundances (e.g., existence value from knowing a particular environmental resource exists or bequest value from preserving a natural resource or cultural heritage for future generations). Estimating potential economic or social impacts to these stakeholders as a result of menhaden-specific ERPs is challenging given complex and dynamic ecological relationships as well as the lack of socioeconomic data, especially for nonmarket goods and services.

This Addendum includes several measures which could carry social and economic impacts, notably potential changes to commercial allocations, the episodic event set aside program, and the incidental catch/small-scale fisheries provisions. The impacts of these changes on an individual stakeholder group will depend not only on the direction of these changes (e.g., whether the allocation is increasing or decreasing), but also a number of other social and economic factors. The extent and distribution of positive or negative socioeconomic effects arising from changes to allocations, or other provisions, is dependent on price elasticities (responsiveness of demand to a change in price), substitute products, fishing costs, alternative employment opportunities, fishing community structure, and possibly other factors.

Identifying quota allocation methods which are fair and equitable among fishery sectors, gear types, and regions will enhance socioeconomic net benefits if changes in allocation result in higher value or more efficient use of the menhaden resource. Efficiency improving shifts in allocation, while potentially beneficial overall, could disadvantage individual stakeholders through reductions in harvests, revenues, and profits.

A 2017 socioeconomic study of the commercial bait and reduction fisheries, funded by the ASMFC, contains several findings which elucidate possible social and economic impacts resulting from changes in menhaden management. While this study was conducted to inform Amendment 3, its findings may still be informative to the measures included in this Addendum. However, it is important to note that the study was focused on potential changes to the coastwide TAC, not the measures being considered in this Addendum. A study focused on, for

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example, allocation changes might have different results based on the different spatial scales and tradeoffs considered.

In the 2017 study, researchers interviewed and surveyed industry members to uncover salient themes, analyzed historic landings data to resolve market relationships, performed economic impact analyses to consider the effects of various TAC changes, and conducted a public opinion survey to assess attitudes toward menhaden management (see Whitehead and Harrison, 2017 for the full report). Interviews and surveys of commercial fishers and other industry members found mixed opinions on several subjects; however, many agreed that the demand for menhaden bait, oil, and meal had increased in recent years. Exogenous demand increases, if leading to increases in ex-vessel prices, could benefit menhaden bait and reduction industry members.

Analysis of historic landings data revealed that prices for menhaden were negatively related to landings levels, but that this relationship was small and insignificant in some instances. In particular, state-level analysis showed ex-vessel price was insensitive to landings. This finding suggested that reductions in the TAC might reduce commercial fishery revenues as decreases in landings are not fully compensated by higher prices. The effects of a change in the allocation of TAC among states is not clear. However, it was found that ex-vessel prices of menhaden were not uniform along the coast, with some states having higher prices than others, suggesting a change in allocation could influence fleet revenues.

Economic impact analyses of changes to the TAC found income and employment decreases (increases) corresponding to TAC decreases (increases), with the largest impacts concentrated in New Jersey and Virginia. For example, the analysis suggests that when totaling direct, indirect, and induced economic changes in the bait fishery, a 5% increase in the TAC from the 2017 baseline would result in 18 more jobs, a \$476,000 increase in total earnings, and a \$1.7 million increase in total economic output. Looking at the reduction sector, a 5% increase in the TAC from the 2017 baseline is estimated to increase total economic output (includes direct, indirect, and induced economic effects) by \$3.6 million in Northumberland county and add 77 full and part-time jobs. The difference in economic impacts between the bait and reduction sector is largely due to the difference in scale between the sectors, i.e., a 5% increase to reduction landings would be much higher in metric tons than a 5% increase to bait landings. In addition, it is important to note that economic impact analyses such as the one conducted in this study are a coarse assessment of potential economic impact, and they often do not take into account specific fishery and market dynamics.

Interestingly, subsequent analysis of coastal county income and employment changes in response to changes in bait landings (not reduction landings) showed little effect, casting some doubt on the conclusion that adjustments in menhaden TAC consistently lead to changes in fishery income and employment in the bait fishery. It may also be that the magnitude of impact is dependent on the size of the fishery in each state and the ability of fishermen to harvest other species. Nonetheless, it is reasonable to expect that if the TAC were to remain fixed but be allocated to states differently, those states receiving increased allocation would have

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positive economic impacts if the increase in allocation would lead to an increase in harvest. For those that received decreased quota, the expected impacts would depend on the expected impacts on harvest: if the reduced allocation would reduce harvest, negative economic impacts would be expected; however, if the reduced allocation was less than or equal to the state's latent quota, i.e., would not have any expected impacts on harvest, no economic impacts would be expected.

3. PROPOSED MANAGEMENT PROGRAM

This addendum considers modifying the following components of the management program: 1) commercial allocations, 2) IC/SSF provision, and the 3) EESA program. An objective is listed for each component to guide evaluation of proposed options for addressing the issues identified in the statement of the problem. **When the Board takes final action on the addendum, there is the opportunity to select any measure within the range of options that went out for public comment, including combining options across issues.**

In response to concerns that 2020 landings were atypical due to impacts from the COVID-19 pandemic, the full extent of which are unknown and possibly variable between states, the Board elected to exclude 2020 landings data in the commercial allocation options of this draft addendum, thereby minimizing the effects of COVID-19 on allocation.

3.1 Commercial Allocation

Objective: Allocations should be adjusted to 1) align with the availability of the resource 2) enable states to maintain current directed fisheries with minimal interruptions during the season; 3) reduce the need for quota transfers and; 4) fully use the annual TAC without overage.

To account for the various combinations of allocation methods and timeframes the following management options have been divided into two steps. The first step outlines the method for setting the minimum allocation, and the second step outlines the approach used to allocate the remaining TAC. An option must be chosen in each step to complete an allocation package. Options under each of the following steps were developed using total landings information including quota transfers, and landings under the IC/SSF provision and EESA program.

Step 1:

3.1.1 Allocation options for addressing the minimum allocation.

The current fixed minimum allocation of 0.5% has been consistently underutilized by several states, with some states transferring or relinquishing some or all of their quota, and others keeping their unused quota. The Amendment 3 provisions of EESA, IC/SSF, and quota transfers have been utilized every year since the Amendment was implemented, indicating the latent quota created by the fixed minimum could be adjusted to reduce reliance on these provisions.

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Some states have highly variable landings, which will likely lead to them rarely exceeding their allocation under some allocation option below. It is important to keep in mind nearly all states have the potential to reach their quota prior to the end of the year under any allocation strategy under the current TAC. Any latent quota reduction produced by selecting the tiered option below will automatically be reallocated to the states based on the allocation method selected in step 2 (section 3.1.2).

Option A. Status Quo: Each state is allocated a 0.5% fixed minimum quota. Total TAC assigned under this option is 8.0% (i.e. 16 states x 0.50%= 8%).

Option B. Three-tiered fixed minimum approach: This option would assign states into three tiers (0.01%, 0.25%, or 0.50%) based on total landings. Pennsylvania, South Carolina, and Georgia would be included in tier one and receive 0.01%. Tier two includes Connecticut, Delaware, North Carolina, and Florida, with each state receiving 0.25%. The remaining states would be in tier three and receive 0.5% of the TAC. The three states in tier one have consistent small-scale, bycatch fisheries, or have harvested no Atlantic menhaden from 2009-2020. The 0.01% coupled with the timeframe allocation assigned in Step 2 below would have covered their limited landings from 2009-2020 under all combinations. Depending on the selection made in Step 2 below, the tier two states would have had sufficient quota to cover their landings every year from 2009-2020, except North Carolina, which could have had up to two years that would have not been covered depending on the timeframe selected, but in nearly all other years they would have used less than half of their allocation. Total TAC assigned under this option is 5.53% (i.e., 3 states x 0.01% + 4 states * 0.25% + 9 states * 0.50% = 5.53%).

Step 2:

3.1.2 Timeframes to base allocating the remaining TAC.

Option 1. Status Quo: Three-year average of landings from 2009-2011. This option only incorporates landings from a short unregulated time period and does not reflect current Atlantic menhaden distribution or fishery performance.

Option 2. 2018, 2019 & 2021

The quota allocation timeframe is based on the most recent average landings from 2018, 2019, and 2021. This timeframe reflects the most recent landings history and is more likely to align with current stock distribution, but does not reflect previous stock distribution or fishery performance.

Option 3. Weighted Time Frames

These options consider both recent and historical timeframes with sub-options of different weighting values. These options are similar to a long term average but focus on a shorter overall timeframe, and can either emphasize more recent fishery performance or weight recent and historical fishery performance equally.

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- 3A. Weighted Allocation Timeframe #1 (2009-2011 and 2018, 2019 & 2021) includes the three most recent years, excluding 2020, and the first three years of quality bait fishery data during the unregulated time period.
 - Sub-Option 1. 25% 2009-2011 / 75% 2018, 2019 & 2021 – This weighting strategy emphasizes the more recent timeframe.
 - Sub-Option 2. 50% 2009-2011 / 50% 2018, 2019 & 2021 – This strategy weights both timeframes evenly.

Option 4. Moving Average

This option uses a three-year moving average to annually adjust allocations as the stock and fishery dynamics change. The three-year average is lagged to allow for finalizing data and time to inform states of their quota (i.e. 2018, 2019 & 2021 average used to set 2023 allocation). This option continually adjusts allocations to recent stock distribution and fishery performance, potentially reducing the need for reallocating in the future. Landings used to calculate the three-year moving average differ under each of the options and may include a state's base quota, any quota transferred to a state, catch under the EESA, and catch under the incidental catch set aside. Any state with harvest overage within the three-year time frame that is not covered by the provisions of the FMP will not have the overage portion of their landings count in calculating the moving average, and will still be required to pay any overage back pound for pound the year following the overage occurrence.

4A. No alterations to the Option. There will be no alterations to the option as described above and total landings will be used in the calculations under this option.

4B. Provision to limit states' moving average landings if total landings exceed the TAC.

State landings less than or equal to the coastwide TAC would be used in the calculation of the moving average, regardless of the source. If total landings (directed plus IC/SSF plus EESA) are below the TAC, then all landings would be included. If directed landings are below the TAC but IC/SSF and/or EESA landings bring total landings over the TAC, then only the portion of IC/SSF and EESA landings that achieve the TAC would count toward the moving average calculation.

Calculation Procedure: (This procedure is only for moving average calculation when the IC/SSF landings added to directed landings exceed the TAC) EESA participation requires opting in and out of the program by providing dated notice to ASMFC and weekly landings reporting at a minimum. Any overage of the EESA that is not reconciled through a transfer will be subtracted from a states total landings prior to calculation. If more than one state is participating at the time of the overage the percentage of each state's landings reported on the calendar

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day(s) the overage occurred will be used to produce the state by state landings reduction required by the EESA overage.

The following will be calculated to determine the IC/SSF landings that are over the TAC to be removed from state landings prior to moving average calculation. The landings termed Excess IC/SSF landings in the calculations below do not include IC/SSF landings for a state that total landings, combined directed and IC/SSF landings, would not have exceeded a state's quota (i.e. a state closes its directed fishery early and operates under the IC/SSF restrictions, but never exceeds its quota). EESA landings included below will be after any adjustment made above (allowable EESA only).

IC/SSF Landings over the TAC = ((Total Landings) – TAC) – (Overages that are not associated with the IC/SSF).

States Adjusted final Quota (AFQ) = (((State's Base Quota) + or – (Transfers)) + (EESA landings)) – (Overages that are not associated with the IC/SSF).

State Excess IC/SSF Landings = (State's Total Landings) > State's AFQ.

Total Excess IC/SSF Landings = The Sum of all states Excess IC/SSF Landings.

State's % of Excess IC/SSF = (State Excess IC/SSF Landings) / (Total Excess IC/SSF Landings).

Reduction of a states IC/SSF Landings = (IC/SSF landings over the TAC) * (State's % of Excess IC/SSF).

State landings to be used in Moving average Calculation = ((States total Landings) – (Reduction of IC/SSF landings))-Overages

Overage Paybacks

Objective: Allow states to pay back overages in the second year following an overage to prevent the need to remove quota during a fishing year due to the timing of when landings data becomes available.

Since compliance reports are due August 1st and states are often working with preliminary landings data, especially at the gear-type level for states that further allocate their quota by sector, it is possible that overages will not be discovered until well into the next fishing year. Under Amendment 3, any overage would need to be paid back before the end of the fishing year after the overage occurred, which could cause states to need to remove quota from fisheries that have already occurred.

Option 1. Status Quo: Any overage of a quota allocation is subtracted for that specific quota allocation in the subsequent year on a pound for pound basis. Overage determination is based on final allocations, including transfers if applicable. Overages will be subtracted from the subsequent year's quota following submission of state compliance reports. Should overages change as preliminary data is finalized, quotas will be re-adjusted accordingly.

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Option 2. Second Year After Overage: Any overage of a quota allocation is subtracted for that specific quota allocation in the second year following the overage on a pound for pound basis. Overage determination is based on final allocations, including transfers if applicable. Overages will be subtracted from the second year's quota following submission of state compliance reports. Should overages change as preliminary data is finalized, quotas will be re-adjusted accordingly.

Table 6. A1-3. Percent annual allocation by state using the 0.5% fixed minimum (Step 1, Option A) allocation and the 2009-2011; 2018, 2019 & 2021; and weighted timeframe allocations (Step 2, Options 1-3). Each of the two weighted timeframe combinations of 2009-2011/2018, 2019 & 2021 (Step 2, Option 3A), and 2009-2012/2017-2019 & 2021 (Step 2, Option 3B) are weighted 25% earlier /75% recent (Sub-Option 1) and 50% recent /50% earlier (Sub-Option 2).

State	Time Frame		2009-2011/2018,2019 & 2021	
	A1 Status Quo 2009-2011	A2 2018, 2019 and 2021	A3: A-1 25%/75%	A3: A-2 50%/50%
ME	0.52%	4.71%	3.66%	2.61%
NH	0.50%	1.19%	1.01%	0.84%
MA	1.27%	2.09%	1.88%	1.68%
RI	0.52%	0.81%	0.73%	0.66%
CT	0.52%	0.58%	0.56%	0.55%
NY	0.69%	0.85%	0.81%	0.77%
NJ	10.87%	10.77%	10.81%	10.85%
PA	0.50%	0.50%	0.50%	0.50%
DE	0.51%	0.52%	0.52%	0.52%
MD	1.89%	1.15%	1.34%	1.53%
PRFC	1.07%	1.07%	1.07%	1.07%
VA	78.66%	73.60%	74.85%	76.10%
NC	0.96%	0.62%	0.70%	0.79%
SC	0.50%	0.50%	0.50%	0.50%
GA	0.50%	0.50%	0.50%	0.50%
FL	0.52%	0.54%	0.54%	0.53%

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Table 7. A4A. Percent annual allocation by state using the 0.5% fixed minimum allocation (Step 1, Option A) and the three year moving average allocation (Step 2, Option 4A) as it would have changed through time, and the year the timeframe would have been used to set allocations.

State	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018, 2019 & 2021
ME	0.52%	0.51%	0.51%	0.51%	0.51%	0.97%	1.64%	2.76%	3.85%	4.71%
NH	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.52%	0.85%	1.19%
MA	1.27%	0.91%	0.77%	0.95%	1.09%	1.13%	1.24%	1.46%	1.69%	2.09%
RI	0.52%	0.52%	0.52%	0.55%	0.71%	0.72%	0.82%	0.71%	0.69%	0.81%
CT	0.52%	0.51%	0.51%	0.51%	0.51%	0.51%	0.53%	0.59%	0.59%	0.58%
NY	0.69%	0.67%	0.68%	0.70%	0.77%	0.79%	0.85%	0.77%	0.72%	0.85%
NJ	10.93%	13.45%	13.94%	12.81%	10.67%	10.89%	11.25%	11.41%	11.23%	10.77%
PA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
DE	0.51%	0.52%	0.52%	0.53%	0.53%	0.53%	0.52%	0.52%	0.52%	0.52%
MD	1.90%	2.18%	2.33%	2.52%	2.16%	2.02%	1.71%	1.38%	1.18%	1.15%
PRFC	1.07%	1.20%	1.30%	1.41%	1.23%	1.15%	1.06%	1.11%	1.06%	1.07%
VA	78.60%	76.18%	75.57%	76.30%	78.57%	78.04%	77.15%	76.08%	74.92%	73.60%
NC	0.96%	0.83%	0.80%	0.64%	0.68%	0.67%	0.66%	0.64%	0.65%	0.62%
SC	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
GA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
FL	0.52%	0.52%	0.54%	0.55%	0.57%	0.57%	0.57%	0.56%	0.55%	0.54%
Year in Use	2013	2014	2015	2016	2017	2018	2019	2020	2021/2022	2023

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Table 8. A4B. Percent annual allocation by state using the 0.5% fixed minimum allocation (Step 1, Option A) and the three year moving average allocation (Step 2, Option 4B), as it would have changed through time, and the year the timeframe would have been used to set allocations.

Note: 2021 values only include landings under the TAC according to the calculation outlined in Option 4B.

State	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018, 2019 & 2021
ME	0.52%	0.51%	0.51%	0.51%	0.51%	0.97%	1.64%	2.76%	3.85%	4.55%
NH	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.52%	0.85%	1.19%
MA	1.27%	0.91%	0.77%	0.95%	1.09%	1.13%	1.24%	1.46%	1.69%	2.09%
RI	0.52%	0.52%	0.52%	0.55%	0.71%	0.72%	0.82%	0.71%	0.69%	0.81%
CT	0.52%	0.51%	0.51%	0.51%	0.51%	0.51%	0.53%	0.59%	0.59%	0.58%
NY	0.69%	0.67%	0.68%	0.70%	0.77%	0.79%	0.85%	0.77%	0.72%	0.82%
NJ	10.93%	13.45%	13.94%	12.81%	10.67%	10.89%	11.25%	11.41%	11.23%	10.79%
PA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
DE	0.51%	0.52%	0.52%	0.53%	0.53%	0.53%	0.52%	0.52%	0.52%	0.52%
MD	1.90%	2.18%	2.33%	2.52%	2.16%	2.02%	1.71%	1.38%	1.18%	1.15%
PRFC	1.07%	1.20%	1.30%	1.41%	1.23%	1.15%	1.06%	1.11%	1.06%	1.08%
VA	78.60%	76.18%	75.57%	76.30%	78.57%	78.04%	77.15%	76.08%	74.92%	73.76%
NC	0.96%	0.83%	0.80%	0.64%	0.68%	0.67%	0.66%	0.64%	0.65%	0.62%
SC	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
GA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
FL	0.52%	0.52%	0.54%	0.55%	0.57%	0.57%	0.57%	0.56%	0.55%	0.54%
Year in Use	2013	2014	2015	2016	2017	2018	2019	2020	2021/2022	2023

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Table 9. B1-3. Percent annual allocation by state using the three tier minimum (Step 1, Option B) allocation the 2009-2011; 2018, 2019 & 2021 and weighted timeframe allocations (Step 2, Options 1-3). Each of the two weighted timeframe combinations of 2009-2011/2018, 2019 & 2021 (Step 2, Option 3A), and 2009-2012/2017-2019 & 2021 (Step 2, Option 3B) are weighted 25% earlier /75% recent (Sub-Option 1) and 50% recent /50% earlier (Sub-Option 2).

State	Time Frame		2009-2011/2018,2019 & 2021	
	B1 2009-2011	B2 2018, 2019 and 2021	B3: A-1 25%/75%	B3: A-2 50%/50%
ME	0.52%	4.82%	3.74%	2.67%
NH	0.50%	1.20%	1.03%	0.85%
MA	1.29%	2.13%	1.92%	1.71%
RI	0.52%	0.81%	0.74%	0.67%
CT	0.27%	0.33%	0.32%	0.30%
NY	0.70%	0.86%	0.82%	0.78%
NJ	11.21%	11.05%	11.09%	11.13%
PA	0.01%	0.01%	0.01%	0.01%
DE	0.26%	0.27%	0.27%	0.27%
MD	1.94%	1.17%	1.36%	1.55%
PRFC	1.09%	1.09%	1.09%	1.09%
VA	80.70%	75.57%	76.85%	78.13%
NC	0.72%	0.37%	0.46%	0.54%
SC	0.01%	0.01%	0.01%	0.01%
GA	0.01%	0.01%	0.01%	0.01%
FL	0.27%	0.29%	0.29%	0.28%

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Table 10. B4A. Percent annual allocation by State using the three tier minimum allocation (Step 1, Option B) and the three year moving average allocation (Step 2, Option 4A), as it would have changed through time, and the year the timeframe would have been used to set allocations.

State	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018, 2019 & 2021
ME	0.52%	0.51%	0.51%	0.51%	0.51%	0.98%	1.67%	2.82%	3.94%	4.82%
NH	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.52%	0.86%	1.20%
MA	1.29%	0.92%	0.78%	0.97%	1.10%	1.15%	1.26%	1.48%	1.73%	2.13%
RI	0.52%	0.52%	0.52%	0.55%	0.72%	0.73%	0.82%	0.72%	0.69%	0.81%
CT	0.27%	0.26%	0.26%	0.26%	0.26%	0.26%	0.28%	0.34%	0.34%	0.33%
NY	0.70%	0.67%	0.69%	0.71%	0.78%	0.80%	0.85%	0.77%	0.72%	0.86%
NJ	11.21%	13.80%	14.30%	13.14%	10.94%	11.17%	11.54%	11.71%	11.52%	11.05%
PA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
DE	0.26%	0.27%	0.27%	0.28%	0.29%	0.28%	0.27%	0.28%	0.27%	0.27%
MD	1.94%	2.23%	2.38%	2.58%	2.20%	2.06%	1.74%	1.41%	1.20%	1.17%
PRFC	1.09%	1.22%	1.33%	1.44%	1.25%	1.17%	1.08%	1.12%	1.08%	1.09%
VA	80.70%	78.22%	77.59%	78.34%	80.67%	80.12%	79.21%	78.11%	76.91%	75.57%
NC	0.72%	0.59%	0.56%	0.40%	0.43%	0.42%	0.41%	0.40%	0.40%	0.37%
SC	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
GA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
FL	0.27%	0.27%	0.29%	0.30%	0.32%	0.32%	0.32%	0.31%	0.31%	0.29%
Year in Use	2013	2014	2015	2016	2017	2018	2019	2020	2021/2022	2023

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Table 11. B4B. Percent annual allocation by State using the three tier minimum allocation (Step 1, Option B) and the three year moving average allocation (Step 2, Option 4B), as it would have changed through time, and the year the timeframe would have been used to set allocations.

Note: 2021 values only include landings under the TAC according to the calculation outlined in Option 4B.

State	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018, 2019 & 2021
ME	0.52%	0.51%	0.51%	0.51%	0.51%	0.98%	1.67%	2.82%	3.94%	4.66%
NH	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.52%	0.86%	1.21%
MA	1.29%	0.92%	0.78%	0.97%	1.10%	1.15%	1.26%	1.48%	1.73%	2.13%
RI	0.52%	0.52%	0.52%	0.55%	0.72%	0.73%	0.82%	0.72%	0.69%	0.82%
CT	0.27%	0.26%	0.26%	0.26%	0.26%	0.26%	0.28%	0.34%	0.34%	0.33%
NY	0.70%	0.67%	0.69%	0.71%	0.78%	0.80%	0.85%	0.77%	0.72%	0.83%
NJ	11.21%	13.80%	14.30%	13.14%	10.94%	11.17%	11.54%	11.71%	11.52%	11.07%
PA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
DE	0.26%	0.27%	0.27%	0.28%	0.29%	0.28%	0.27%	0.28%	0.27%	0.27%
MD	1.94%	2.23%	2.38%	2.58%	2.20%	2.06%	1.74%	1.41%	1.20%	1.17%
PRFC	1.09%	1.22%	1.33%	1.44%	1.25%	1.17%	1.08%	1.12%	1.08%	1.09%
VA	80.70%	78.22%	77.59%	78.34%	80.67%	80.12%	79.21%	78.11%	76.91%	75.73%
NC	0.72%	0.59%	0.56%	0.40%	0.43%	0.42%	0.41%	0.40%	0.40%	0.37%
SC	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
GA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
FL	0.27%	0.27%	0.29%	0.30%	0.32%	0.32%	0.32%	0.31%	0.31%	0.29%
Year in Use	2013	2014	2015	2016	2017	2018	2019	2020	2021/2022	2023

3.2 EESA Program

Objective: Ensure sufficient access to episodic changes in regional availability in order to minimize in-season disruptions and reduce the need for quota transfers and IC/SSF landings.

3.2.1 Increase the Set-Aside

Goal: In combination with reallocation or separately, ensure the states of Maine to New York have increased bait quota for this program to reduce the need for in-season quota transfers or reliance on the IC/SSF provision in response to the increased presence of Atlantic menhaden biomass in the Northeast.

For both Options 1 and 2, the mandatory provisions, declaring participation, procedure for unused set aside, and procedure for set aside overages (Sections 4.3.6.1- 4.3.6.4) as outlined in Amendment 3 (Section 4.3.6.3) will remain in effect.

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For Option 2 only, there are two sub-options for the Board's consideration. To allow for additional flexibility in managing the EESA depending on states' allocations and the need to reduce quota transfers, the following sub-options allow for the EESA to be set during the TAC setting process, rather than through adaptive management as outlined in Amendment 3.

Option 1. Status Quo (1%) – The EESA would remain at 1% of the total coastwide TAC. Should any quota remain unused after October 31st, annually, it would revert back into the common pool.

Option 2. Increase up to 5% - This option would allow the Board to increase the EESA to a specific percentage greater than or equal to 1% and less than or equal to 5%. The designated percentage of EESA would be subtracted from the total coastwide TAC prior to the distribution of allocation to states. Depending upon the option(s) chosen under Section 3.1, re-adjusting the fixed minimum quota could offset the possible increase in the EESA (see note below).

Sub-option 1. EESA is set as a static amount of 1-5%: The Board may choose an EESA between 1 and 5% and the chosen option is static until a subsequent Amendment or Addendum.

Sub-option 2. Set the EESA during Specifications at an amount between 1-5%: Under this option the Board will set the EESA at an amount between 1 to 5% during the Specification process as part of approving the TAC. The TAC and EESA may be set annually or on a multi-year basis depending on Board action.

Note (only applies if a tiered minimum approach is selected): The 0.5% fixed minimum from Amendment 3 allocated 8.0% of the TAC prior to timeframe based allocation of state quotas. If the fixed minimum was replaced by the three-tiered minimum allocation strategy, the 8.0% would be reduced to 5.53%. The amount of quota left by selecting the tiered option (2.47%), will be reallocated to the states, but increasing the EESA to 2.47% or less will result in a similar value in pounds being removed from the TAC prior to time frame based allocation. In Amendment 3, nine percent of the TAC either went to the EESA or the fixed minimum allocation.

3.3 IC/SSF Provision

Objective: Sufficiently constrain landings to achieve overall management goals of: 1) meeting the needs of existing fisheries, 2) reducing discards, and 3) indicating when landings can occur and if those landings are a part of the directed fishery.

In this section, there are four sub-topics to address IC/SSF landings. They include proposed changes to the timing of when states can begin landing under this provision (3.3.1); permitted gear types (3.3.2); changes to the IC/SSF trip limit (3.3.3); and considering a new accountability system for IC/SSF landings (3.3.4).

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3.3.1 Timing of IC/SSF Provision

Goal: Address the timing of when a state begins fishing under the provision since it impacts the duration that landings occur.

Option 1. No change (Status quo): Once a quota allocation is reached for a given state, the fishery moves to an incidental catch fishery. Currently, individual states interpret “after a quota allocation is met for a given state” differently (i.e., whether this refers to the entire allocation or a sector, fishery, or gear allocation).

Option 2. Sector/fishery/gear type allocation within a state is met: Currently, states such as New Jersey and Virginia further divide their state allocation into sector and gear type specific allocations. The provision would confirm that once a sector/fishery/gear type specific allocation is reached for a state, that state’s sector/fishery/gear type fishery can begin landing catch under the provision.

Option 3. Entire states allocation met: Once the entire quota allocation for a given state is reached, regardless of sector/fishery/gear type fishery allocations, the menhaden fishery moves to landing under the IC/SSF provision.

3.3.2 Permitted Gear Types of the of IC/SSF Provision

Goal: Address the volume of landings under the provision by considering removing specific gear types

Note: Under Amendment 3, fyke nets were listed under both gear types which may lead to two different possession limits for the same gear type under 3.3.3 below, should the possession limit for directed gear types be modified. Therefore, under Options 2 and 3, fyke nets have been removed from the small-scale directed gear type category and maintained only in the non-directed gear type category. Additionally, trammel nets are defined as a directed gear under Amendment 3, but at the request of the Board was moved into the non-directed gear type category for Options 2 and 3 below. Option 1 Sub-Options 2 and 3 provide a mechanism for the classifications to be changed without changing permitted gear types.

Option 1. No changes to permitted gear types (Status quo): The provision would apply to both small-scale directed gears and non-directed gears. Small scale directed gears shall include cast nets, traps (excluding floating fish traps), pots, haul seines, fyke nets, hook and line, bag nets, hoop nets, hand lines, trammel nets bait nets, and purse seines which are smaller than 150 fathoms long and eight fathoms deep. Non-directed gears include pound nets, anchored/stake gillnets, drift gill net, trawls, fishing weirs, fyke nets, and floating fish traps.

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Sub-Option 1 (Status quo). All gear types will retain the classifications as defined in Amendment 3.

Sub-Option 2. Fyke nets will be removed from the small-scale directed gear type category, thereby becoming listed only as a non-directed gear.

Sub-Option 3. Fyke nets will be removed from the small-scale directed gear type category, thereby becoming listed only as a non-directed gear, and trammel nets will be reclassified as a non-directed gear type.

Option 2. No purse seines, all other small-scale and non-directed gears maintained: The provision would apply to both small-scale directed gears and non-directed gears, but exclude purse seine gears. This option is included due to the growth of directed landings from small-scale purse seine gears in recent years (Table 6). Landings from purse seine gears would count against a state's directed fishery quota. Small-scale directed gears shall include cast nets, traps (excluding floating fish traps), pots, haul seines, hook and line, bag nets, hoop nets, hand lines, and bait nets. Non-directed gears include pound nets, anchored/stake gillnets, trammel nets, drift gill net, trawls, fishing weirs, fyke nets, and floating fish traps.

Option 3. Non-directed gears only: The provision shall apply to non-directed gears only. This includes pound nets, anchored/stake gillnets, trammel nets, drift gill net, trawls, fishing weirs, fyke nets, and floating fish traps.

3.3.3 Trip Limit for Directed Small-Scale Fisheries of IC/SSF Provision

Goal: Limit the annual volume of IC/SSF landings by considering reducing the trip limit.

The options below modify the trip limits for directed small-scale fisheries. Stationary multi-species gears are defined as pound nets, anchored/stake gill nets, fishing weirs, floating fish traps, and fyke nets. A trip is based on a calendar day such that no vessel may land menhaden more than once in a single calendar day. The use of multiple carrier vessels per trip to offload any bycatch exceeding the daily trip limit of Atlantic menhaden is prohibited. If Option 3 was selected in section 3.3.2 above, this section is no longer needed.

Option 1. No change to trip limit (Status quo): small-scale gears and non-directed gear types may land up to 6,000 pounds of menhaden per trip per day. Two authorized individuals, working from the same vessel fishing stationary multi-species gear, are permitted to work together and land up to 12,000 pounds from a single vessel – limited to one vessel trip per day.

For both Options 2 and 3 below, the proposed change in the trip limit would only apply to small-scale directed gears which include cast nets, traps (excluding floating fish traps), pots, haul seines, hook and line, bag nets, hoop nets, hand lines, bait nets, and purse seines which

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are smaller than 150 fathoms long and 8 fathoms deep. Non-directed gears and stationary multi-species gears would still be able to land up to 6,000 pounds of menhaden per trip per day, with two individuals working from the same vessel fishing stationary multi-species gear, permitted to work together can land up to 12,000 pounds.

Option 2. 4,500 pound trip limit for directed gear types: The trip limit for the directed small-scale fishery shall be 4,500 pounds of menhaden per trip per day.

Option 3. 3,000 pound trip limit for directed gear types: The trip limit for the directed small-scale fishery shall be 3,000 pounds of menhaden per trip per day.

3.3.4 Catch Accounting of IC/SSF Provision

Goal: Create a system where annual IC/SSF landings are limited and there is accountability for overages.

Note: Under Option 2, the Board is not limited to one option. They can choose a combination of Option 2A and 2B or the sub-options. Furthermore, Options 1 and 2 do not affect the Board's authority to alter trip limits or permitted gear types through adaptive management, as outlined in Amendment 3 Section 4.3.5, regardless of whether the trigger is tripped.

Option 1. IC/SSF landings do not count against a state allocation nor the annual TAC (status quo): Landings under this provision will be reported as a part of the annual FMP Review (Amendment 3, Section 5.3: Compliance Report). Landings are reported by states as a part of Annual Compliance Reports. Should a specific gear type show a continued and significant increase in landings under the provision, or it becomes clear that a non-directed gear type is directing on menhaden under this provision, the Board has the authority, through adaptive management (Amendment 3, Section 4.6), to alter the trip limit or remove that gear from the IC/SSF provision.

Option 2. IC/SSF landings are evaluated against the annual TAC: Total landings under this provision would be evaluated against the annual TAC and will be reported as a part of the annual FMP Review (Amendment 3, Section 5.3: Compliance Report). Landings are reported by states as a part of Annual Compliance Reports. If IC/SSF landings cause the TAC to be exceeded, meaning the TAC is exceeded after adding total IC/SSF landings to total landings that occur under state quotas and EESA, the trigger is tripped, and the Board must take action as specified in Options 2A-2B below.

Option 2A. Modify the Trip Limit for Permitted Gear Types in the IC/SSF Provision: The Board will evaluate the current IC/SSF trip limit and permitted gear types and take action to reduce the trip limit for one or more permitted gear types in the IC/SSF provision.

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Sub-Option 1. The trip limit will be adjusted for one or more permitted gear types in the IC/SSF provision via Board action.

Option 2B. Modify Permitted Gear Types in the IC/SSF Provision: The Board will evaluate the permitted gear types in the IC/SSF provision and take action to eliminate one or more gear types from the IC/SSF provision.

Sub-Option 1. Permitted gear types in the IC/SSF provision will be adjusted via Board action.

4. COMPLIANCE SCHEDULE

If the existing Atlantic menhaden management plan is revised by approval of this draft addendum, the measures would be effective January 1, 2023. Unless otherwise directed by the Board, allocations will be revisited no more than 3 years (2025) following implementation of this addendum, as outlined in Amendment 3.

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5. LITERATURE CITED

ASMFC. 2012. Amendment 2 to the Atlantic Menhaden Fishery Management Plan. ASMFC, Arlington, VA 114 p.

ASMFC. 2016. Addendum I to Amendment 2 to the Atlantic Menhaden Fishery Management Plan. ASMFC, Arlington, VA 7 p.

ASMFC. 2017. Amendment 3 to the Atlantic Menhaden Fishery Management Plan. ASMFC, Arlington, VA 111 p.

Bigelow, H.B., and Schroeder, W.C. 2002. Fishes of the Gulf of Maine. 3rd ed. Edited by B.B. Collette and G. Klein-MacPhee. Smithsonian Institution Press, Washington, D.C.



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MEMORANDUM

TO: Atlantic Menhaden Management Board
FROM: Atlantic Menhaden Advisory Panel
DATE: November 1, 2022
SUBJECT: Advisory Panel Recommendations on Draft Addendum I Options

The Advisory Panel (AP) met via webinar on October 18, 2022 to formulate comments and provide recommendations on Draft Addendum I to Amendment 3. Panel members in attendance represented commercial harvesters and processors, recreational anglers, and conservation coalition members. The following is a summary of the meeting and the discussion had by the AP members. The AP did discuss preferred management options in the document and, given a consensus was not reached on many issues, all viewpoints are presented.

AP Attendance:

Meghan Lapp (RI, Chair)
Vincent Balzano (ME)
Michael Dawson (ME)
Will Caldwell (NY)
Melissa Dearborn (NY)
Peter Himchak (VA)
Jimmy Kellum (VA)
Barbara Garrity-Blake (NC)
ASMFC Staff: James Boyle and Emilie Franke

3.1: Quota Allocation

Step 1: Fixed Minimum

6 AP members support Option B: Three-tiered fixed minimum

- One AP member commented that the tiered approach best aligns with the goals and objectives of the addendum
- Four AP members commented that the tiered system would best support their respective states of NY and ME.

Step 2: Timeframe

4 AP members support Option 2: 2018, 2019, & 2021

- Two AP members commented that this option represents the current cycle of menhaden distribution and aligns with the comments they saw in the public hearings in ME.
- Two AP members commented that if this option was not feasible, then they would accept Option 3A Sub-option 1, which weights recent years more heavily (75/25). They also opposed Options 4A and 4B due to the wide variations in menhaden availability in certain areas in some years.

2 AP members support Option 3A Sub-option 2 (50/50)

3.2: Episodic Event Set Aside

2 AP members support Option 1: Status Quo (1%)

- One AP member commented that the allocation options in the addendum already address increasing quota in the northeast.
- Another AP member commented that 1% is already a lot of fish.

2 AP members support Option 2: Increase the set aside (1-5%)

- One AP member added their support for Sub-option 2 and commented that increasing the set aside would suit the objective of the EESA to respond to the northern influx of fish.

3.3: Incidental Catch/Small-Scale Fishery

Timing

1 AP member supports Option 1: Status Quo

- Another AP member commented that NY does not separate quota by sector, and they do not oppose Option 2 if it helps other states that wish to separate quota.

Gear Types

1 AP member supports Option 1: Status Quo

- The AP member commented that the restricted purse seine size is relatively small and that maintaining purse seines in the IC/SSF is critical to ME lobster fishers for bait, especially later in the season. The member added that the large turnout in both ME public hearings regarding this document was largely due to the unanimous and vocal support to keep the use of purse seines.

2 AP members support Option 2: Remove Purse Seines

- Two AP members commented their preference for Option 2, but would accept Option 1. Both members were adamant in their opposition to Option 3 (Non-directed only), as it would eliminate the IC/SSF fishery in NY due to the exclusive use of beach seines.

Trip Limits

3 AP members support Option 1: Status Quo

Catch Accounting

1 AP member supports Option 1: Status Quo

Other Comments

- One AP member wanted to express their desire to have beach seines considered separately from haul seines due to the vast differences between the gear types, particularly when describing the NY fishery.
- AP member Jeff Kaelin was unable to attend the meeting and shared the written comment for Lund's fisheries with the AP to express his preferred management options, which is included in the briefing materials as an organization letter.

Atlantic States Marine Fisheries Commission

Draft De Minimis Policy

November 2022

The Atlantic States Marine Fisheries Commission (Commission) includes *de minimis* provisions in interstate fishery management plans (FMP) to reduce the management burden for states whose measures would have a negligible effect on the conservation of a species. The ISFMP Charter includes a definition of *de minimis* and the requirement to include *de minimis* provisions in FMPs.

Definition: De Minimis – A situation in which, under existing conditions of the stock and the scope of the fishery, conservation and enforcement actions taken by an individual state would be expected to contribute insignificantly to a coastwide conservation program required by an FMP or amendment.

FMP Provisions: ... and provided that each fishery management plan shall address the extent to which states meeting de minimis criteria may be exempted from specific management requirements of the fishery management plan to the extent that action by the particular states to implement and enforce the plan is not necessary for attainment of the fishery management plan's objectives and the conservation of the fishery.

De minimis provisions within FMPs are designed to reduce the management burden for states whose measures would have a negligible effect on the conservation of a species. This Draft Policy outlines *de minimis* standards for FMPs. A species board may deviate from these standards to address unique characteristics of a fishery. If a board deviates from the Policy's standards, a rationale must be provided within the FMP. It is noted that federal FMPs do not recognize *de minimis* standards; therefore, any *de minimis* measure implemented in a FMP for jointly managed species could result in inconsistent measures between state and federal waters.

This Policy does not automatically change the provisions of current FMPs. In order to change *de minimis* standards, an addendum or amendment process must be completed, unless the FMP specifies a different process.

Minimum Standards

By definition, states that meet *de minimis* standards would have a negligible effect on the conservation of a species, therefore, those states should not have to change regulations year-to-year to meet FMP requirements. Each FMP will establish a set of measures for *de minimis* states to implement that would not have to change annually. These measures must provide a minimal level of species conservation as well as prevent regulatory loop holes. These measures can be the same for both the commercial and recreational fishery or different measures could

be set for each fishery. Boards should review the standard *de minimis* standard measures after each benchmark stock assessment to determine if they still providing a minimal level of species conservation.

***De Minimis* Fishery Designation**

De minimis provisions will be considered separately for commercial and recreational fisheries or combined. There must be a designation that takes into account both sectors of the fisheries. Whether they are combined or separate is a decision for the species board. If there is no commercial or recreational fishery a board can clarify there is no significant fishery, therefore, no *de minimis* designation for that sector is necessary.

***De Minimis* Thresholds**

De minimis thresholds will be based on the average landings from the previous three years of landings. The averaging of multiple years of data prevents a state from taking action as a result of a rare event. A state can be considered *de minimis* if the average landings for the last three years is less than 1% of the coastwide landings.

Sampling Requirements

De minimis states are exempt from sampling requirements because it may be difficult to meet the sampling requirements of the plan when landings are minimal. For stock assessments, it may important to have some biological samples on the outer edges of a species range where *de minimis* states often fall. For data poor species, it may be necessary for states to collect biological samples, even with minimal landings. Species boards will have the stock assessment subcommittee or technical committee review the sampling requirements for *de minimis* states to determine what level, if any, is appropriate.