Atlantic States Marine Fisheries Commission

American Lobster Management Board

January 25, 2022
10:00 – 11:30 a.m.
Webinar

Draft Agenda

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

1.	Welcome/Call to Order (*J. McNamee*)	10:00 a.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from October and December 2021	10:00 a.m.
3.	Public Comment	10:05 a.m.
4.	Consider Draft Addendum XXVII for Public Comment: Increasing Protection of Spawning Stock in the Gulf of Maine/Georges Bank *(C. Starks)* **Action**	10:15 a.m.
5.	Consider Terms of Reference for Jonah Crab Benchmark Stock Assessment *(J. Kipp)* **Action**	11:10 a.m.
6.	Consider Fishery Management Plan Reviews for American Lobster and Jonah Crab for 2020 Fishing Year *(C. Starks)* **Action**	11:15 a.m.
7.	Review and Populate Advisory Panel Membership *(T. Berger)* **Action**	11:25 a.m.
8.	Other Business/Adjourn	11:30 a.m.

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

MEETING OVERVIEW

American Lobster Management Board
January 25, 2022
10:00 – 11:30 a.m.
Webinar

Chair: Dr. Jason McNamee (RI) Assumed Chairmanship: 02/22	Technical Committee Chair: Kathleen Reardon (ME)	Law Enforcement Committee Representative: Rob Beal
Vice Chair: VACANT	Advisory Panel Chair: Grant Moore (MA)	Previous Board Meeting: December 6, 2021
Voting Members: ME, NH, MA, RI, CT, NY, NJ, DE, MD, VA, NMFS, NEFMC (12 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from October 18, 2021 and December 6, 2021

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

4. Consider Draft Addendum XXVII for Public Comment: Increasing Protection of Spawning Stock in the Gulf of Maine/Georges Bank (10:15-11:10 a.m.) 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 Plan Development Team (PDT) and the Technical Committee met multiple times in 2021 to develop Draft Addendum XXVII (**Briefing Materials**). The PDT selected management options based on TC analysis and recommendations, which can be found here and here.
- Draft Addendum XXVII 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.

Presentations

- Overview of Draft Addendum XXVII for Public Comment by C. Starks

Board Actions for Consideration at the Meeting

- Consider approval of Draft Addendum XXVII for public comment

5. Consider Terms of Reference for Jonah Crab Benchmark Stock Assessment (11:10-11:15 a.m.) Action

Background

- To date, there is no range-wide stock assessment of Jonah crab, stock status is unknown, and there has been limited science-based advice available to support management of the fishery.
- In August 2021 the Board initiated a benchmark stock assessment for Jonah crab. This was recommended by the Technical Committee given the data available, a steady increase in landings as the fishery has developed, and persistent uncertainty about sustainability and market limitations.
- The TC met in January 2022 to recommend Terms of Reference for the Jonah Crab Benchmark Stock Assessment, as well as a timeline for completion of the assessment (**Briefing Materials**).

Presentations

- Terms of Reference and Timeline for the 2023 Jonah Crab Benchmark Stock Assessment by J. Kipp

Board Actions for Consideration at the Meeting

- Approve Terms of Reference and timeline for Jonah Crab Benchmark Stock Assessment

6. Consider Fishery Management Plan Reviews and State Compliance (11:15-11:25 a.m.) Action

Background

- State compliance reports for American lobster and Jonah crab were due August 1, 2021.
- The Plan Review Teams reviewed state compliance reports and compiled the annual FMP Reviews for lobster and Jonah crab for the 2020 Fishing Year (**Briefing Materials; Supplemental 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 2020 Fishing Year by C. Starks

- Approve Fishery Management Plan Reviews and state compliance reports for American Lobster and Jonah Crab for the 2020 Fishing Year
- Approve *de minimis* requests.

7. Review and Populate Advisory Panel Membership (11:25-11:30 a.m.) Action

Background

• Eben Wilson and Jeff Putnam, both commercial trap fishermen from Maine, have been nominated to the American Lobster Advisory Panel **(Briefing Materials)**.
Presentations • Advisory Panel Nominations by T. Berger
Board Actions for Consideration at the Meeting • Approve Advisory Panel nominations

8. Other Business/Adjourn

American Lobster and Jonah Crab TC Task List

Activity level: High

Committee Overlap Score: Medium

Committee Task List
Lobster TC • Annual state compliance reports are due August 1 • Fall 2022: Annual data update of lobster abundance indices *Jonah Crab TC* • Winter/Spring 2022: Begin preparations for Jonah crab assessment data workshop • Summer 2022: Continue development of assessment • Annual state compliance reports are due August 1 • Fall 2022: Development of methods for Jonah crab stock assessment

TC Members
American Lobster: Kathleen Reardon (ME, TC Chair), Joshua Carloni (NH), Jeff Kipp (ASMFC), Kim McKown (NY), Conor McManus (RI), Chad Power (NJ), Tracy Pugh (MA), Burton Shank (NOAA), Craig Weedon (MD), Somers Smott (VA), Renee St. Amand (CT)
Jonah Crab: Derek Perry (MA, TC Chair), Joshua Carloni (NH), Chad Power (NJ), Jeff Kipp (ASMFC), Conor McManus (RI), Allison Murphy (NOAA), Kathleen Reardon (ME), Chris Scott (NY), Burton Shank (NOAA), Somers Smott (VA), Corinne Truesdale (RI), Craig Weedon (MD)

Jonah Crab Stock Assessment Subcommittee (SAS) Members
Jonah Crab: Derek Perry (MA, TC Chair), Joshua Carloni (NH), Jeff Kipp (ASMFC), Kathleen Reardon (ME), Burton Shank (NOAA), Corinne Truesdale (RI), Jeremy Collie (URI)

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

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

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

AMERICAN LOBSTER MANAGEMENT BOARD

Webinar
October 18, 2021

TABLE OF CONTENTS

Call to Order, Chair Daniel McKiernan 1

Approval of Agenda 1

Approval of Proceedings from August 2, 2021 1

Public Comment 1

Review of the Annual Data Update of American Lobster Abundance Indices 1

Discuss Development of Draft Addendum XXVII, Gulf of Maine/Georges Bank Resiliency 4
Consider Plan Development Team (PDT) Recommendations on Objectives 4
Provide Feedback to PDT on Proposed Options 15

Progress Update on Draft Addendum XXIX: Electronic Vessel Tracking Devices in the Federal American Lobster and Jonah Crab Fisheries 29

Consider Next Steps for the Development of a Management Strategy Evaluation for the American Lobster Fisheries 33

Adjournment 36

INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).

2. **Approval of proceedings from August 2, 2021** by consent (Page 1).

3. **Move to adjourn** by consent (Page 36).

ATTENDANCE

Board Members

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

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

Ex-Officio Members

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

Staff

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

Guests

Karen Abrams, NOAA
Max Appelman, NMFS
Peter Benoit, Ofc. Sen. King, ME
Frederick Bever
Kurt Blanchard, RI DEM
Sarah Bland, RI DEM
Karen Bradbury, Ofc. Sen. Whitehouse
Delayne Brown, NH FGD
Jeff Brust, NJ DEP
Thomas Burrell, PA F&B
Josh Carloni, NH FGD
Beth Casoni, MLA
Heather Corbett, NJ DEP
Justin Davis, CT (AA)
Lennie Day
William DeVoe, ME DMR
Lynn Fegley, MD DNR
Marianne Ferguson, NOAA

Guests (continued)

Joe Fessenden, Am. Comm. Fishing
James Fletcher
Tom Fote, NJ (GA)
Lewis Gillingham, VMRC
Angela Giuliano, MD DNR
Amalia Harrington, Univ Maine
Marin Hawk, MSC
Heidi Henninger, Offshore Lobster
Jay Hermsen, NOAA
Asm. Eric Houghtaling, NJ (LA)
Bob Humphrey, Powmal, ME
Rob LaFrance, Quinnipiac Univ
Chip Lynch, NOAA
Patrice McCarron, MLA
Genine McClair, MD DNR
Kim McKown, NYS DEC
Conor McManus, RI DEM
Meredith Mendelson, ME DMR
Nichola Meserve, MA DMF
Steve Meyers, Williamsburg, VA
Jerry Morgan, Madison, CT
Lorraine Morris, ME DMR
Wendy Morrison, NOAA
Brandon Muffley, MAFMC
Lindsey Nelson, NOAA
Jeff Nichols, ME DMR
Gerry O'Neill, Cape Seafoods
Derek Orner, NOAA
Nick Popoff, USFWS
Will Poston, SGA
Douglas Potts, NOAA
Tracy Pugh, MA DMF
Jill Ramsey, VMRC
Elizabeth Rasheed, SELCNC
Burton Shank, NOAA
Melissa Smith, ME DMR
Somers Smott, VMRC
Rene St. Amand CT DEP
Jesica Waller, ME DMR
Craig Weedon, MD DNR
Kelly Whitmore, MA DMF
Chris Wright, NOAA
Horace Wynn
Renee Zobel, NH FGD

The American Lobster Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Monday, October 18, 2021, and was called to order at 9:00 a.m. by Chair Daniel McKiernan.

CALL TO ORDER

CHAIR DANIEL McKIERNAN: Good morning, everyone, this is the October 18, 2021 American Lobster Management Board meeting. My name is Daniel McKiernan, and I am the Director of the Division of Marine Fisheries and the Administrative Representative to the delegation.

APPROVAL OF AGENDA

CHAIR McKIERNAN: First on the agenda, we need an approval of the agenda. Is there any objection or any edits that are desired for today's agenda?

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

CHAIR McKIERNAN: Hearing none, the agenda is approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR McKIERNAN: Next the proceedings from August 2, 2021. Are there any suggested edits to the proceedings from that last meeting, please raise your hand?

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

CHAIR McKIERNAN: Hearing none, it is approved by unanimous consent.

PUBLIC COMMENT

CHAIR McKIERNAN: Next is public comment. Toni, has anyone signed up to speak on any of the issues that are not on today's agenda?

MS. KERNS: I didn't have anyone sign up, but I'm going to ask for any hands, if anybody does need to make comment. I don't see any hands raised.

REVIEW OF THE ANNUAL DATA UPDATE OF AMERICAN LOBSTER ABUNDANCE INDICES

CHAIR McKIERNAN: Okay, on to Agenda Item 4. This is a Review of the Annual Data Update of American Lobster Abundance Indices**.** During the 2020 stock assessment the Stock Assessment Subcommittee recommended representation to the Board of these updated parameters. Caitlin, I'm assuming this is the first, and what will be kind of an annual event for the Board to receive an update on some of these indices.

MS. CAITLIN STARKS: Correct, Dan.

CHAIR McKIERNAN: That's cool. I guess we can go right to your presentation.

MS. STARKS: Kathleen is going to be presenting, and thanks, Maya for brining that up, and Kathleen, I think you should be all set to go.

CHAIR McKIERNAN: Thank you, Kathleen, go ahead.

MS. KATHLEEN REARDON: Okay thanks Caitlin and thanks Dan. As Dan just reviewed, as part of the 2020 Lobster Stock Assessment, the Stock Assessment Subcommittee and the Peer Review Panel recommended a data update process to monitor changes in stock abundance and trends between assessments, to be presented to the management board on an annual basis.

This process updates the survey indicators since the assessment, and the datasets recommended can indicate trends in exploitable lobster abundance expected in the near future. The datasets include the young of year settlement index, trawl survey indices for sizes 71 to 80 millimeters carapace length, and encounter rate, and the ventless trap survey to a greater than 53 millimeters carapace length.

To evaluate the trends, each indicator is compared to the relative percentile determined by the assessment time series of 1981 through the current, or the available years for each indicator. The process compares the calculated five-year means

for the assessment status and the updated status. For the assessment five-year means, the data was from years 2014 to 2018, and the update period was 2016 to 2020, with the additional two years.

For each indicator a negative status was determined if the indicator fell below the 25th percentile, neutral if between the 25th and the 75th percentile, and positive if greater than the 75th percentile. The tables and figures may be small in these slides and hard to read, depending on the size of your screen, but all are in the data update memo as well.

But for these slides you can focus on the color coding, where positive is white, neutral is gray, and black is negative. Any new data from 2019 or 2020 in the figures will be displayed in red at the end of the time series. The COVID-19 pandemic did impact data collection for all agencies. The pandemic prevented multiple trawl surveys from sampling in 2020, and that missing data does impact the five-year means used for the updated indicator status.

I will go through each stock and indicator, and how the updated status compared to the assessment status. To orient you, this standard time series to the left is 1981 to 2020, with each column representing a different statistical area, in this case state or survey for some of the other indicators.

The percentile ranges are on the bottom. In the table the assessment indicator means for 2014 and 2018 are outlined in red, while the updated indicator means are outlined in orange. The status of negative, neutral and positive are again as I said earlier, designated by black, gray, or white, and in the figure each panel is a different statistical area or survey with new data from 2019 to 2020 in the red.

To start, the young of year indices in the Gulf of Maine showed evidence of improvement, but were not positive. The assessment status had two negative indices and three neutral, while the updated status had all five indicators as neutral. For the Gulf of Maine trawl survey indices for recruits of 71 to 80 millimeters, the indices showed positive conditions with no status change from the assessment. But, as I noted earlier, five of the six surveys were not completed in 2020. The cross through the table means no survey. The Maine/New Hampshire fall survey was the only 2020 survey that was completed, and also posted the first neutral value since 2015. These figures show the annual recruit index value for each trawl survey with the spring surveys to the left and the fall surveys to the right.

As I said before, none of the surveys were completed in spring 2020 and the only fall survey completed in 2020 does show a decline. In general, the fall indicators since the assessment do show declines. For the Gulf of Maine trawl survey encounter rates, we have some of the same caveats for the 2020 missing data.

In general, the rates remain high and similar to the assessment, but there was some deterioration. In the assessment five of the six were positive, but in the updated status three were positive and three were neutral. In the assessment the ventless trap survey was not a stock indicator in previous assessments before 2020, because it only started in 2006.

But, because we are showing changes since the assessment, the TC determined that it is appropriate here to use the survey to evaluate trends since the assessment. In that assessment the VTS index was model based and stock wide. This modeled approach was not evaluated for estimated indices by statistical area.

But the TC decided that it would be useful to provide greater spatial resolution of the survey results to examine the abundance trends within the stock boundary. The results shared here are designed based ventless trap survey indices, and reported by statistical area. For the Gulf of Maine ventless trap survey, the columns are each statistical area by sex.

The assessment found that four of the indices were positive and four were neutral. In the updated status two were positive and six were neutral. These indices do show decline since the assessment. For figures of the same data, the females are to the left and the males are to the right, 511, the most northern statistical area is on the top with the most southern Gulf of Maine statistical area 514 on the bottom.

Statistical Area 514 fell into the negative range for the first time since 2014, 511 and 512 also exhibited a declining trend, dropping into the neutral range. For Georges Bank there were no indicators available for 2020. For recruit abundance the assessment status found both spring and fall surveys were neutral, but in the updated status spring was neutral and fall was negative.

The encounter rates were similar to the assessment, where both the assessment and updated status were positive. These are the figures for just the recruit indicators for Georges Bank, while Georges Bank recruit indicators show high inter-annual variability. The Georges Bank recruits show possible deterioration in the fall of 2019, similar to the Gulf of Maine inshore survey.

Switching to Southern New England. The young of year indices are reported by state and were negative across the stock. For the assessment, two of the states were negative while one was neutral. But for the update all indices were negative. Massachusetts has not seen a young of year for six years. For trawl surveys, only Rhode Island was able to complete their trawl survey in 2020, so six of the eight surveys were not completed in 2020. The updated status was similar to the assessment across the indicators with three neutral and five negatives. These are the figures of the annual trawl survey recruit numbers with the spring on the left and fall on the right with the federal offshore survey on the top, then moving south from Massachusetts to Rhode Island to Connecticut on the bottom.

Both of the offshore indictors on the top panel were negative in 2019, while all of the inshore areas also remained low. For encounter rates, the indicator statuses were similar to the assessment, with two neutral indicators and six negatives. For southern New England ventless trap survey, the indices are reported by sex and statistical area.

The TC notes that the survey has only taken place during depleted stock conditions in an adverse environmental regime. Inter-annual variability can be misleading without the context of a longer time series, including a period of more positive stock conditions. With that in mind, the assessment status had one indicator in negative status and three in neutral, while the updated indicators show that all four are in neutral status.

For the ventless trap, while the updated five-year mean was neutral, both 2019 and 2020 values in 539 were negative for males and females. I know that was a lot of information. It is all in the data update memo. But in summary, the lack of 2020 trawl survey data is problematic in looking at trends since the assessment.

With these limited data we can only make uncertain conclusions, but there is some evidence of decline. In the Gulf of Maine, the indicators are showing declining trends in recruitment in both the fall trawl surveys and ventless trap. For Georges Bank the indicators are highly variable and dependent on only the fall and spring federal survey that did not go in 2020. For Southern New England, the stock continues to have negative indicator status inshore and neutral conditions offshore. With that I am happy to take any questions.

CHAIR McKIERNAN: Any questions from the Board for Kathleen? Great job, Kathleen.

MS. KERNS: I don't see any hands yet, Dan. No hands.

CHAIR McKIERNAN: Okay, well I'm sure as we proceed forward between this meeting and the next on Addendum XXVII, especially on matters that pertain to the Gulf of Maine, some of these data

will be brought forward to help guide us. Thank you, Kathleen, for a great presentation.

Thanks to the Technical Committee for compiling all of this really interesting data. With any hope we'll have fewer data gaps in the future, as we kind of crawl out of this pandemic.

DEVELOPMENT OF DRAFT ADDENDUM XXVII, GULF OF MAINE/GEORGES BANK RESILIENCY

CHAIR McKIERNAN: Next on the agenda is the Development of Draft Addendum XXVII, Gulf of Maine/Georges Bank Resiliency**,** and Caitlin has a presentation on this.

I will remind the Board that over three years ago this Addendum was initiated, to deal with some of the expected declines in, I guess some of the same parameters that Kathleen just showed us, the decline of young of the year values, expected decline in the ventless trap survey indices, as well as the expected decline in landings as well. I think the Board appropriately wanted to see if we could sort of pre-bait some management measures that could address the decline and make the fishery more sustainable and less susceptible to the long-term decline that we saw in the Southern New England area. Like I said, this was brought forward over three years ago, and Caitlin is going to speak to the evolution of this Addendum.

The messaging that the Board has come forward with to the PDT, and then some of the PDTs struggles to fully comprehend what the Board is looking for, to put together some management recommendations that we could eventually take out to public hearing. Caitlin, why don't you present on the background, and what some of the detailed options are that have come forward from the Plan Development Team.

MS. STARKS: I can do that. I'll start off with some brief background, as Dan indicated, on this action, and give you an update to the proposed action timeline. Then I'll go over the recommendations from the Technical Committee and the PDT on the Addendum options. Then at the end highlight a few questions for the Board where the PDT is looking for some additional guidance.

For some brief context, Draft Addendum XXVII was initiated in August, 2017, and that was in response to concerns about declining trends in Maine's larval settlement survey over recent years that could possibly foreshadow future declines in recruitment in landings. At that time, the Addendum objective was to increase the resiliency of the Gulf of Maine and Georges Bank stock by considering standardized management measures across LCMAs in the stock.

Then, following initiation of the Addendum it was put on hold for a few years, to prioritize right whale risk reduction efforts. In February, 2021, after reviewing the 2020 benchmark stock assessment, the Board reinitiated work on this Addendum with a new motion, which changed the focus of the Addendum to consider a trigger mechanism.

Such that upon reaching the trigger measures would be automatically implemented to improve the biological resiliency of the Gulf of Maine and Georges Bank stock. Since that February meeting, the PDT and TC have met a number of times to develop the document, and the Board has met several times.

CONSIDER PLAN DEVELOPMENT TEAM (PDT) RECOMMENDATIONS ON OBJECTIVES

MS. STARKS: In May and August of 2021, the Board gave some guidance to the PDT, which included that the action should prioritize increasing resiliency of the stock over standardizing measures, that it should consider a tiered approach with multiple trigger levels, and that it should include some relatively conservative trigger levels, such that a change to measures would occur before abundance were to fall significantly from the current levels.

The PDT and TC took that into account, and they've provided some additional analysis and

recommendations on the draft management options for the Addendum. I want to highlight here that the PDT, as Dan mentioned, has had some trouble developing options for this Addendum for a few reasons.

One is that both the PDT and TC have felt that there is some inconsistency between the Board's original motion, which focused on stock resiliency and proactive management, and the additional guidance provided by the Board that supported management action occurring after declines in abundance are observed. Additionally, there is not consensus among all of the PDT members on some of the trigger levels and management measures being discussed, given the uncertainty about the goals of the Addendum.

For example, there is not union in this agreement on maximum gauge size changes being considered, and I'll go more into detail on that later. That said, the PDT is looking today for some more guidance from the Board at the end of the presentation, to be able to finalize this management document for consideration for public comment at the next meeting.

Given that information, this is an updated proposed timeline for the remaining steps of the action development. Today the Board is reviewing the TC and PDT recommendations for the Addendum, and then following today's meeting the plan is for the PDT to finalize the draft addendum for public comment, based on the Board's guidance.

The Board would then be able to consider the draft addendum for public comment in January of 2022 at the winter meeting, and if approved public hearings would take place in February, and the Board could consider the public comments and final approval of the Addendum in May, 2022.

Now I'll go into the TC analysis and recommendations on the action. First, I want to note that during the TCs discussions they defined resiliency as the ability of the stock to recover from a disturbance, and made the recommendations based on the understanding that the Board was interested in increasing stock resiliency by adding an additional biological buffer through the protection of spawning stock biomass across LCMAs.

With that in mind, the TC provided analysis and recommendations on the index for the trigger mechanism, the trigger levels, and the projected impact of management measures. For the trigger mechanism, the TC recommended using a trigger index that would be calculated as the average of three survey specific running three-year average recruit indices, meaning lobsters from 71 to 80 millimeters in carapace length.

The three surveys are the combined Maine and New Hampshire and Massachusetts spring trawl survey index, the combined Maine, New Hampshire and Massachusetts fall trawl survey index, and the combined Gulf of Maine ventless trap survey index. All these would be scaled to their 2015 to 2017 values.

The reason for using these recruit indices is that there is an expected one-year lag between the recruit indices and the recruitment to the stock assessment reference abundance, which was used for a stock status determination. The reference period for the recruit index is 2015 to 2017, and that is indicative of recruitment to the 2016 to 2018 reference abundance.

Again, that was used for the stock status determination in the 2020 stock assessment. Scaling each index to its 2015 to 2017 average puts them all on comparable scales that represent a percent change from the reference years, and allows them to be combined into the single trigger index. The way the mechanism would work as proposed, is that management would be triggered if the three-year moving average of the three survey indices were to fall by a certain percent from the reference value. The TC also recommended that the trigger level considered in the Addendum should be related to the assessment model outputs,

the abundance regime shift, and abundance reference points that were adopted by the Board.

As a reminder, those reference points include the fishery industry target, which is the 25th percentile of the high abundance regime and the abundance limit, which is the point below which the stock status is considered depleted. The trigger levels recommended are one that approximates the fishery industry target, one that approximates the abundance when the regime shift occurred from the moderate to high abundance regime, and one that approximates the 75th percentile of abundance during the moderate regime.

The TC did not recommend using trigger level approximating the abundance limit, because again, below that point the stock status would be considered depleted. The TC felt that this was not an appropriate trigger level as a proactive trigger for increasing stock resiliency. This is a visual of where those reference points from the stock assessment fall on the Gulf of Maine/Georges Bank model abundance curve.

The top horizontal dotted line is the fishery industry target, and below that there is a dashed blue line that represents the point where the moderate abundance regime shift occurred from the moderate to high abundance regime. Then the 75th percentile of the moderate abundance regime is shown by the yellow dot/dash line, and below that the dashed red line is the abundance limit.

The black dot on the top right represents that average abundance from 2016 to 2018, which was used for the stock status determination. These are the percent declines from the reference value, that black dot on the last graph to each of the possible trigger levels. From the 2016 to 2018 average abundance to the fishery industry target is a 17 percent decline in abundance.

To the point where the moderate to high regime shift occurs would be a 32 percent decline, and to the 75th percentile of moderate abundance regime would be a 45 percent decline. For the actual triggers in the Addendum, the idea is that they would be based on the annual recruit indices as I described, but these percent declines in the recruit indices are meant to approximate the same change in stock abundance.

Here is what those trigger levels look like as declines in abundance from the black dot, again the top most guideline is the cumulative decline to the fishery industry target, and then the dashed line is the cumulative decline to the abundance levels, where the regime shifted from moderate to high, and the dot/dash line is a cumulative decline to the 75th percentile of the moderate abundance regime.

Some additional comments that the TC made on these triggers are that first making changes to the management measures, such as increasing the minimum gauge size, while the stock abundance is at a higher level, has more potential to enhance the stock resiliency by increasing spawning stock biomass. In the same vein, making those types of changes while abundance is at higher levels will generally have a smaller impact to industry, as opposed to taking the same action after the industry is already feeling the impacts of declining abundance on the catch. Additionally, at the PDTs request, the TC was able to calculate the trigger index values with available data through 2020 using the recommended method. This graph shows the combined index in the upper left corner, with the three individual indices in the other plots. Again, these are all scaled to the reference values 2015 to 2017, and therefore they are comparable as proportional changes.

The horizontal dash lines in each graph represent the percent declines associated with those three trigger levels I discussed, 17 percent decline, 32 percent decline, and 45 percent decline from top to bottom. For 2020, which is the last year of data for which there is data available from the survey recruit indices, the trigger index value is calculated to be

0.84, which equates to a 16 percent decline in the index from the reference period.

As you can see, all three indices that are used for the combined trigger index show a declining trend in 2018. As a note, only the fall trawl and VTS survey indices were available for 2020, due to the spring trawl not being conducted because of the COVID-19 pandemic. The 2020 value is based on those two surveys, rather than the three.

The spring 2021 trawl survey was conducted, but that will not be used to calculate a combined index until the 2021 fall and VTS indices are available, which should be early next year. With regard to the possible management measures, the TC generally agreed that compared to the other types of biological measures in place now, changes to gauge size are the most likely to have positive impacts to the stock.

They focused their analysis on the impacts of different minimum and maximum gauge sizes for the LCMAs and the Gulf of Maine and Georges Bank stock, and they estimated impacts on landings, spawning stock biomass, and exploitation. The main take away from that analysis is that increasing the minimum gauge size is expected to have the most impact on stock resiliency by allowing more individuals in the population to reproduce, even if it were a relatively small change to that minimum gauge size.

The TC noted that increasing the minimum gauge size would likely have a short-term impact of decreasing the number of lobsters landed, but in the long run it is expected to increase the overall weight of landings. The analysis did not look at vent size separately, but agreed that vent sizes should be consistent with the changes in minimum gauge size.

For maximum gauge size in general, the TC has less certainty about the impact to the stock. They noted that when considering minor changes to maximum gauge size it is less likely to have a big impact, compared to changes to minimum gauge size due to the population structure, inshore versus offshore.

Inshore is where the large majority of landings are from, but the size structure of the population inshore is already truncated, and there are not many large individuals being caught, whereas offshore there are larger lobsters in the population, but the landings from offshore represent a much smaller proportion of the total landings from the stock. The benefit of maximum gauge size decreases would be that it places forever protections on a few large lobsters, which are likely to have higher reproductive capacity than smaller lobsters. Before I get to specific recommendations on measures for each LCMA, I wanted to put up the current management measures for reference. For now, the main things to note are the minimum and maximum gauge sizes that are currently in place in each area, and we will talk about the differences in the v-notch rules a little bit later.

This is another table for reference in case we need it. We will be talking about the sizes as both inches and millimeters, so this could be helpful. I might even recommend taking a picture or a screenshot while this is on the screen, so that you can reference it later during the discussion, and I can leave this up for a second or two for folks to do that if they would like, and I can also come back to it at the end.

This is a chart that shows the range of sizes currently in place within the Gulf of Maine and Georges Bank stock, shown by the yellow cells as well as the estimated size at 50 percent maturity for the Gulf of Maine/Georges Bank stock, which is 87 millimeters carapace length, and that is shown by the orange horizontal line in the middle.

As a reminder, there is some variations within the different areas of the overall stock unit for the size at maturity. But as you can see currently, Area 1 in Outer Cape Cod's minimum gauge sizes fall below the stock wide size at maturity. The TC has generally agreed that it's better for stock resiliency

to move the minimum size to be at or above the size at 50 percent maturity of the area.

These are the TCs recommendations for Area 1. The TC recommends increasing the minimum gauge size in Area 1, given it is currently below the size at 50 percent maturity, and additionally this could address growth overfishing by reducing the extent to which lobsters are harvested before reaching their growth potential, which would result in more yield per recruit for the fishery.

For maximum gauge in Area 1 the TC does not recommend a change. The current maximum gauge size is five inches, which is the lowest in all areas of the stock, and decreasing it further would not be expected to increase the spawning stock biomass. For LCMA 3, the Technical Committee does not recommend decreasing the minimum gauge size, and they agreed that increasing the minimum gauge size in Area 3 is not a high priority.

This is because the LCMA 3-gauge size is already close to the size at 50 percent maturity, which is 91 millimeters for the Georges Bank area. As I noted previously, the impacts of decreasing the maximum gauge in LCMA 3 are more uncertain. Their complex population and reproductive dynamics for larger lobsters offshore, which makes it hard to predict how a change would affect the spawning stock biomass, and whether that would translate into positive impacts to recruitment.

In general, decreasing the maximum gauge size has larger effects for LCMA 3 relative to decreasing minimum size in LCMA 3, or compared to changing the maximum sizes for the other LCMAs. But the benefit is expected to be much less than increasing the minimum size in Area 1. For Outer Cape Cod the TC also does not recommend decreasing the minimum gauge size. Again, this is not expected to have a positive effect on spawning stock biomass, and in general increasing the minimum gauge size should have some benefits to the stock.

However, for Outer Cape Cod there are more uncertainties due to the fact that this is considered a transitional area, with lobsters moving in from other locations. That creates challenges for pinning down the size at maturity for the area and the population size structure. Similar to Area 3, the impacts of decreasing maximum gauge size are uncertain.

The Outer Cape Cod fishery accounts for a relatively small portion of the stock wide landings, so the impact is unlikely to be large. Then the TC also recommends for Outer Cape Cod to standardize the measures for state and federal permit holders as is proposed in the draft options for this Addendum.

They noted benefits of this, including for law enforcement and commerce, as well as providing a consistent conservation strategy across the management area. The TC made a few additional statements related to these recommendations that they wanted to make clear for the Board. First, they noted that although the Board guidance was to prioritize improving the biological resiliency of the stock over the standardization of measures.

They did feel that standardizing measures across areas would be beneficial, because it would simplify the stock assessment and the evaluation of management strategies, especially given the management areas do not align with the stock boundaries. Additionally, the TC stated that although the recommendations focused on gauge size changes, that was mainly as a result of guidance from the Board and PDT to focus on the biological measures that are currently used for lobster, and not to look at alternative measures like quotas or trap reductions.

The TC does believe that other measures like trap reductions and quotas could have the potential to benefit the stock by reducing fishing mortality, but there are challenges with estimating the impacts, because the relationship between trap limits, traps fished, all frequency in catch is very difficult to predict.

It would be challenging to determine what the impacts would be, and additionally it would be challenging to get at an inappropriate quota level, due to the current levels of uncertainty around the abundance estimates from the stock assessment. If the Board is interested in these types of measures in the future, much more analysis would be needed.

Lastly, the Technical Committee wanted to emphasize that it may not be realistic to expect that the recommended changes to management measures will guarantee the stock abundance will stay at record high levels. The TC expects the recommendations to partially address growth overfishing to mitigate some of the effects of productivity decline, and enhance the stock's ability to recover from future declines by increasing the proportion of females that can reproduce before they're harvested.

But this does not necessarily mean that the stock could recover to the same record high levels that have been observed recently. The TC does not want to imply that these measures alone would ensure long term sustainability of the fishery. Now with the TCs recommendation in mind, I can move on to the PDT recommendations for the draft addendum. As I mentioned in the introductory slide, there has been some concerns amongst PDT members that some of the guidance received from the Board and the advice from the TC are inconsistent with each other, and in particular I mentioned the TC defines resiliency as the ability of the stock to recover from a disturbance, and suggested that immediate action to increase minimum gauge size while stock conditions are favorable would be more effective, compared to waiting for declines in abundance to trigger a management change.

However, the Board guidance was in favor of using a trigger mechanism, in which management measures would not be implemented until after an observed decline. Additionally, as you saw in the trigger index graph, all three of those indices that the TC recommended using to approximate changes in abundance for the trigger mechanism are showing a declining trend since 2018.

Both of these things have made it difficult for the PDT to agree on appropriate management options for this Addendum. The way to acknowledge these issues and try to move forward with more clarity about the purpose of the action. The PDT has put forward something for the Board to consider, which would be modifying the goal of the Addendum to frame the action as responding to these trends, rather than proactively reducing stock resiliency in anticipation of future declines.

The PDT drafted a proposed objective for the Board to consider, which is given persistent low settlement indices and recent decreases in recruit indices, the Addendum should consider a trigger mechanism, such that upon reaching the trigger measures would be automatically implemented to increase the overall protection of spawning stock biomass of the Gulf of Maine and Georges Bank stock.

The PDT felt that this would address the most recent trends in the survey indices, as well as add clarity that the proposed measures are intended to increase spawning stock biomass. Working off of that goal statement, the PDT restructured the draft options in the Addendum since the last meeting.

They separated the Addendum into three issues. The first issue considers options to standardize some of the biological management measures, such as the inconsistencies within LCMAs at final approval of the Addendum. The second issue considers the trigger mechanism and management measures that would be implemented upon reaching those triggers, and the third issue would establish the spatial implementation of those measures within Area 3.

For Issue 1, the proposed options are Option 1, status quo, which means there would be no changes to the measures upon final approval of the Addendum, and Option 2 is that some standardized measures would be implemented upon final

approval of the Addendum. The sub-options for Option 2 would allow the Board to select which measures those would be.

One thing to note is the sub-options are not mutually exclusive, and the Board could select multiple sub-options under Option 2. Sub-option 2A is that upon final approval of the Addendum, measures within each LCMA would be standardized to the most conservative measure where there are inconsistencies in measures for state and federal permit holders.

This would result in Outer Cape Cod's maximum gauge size being standardized to six and three-quarters of an inch for both state and federal permit holders, and the v-notch definition being standardized to one-eighth of an inch with or without setal hairs. Sub-option 2B is to implement a standard v-notch requirement across all LCMAs in the Gulf of Maine/Georges Bank stock at final approval of the Addendum, which would result in mandatory v-notching for all eggers in LCMA 1, LCMA 3, and Outer Cape Cod.

Sub-option 2C is to standardize regulations across LCMAs and the Gulf of Maine and Georges Bank stock for issuing trap tags for trap losses, such that catastrophic trap tags are not being issued before documented losses occur. For Issue 2, again this considers establishing a trigger mechanism, where upon reaching a defined trigger based on the proposed index, measures would be implemented to increase the spawning stock biomass.

The PDT proposed three different options. Option 1 would be to establish one trigger at a 17 percent decline in the trigger index from the record level, and at that point the measures implemented would be a change to the minimum size in LCMA 1 to 3-5/16 of an inch. A second trigger would be established at a 32 percent decline in the trigger index from the reference level, and at that point the minimum size in LCMA 3 would be increased to 3-3/8 of an inch, and the maximum size in LCMA 3 and Outer Cape Cod would change as well.

As you can see, the PDT did not decide on the maximum size, but rather left it as a choice for the Board for either 6 inches or 6 and 1/2 inches. For Option 2 there is only one trigger level, which is the 17 percent decline in the trigger index, and at this point a gradual change in the gauge sizes would be initiated, where the size would change by 1/16 of an inch until reaching the endpoint shown in the table.

Again, the PDT is looking for Board guidance on the proposed final minimum size in LCMA 1 at either 3-3/8 or 3-15/32 of an inch, and the minimum size in LCMA 3 and Outer Cape Cod would remain status quo. The maximum size for both areas would gradually change to either 6 inches of 6-1/2 inches for Outer Cape Cod in Area 3.

Lastly, for Option 3, the PDT proposed an alternative approach to the trigger mechanism. This option would instead implement scheduled changes to the management measures as indicated in the table. In 2023 the minimum size in Area 1 would increase to 3-5/16, and then in 2025 it would increase to 3-3/8. All other measures would remain status quo in Option 3.

Last issue is Issue 3, which again addresses the spatial extent in Area 3, where the modified management measures would apply. Option 1 is status quo, which is that Area 3 would be treated as one unit, so the rules would apply throughout the whole area of Area 3, and Option 2 is that the measures would only apply in part of Area 3. Specifically, Area 3 would be split along the 70-degree west longitude line to create an eastern and western section of Area 3, with an overlap area of 30 minutes on either side of that line.

Under this 0ption, harvesters in LCMA 3 could elect two fish exclusively in the western or eastern portion while being allowed to fish annually in the overlap zone without needing to change their area declaration. In that overlap zone the fishermen would be held to the management measures of the

sub-area they have declared. This second option should be noted.

This would only really apply if the measures selected in the previous issues would result in a change to the current measures for LCMA 3. Those are the proposed options at this point, and now I have some specific questions that the PDT is hoping to get Board guidance on. These questions on this first slide are related to Issue 1, which again is considering standardizing some measures at final approval of the Addendum.

First the PDT would like clarity on whether the Board is interested in including Sub-option 2B under Issue 1 in the Draft Addendum for public comment. Again, this is the option that proposes implementing a standard v-notch requirement across all LCMAs in the Gulf of Maine and Georges Bank stock. Given available data and the issue of enforceability of v-notching, the PDT noted some concern that it would be challenging to estimate the impacts of this option on spawning stock biomass.

They see it more as a policy decision and would like some Board guidance on whether to include this option. Second, also on the issue of v-notching. The PDT is asking whether the Board is interested in considering an option to standardize the v-notch definition to 1/8 of an inch across all areas in the stock.

Additionally, they are wondering if the Board is interested in standardizing the minimum depth of the v-notch and the shape that is required when it is cut. Third, the PDT is wondering if the Board prefers to address the options that are currently under Issue 1 separately from the trigger mechanism, which is what is proposed now, or as part of the management measures that would be implemented upon reaching a certain trigger.

These next questions are related to Issue 2, and specifically the management measures that would be considered for automatic implementation upon reaching defined trigger levels. With regard to the proposed gauge size changes, the TC has advised that increasing the minimum gauge size in LCMA 1 is most likely to have the largest impact on the protection of overall spawning stock biomass.

The PDT is asking if the Board is willing to consider options that would increase the minimum size in LCMA 1 to 3-3/8 of an inch or 3-15/32 of an inch. As a reminder, the current minimum size in Area 1 is 3-1/4 of an inch, which equates to 83 millimeters. The TC also agreed that compared to increasing the minimum size in LCMA 1, decreasing the maximum gauge size in LCMA 3 and Outer Cape Cod to 6 inches or above is likely to have a relatively small positive impact on the spawning stock biomass.

But it would have minimal but permanent impact to Area 3 industry, and there are some great uncertainties surrounding the magnitude of those effects. Given that, the PDT wants to know if the Board is interested or willing to consider any decreases to the maximum gauge size in those areas, and if so, what would be the lowest maximum size the Board would be willing to consider. Would that be 6-1/2 inches, 6-1/4 inches, or 6 inches? That is all I have for the Board, so I'm happy to take any questions.

CHAIR McKIERNAN: Okay, thanks, Caitlin, there is a lot of great information there. We're going to take questions or I'll have you take questions, but I'm going to cut off any discussion at this time about whether one option is better than another, because I think what we need to do is put that motion up that the PDT. Put up as a motion the proposal objective of this Addendum XXVII, to see if we could get consensus on changing that, because that's really what the PDT would like to see.

Why don't we open the floor for questions for Caitlin, but please, please don't go right into your opinions about certain management measures. But I think some of these questions should be asked if there is any need for clarification about how the PDT and TC came to some of their

recommendations. Whoever wants to, raise their hand to ask a question of Caitlin at this time.

MS. KERNS: At this time, Dan, you just have David Borden.

CHAIR McKIERNAN: Okay, David Borden.

MR. DAVID V. BORDEN: Caitlin, a question for you, but you may want to defer it to Kathleen. What is the compliance rate of the v-notch provision in each area? What portion of, for instance what portion of Area 1 fishermen actually v-notch lobsters, as compared to the percent in Area 3, or the Outer Cape?

MS. STARKS: I certainly do not have an answer to that question, and I can ask Kathleen if she does, although I'm pretty sure there is a lot of uncertainty about that.

CHAIR McKIERNAN: David, I would point out that Area 3 has a line drawn, I think it's the 42-40, north of which there already is an existing mandatory v-notching requirement in the federal regulations, I think in the Plan as well.

MR. BORDEN: Yes, thank you, Mr. Chairman. I realize that. But that is not what I'm asking. What I'm asking is, how many fishermen actually comply with it? What is the compliance rate?

CHAIR McKIERNAN: I think Caitlin, I'll speak for her. I don't think you have any data that reveal compliance rates, right?

MR. BORDEN: Okay, and then if I might, Mr. Chairman. One follow-up question. This is to Caitlin or Kathleen, whichever is appropriate. On the uncertainties on the large lobsters. I'm familiar with a number. I think a number of the reasons why the scientists have basically raised those concerns. But just for the rest of the Board, could somebody just summarize what those uncertainties are? I think one of them is the molt frequency changes with large lobsters. Is that correct?

MS. STARKS: I will go ahead and let our TC Chair answer, so Kathleen, feel free.

MS. REARDON: I will try to answer that. I actually just want to comment on the v-notch compliance first. The Law Enforcement Committee might have some idea of this for the compliance rates among fishermen, but we do not have data on that. The only proxy that we might have, is percent of eggers that already have a v-notch, and that is data that we would have in our bio samples information. I know we calculate that for Maine. But I don't know what it is in the other areas, but we do have that information. For the large lobsters, the uncertainties in Area 3, it does come down to data. The parameters in Area 1 or for the whole model, the assessment model. It puts Gulf of Maine and Georges Bank together. To be able to do these analyses we needed to separate them, because there are different selectivity's for the traps, also the size structure is different in Area 3, and just a number of large lobsters that we have in our data, we don't have that many.

There are more uncertainties. Exploitation rate is different, the sex ratio is different in Area 3, and so all of those things we tried to estimate for Area 3, and came up with a model that made some assumptions, but we feel that it was able to replicate the length compositions that we find in the bio sample data.

I don't know if that really answers your question, but there are definitely a number of uncertainties. When it comes to the impact of protecting some of those lobsters, as Caitlin mentioned, the larger lobsters do have potentially a larger capacity for reproduction, but there are many questions about molt frequency, molt increment. Yes, a lot of uncertainty there.

MR. BORDEN: Mr. Chairman, can I make one quick point?

CHAIR McKIERNAN: Certainly.

MR. BORDEN: I think it would be useful if it's not a ton of work, to have a scientist provide us with some estimates of the percent observed v-notching by LMA, and I would just use Area 2 as an example. I know there are a number of fishermen in Area 2 that do it, but the number is really relatively low. In Maine, from what I understand, there is a large number of participants, and the number is really high.

I've heard estimates of that number being as high as like 60 percent. But in Area 3 I think once again, we get into this issue of compliance is fairly low. It would be useful to know what the science says, and if the TC could or somebody on the TC could summarize in their next document to the Board what the sources of uncertainty are with the large lobsters, to follow up on the points that Kathleen made, I think that would be helpful.

CHAIR McKIERNAN: Consistent with the strategy that I weighed out earlier, Caitlin.

MS. KERNS: Dan, you have one more hand, Ritchie White.

MR. G. RITCHIE WHITE: Yes, just a follow up on David's point. I know law enforcement in New Hampshire, it's not uncommon to make cases of v-notch in possession, so I think reaching out to the Law Enforcement Committee and getting a sense of what the number of actions or how common actions are for the different LMAs could also be helpful.

It obviously will tell you how many lobsters are being v-notched, but it is going to tell you that lobsters are being v-notched, and they are being encountered illegally with the possession. I would just try to get that stated, and see if that can help at all. Thanks.

CHAIR McKIERNAN: Is there anyone else?

MS. KERNS: Dan, we do have Delayne Brown. I don't know if he wants to speak to that from the Law Enforcement Committee. He is on the call today. I don't know if you wanted to have him address any of those issues or not. I know that all states do not have a searchable record of cases. Some do, some don't.

CHAIR McKIERNAN: Toni, I've been listening to the discussion very carefully, and I think what David is describing is compliance with the rule to actually notch the flipper. That is different than compliance with the rule about a newly caught, a lobster with an old notch, whether it be from the day prior, sharp, no setal hairs, to something that may have molted once or twice with still a remnant that might fall under the protection of a zero-tolerance rule.

I don't know if the Law Enforcement representative could tease that out. I would like to hear from the Law Enforcement representative about whether or not cases can be made about noncompliance with the rule that says one must v-notch an egger. I think that would be more consistent with what David's asking.

MS. KERNS: Well, Delayne, I unmuted you if you wanted to speak to that or not.

MR. DELAYNE BROWN: Yes, so possession of v-notch, we do make cases of that. Possession of mutilated, we also make cases on that. But to actually observe a violation on a boat when the lobster is in hand and not v-notched. I don't know if one would do that. Does that answer your question?

CHAIR McKIERNAN: Yes, thanks for that. I just want to be clear, in terms of what the questions are that compliance levels with possession of previously notched lobsters are different than compliance with a mandate of v-notching. I don't know if the Technical Committee could look at the available incidents of v-notched lobsters, assess encounter rate, and come up with some kind of a conclusion.

I'm not sure how reliable that would be, but I think that is essentially the question that David is asking. Is there any way to reveal the compliance rate with the mandate to v-notch? I'll just say as Board Chair, and as someone who has been on the Board for a

couple of decades. There is no question that the v-notch conservation program over the last 20 years has increased the number of protected females.

I think the Technical Committee has certainly concluded that whatever compliance rate we have, even if it's less than 100 percent, there has been a lot of enhanced protection. There are egg-bearing females in the population that there otherwise wouldn't be living had there not been a v-notch rule. But to David's point, I don't know if we can tease that out. But Caitlin, maybe we can ask the TC in a question after the meeting to give us a response on that between now and the next meeting. Are there any other folks who want to ask questions of Caitlin or Kathleen?

MS. KERNS: Kathleen has her hand up.

CHAIR McKIERNAN: Great, go ahead, Kathleen.

MS. REARDON: I just wanted to go back to the large lobster question that David asked. This is actually discussed in the TC materials relatively extensively. This was something we talked about a lot, the uncertainties, and we tried to lay that out in the document in both the impacts, kind of I think it's considered an appendix to our memo.

Please, review that in looking for that information. I'm not sure we would be able to provide that much more than what is already in the document, the v-notching question of percent of v-notched eggers is something that we can probably come up with, but yes, I think this is an enforcement issue, and that is something that we pointed out in the memo.

CHAIR McKIERNAN: All right, thank you very much. Is there anyone else? No hands, Toni?

MS. KERNS: That's it, no more hands.

CHAIR McKIERNAN: All right, thank you. As I mentioned earlier, bear with me, and Caitlin if you could put up that new language that the PDT suggested that the Board consider as the new objective for this Addendum. I think we owe it to the PDT to give them this kind of guidance. Clearly the Board voted in 2017 to move forward with an Addendum.

We were quite clear looking for uniform measures among the LCMAs, lobster conservation management areas, the most recent version we changed course and we wanted to focus more on a trigger mechanism, less so on the uniform measures.

Although the TC clearly stated that assessments will become much easier if there were more uniform measures across LCMAs within the stock unit. But I think we owe it to the PDT to give a clearer message, and I would just like to get some discussion about this, and whether the Board would embrace this as the new objective of the Addendum. Can I get some hands to weigh in on this at this time?

MS. KERNS: Pat Keliher.

MR. PATRICK C. KELIHER: Mr. Chairman, I wouldn't have any objections to this. I know the TC and the PDT did struggle with this a little bit when they talked about resiliency. This seems to help give some additional clarity moving forward. I would be okay with the change.

CHAIR McKIERNAN: Thanks, Pat. I appreciate your feedback on that, since you were the maker of the previous motion. Maybe you made both previous motions going back to 2017 as well. Would you be willing to make this motion?

MS. STARKS: I don't know if we need a motion, Mr. Chair, as long as there is no objection from the Board.

CHAIR McKIERNAN: All right. I appreciate that. Is there any objection from the Board to this language?

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

PROVIDE FEEDBACK TO PDT ON PROPOSED OPTIONS

CHAIR McKIERNAN: Well, that's awesome. Well, thank you, Pat. I think the PDT will be appreciative of that moving forward. Now we can go into the three issues that have been laid out before us. That would be standardizing measures upon approval of the addendum, establishing triggers in these management responses.

Then whether to create some language about Area 3 permit holders and making these rules different, and also issuing different stock tag types for the Area 3 fishermen fishing east and west. Why don't we bring up the issue of what should be standardized? Caitlin, do the five questions that you present get us to sufficient clarity on the three issues that you would like the Board to resolve?

MS. STARKS: I believe so. The questions on this slide here are related to that first issue. I think if we could handle them one at a time that might be easier.

CHAIR McKIERNAN: Sure, okay. First issue; is the Board interested in including Sub-option 2B for public comment. The PDT has some concerns about estimating impacts on SSB given available data, and the issue of enforceability of v-notching. It's my understanding that Issue 2B is a proposal where upon approval all the LMAs within the Gulf of Maine/Georges Bank stock would be required to notch all egg bearing females that come over the rail.

MS. KERNS: I have David Borden.

CHAIR McKIERNAN: David Borden, go ahead.

MR. BORDEN: Actually, I'm going to pass at this point, Mr. Chairman.

CHAIR McKIERNAN: Okay, so just to be clear. What we're doing in this conversation is we are deciding whether to leave some of these options on the cutting room floor and moving forward with a draft addendum that could be finalized by the PDT over the next three or four months, with this possibly not included or included. Are there any Board members who would like to speak to whether to include 2B?

MS. KERNS: I have three names, Dan. I have Steve Train, Ritchie White, and Cheri Patterson. I'm going to open up Steve Train's microphone, and his microphone goes live, just as an FYI when I open it up.

CHAIR McKIERNAN: Okay, Steve Train.

MR. STEPHEN TRAIN: Thank you, Mr. Chair. Good to hear from you, Dan. I'm in favor of this, but it's easy for me to say that, I already have it. You said earlier, you know regardless of the percentage of compliance we have it's still working. I mean it's not that I want to force it on any other zone, but I just don't see how anybody couldn't see the benefit of this with all the science we have behind it, so I'm in favor of including it.

CHAIR McKIERNAN: Thank you, Steve. Ritchie White.

MR. WHITE: I'm in favor of keeping this as well. Regardless of the percentage, we know that there is a certain amount that is being accomplished, and that is a positive. I think it is unfair for a zone to catch lobsters that have been v-notched in another zone, so I think leaving 2B in is an important factor.

CHAIR McKIERNAN: Ritchie, just to clarify. Lobsters that are notched in one zone and caught in another. If the standard of possession is similar, I'm not sure that this rule would affect that. But I hear you clearly that you would like to see this remain in the proposed document. All right, Cheri Patterson.

MS. CHERI PATTERSON: Thank you, Mr. Chair. I agree with both Steve and Ritchie. I think that this could be in addition to resiliency there is some information that indicates that it does work. It would also add to equality amongst all the LCMAs. Thanks.

MS. KERNS: Dan, you also now have David Borden's hand up.

CHAIR McKIERNAN: David Borden.

MR. BORDEN: I can support leaving this in, because what we're talking about is the requirement to mandate and not how we judge v-notch lobsters. For a public hearing document, I think this is fine to have this option out.

CHAIR McKIERNAN: All right, anyone else? It sounds like we'll be including this in the document, unless we get a groundswell of position. But is there anyone else who would like to speak on it at this time?

MS. KERNS: I just want to make sure Ritchie's hand is up just from before and not a new hand. I think it's from before.

CHAIR McKIERNAN: All right, no other hands, let's go to Caitlin's second burning issue, second question. Is the Board interested in considering an option to standardize the v-notch definition to 1/8 inch across all areas of the stock, or standardizing minimum depth of the v-notch and shape when it is cut? I think those are two separate issues.

Caitlin, I don't know if it would be possible for you to actually create this as a 2A or 2B, because I would like to address this separately. The first has to do with the v-notch possession definition, which is the recapture of a female lobster that appears to have a notch that may have molted over, and the depth of which this must be for it to be protected.

I guess the question that I would pose is, I'll put it out there. I'm assuming this would allow jurisdictions that have a zero-tolerance standard now to maintain that, because I know some jurisdictions are quite satisfied with the zero-tolerance language. Caitlin and Toni, can we assume that if a more standard definition was created that states with zero tolerance would be able to keep that?

MS. STARKS: I think it's up to the Board to define whether or not states can be more conservative than what is implemented. You know previously with this Addendum there was discussion about standardization. I think we've moved a little bit away from that. I would tend to say yes, it makes sense to say that a state could be more conservative on this particular measure of the v-notching definition. But I do think it's up to the Board.

CHAIR McKIERNAN: Yes, thank you, Caitlin, and as someone who has been around awhile, I'll just observe that the state of Maine has a prohibition on the landing of lobsters by dragger, even though the interstate plan and the federal plan allow 100 count per day. Maine has maintained that more strict rule, and I believe that rule has been held up in court.

I'm confident that legally a more restrictive rule would be able to be applied, and I'm not sure the Commission could prevent that. I just want that to be clear that this particular amendment wouldn't necessarily mandate a state that has zero tolerance to amend that. Let's take it out to the Board. Is there interest in creating a 1/8 inch across all areas within the stock, with the potential to maintain a zero-tolerance standard if a state chose to do that?

MS. KERNS: Pat Keliher from the Board, and I think Caitlin has something she wants to add.

MS. STARKS: Yes, if I could, Mr. Chair, I just wanted to put up the current measures so folks can see what the definitions are. As you can see here, we just talked about Area 1, zero tolerance requirements for v-notching possession, and really if there is a desire to let that stay, then zero tolerance for Area 1.

Then the only issue of inconsistency I believe is this Outer Cape Cod 1/4 inch versus 1/8 inch. I think that would also be resolved. Yes, that is something that would be resolved in Issue 2A, so it's maybe

doesn't make sense to include this as a separate issue if that's already resolved, if the desire is to let Maine be more restrictive than 1/8 of an inch.

CHAIR McKIERNAN: If I could take my Board Chair hat off for a second. The Massachusetts may want to go with the 1/8 inch for more standard measure within the state, and allow the states of New Hampshire and Maine to continue with a zero-tolerance standard. I'm not sure it's a moot point if the southernmost jurisdiction in Area 1 would like to see the more uniform measure. But I'll let the Board members weigh in. Any hands, Toni?

MS. KERNS: You had Pat Keliher and David Borden.

CHAIR McKIERNAN: Okay great, go ahead, Pat.

MR. KELIHER: I would, and I understand where Caitlin was going. But I would have no qualms of leaving it in. I mean Maine has zero tolerance; it's worked very well here. I can tell you whether you have zero tolerance, so a 16th or an 8th or whatever the measurement is. There is always going to be some interpretation of whether it is legal or not. We've dealt with this; I've dealt with it for over a decade now. Zero tolerance has worked for us, and we very likely, unless there was a major change within the industry, very much likely keep that in place. As long as it goes into the document with the understanding that jurisdictions can be more conservative, I'm fine with leaving it in.

CHIAR McKIERNAN: Thanks, Pat, that's helpful. David Borden. David, are you there?

MR. BORDEN: Excuse me. I'm on, Dan. I get a little bit confused discussing this, because we're using two or three different documents here. To me it would be a lot easier to deal with this if we just dealt with the document that the PDT circulated with the specific language in it. In other words, the language that has been put up on some issues is slightly different than the language in the document that got circulated, so it just adds to the confusion. What we're talking about on this item is Sub-option 2A, if I understand it. Is that correct, Caitlin?

MS. STARKS: Yes. Currently, I'm going to pull up the options as written that you are suggesting, David. We are talking about 2B, which is standardizing the v-notch requirement. The Board, I just heard, is in favor of leaving this in. Previously this option had an additional statement about standardizing the v-notch definition to 1/8 of an inch.

The PDT was not sure if that was something the Board was interested in, and so we're asking today if the Board would like that standardization of the v-notch definition to be considered as well across areas in the stock. Sub-option 2A is specific to inconsistencies within LCMAs. Sub-option 2B is getting at across LCMAs.

MR. BORDEN: See that's where I'm getting confused. I thought we just dealt with Area 2B.

MS. STARKS: We did.

MR. BORDEN: Didn't the last discussion deal with 2B?

MS. STARKS: Yes, this part of 2B, what has been proposed by the PDT is what the Board just dealt with. I heard that the Board is in favor of this staying in the document. What we're looking at now is potentially another option that would be to standardize the v-notch definition across LCMAs to 1/8th of an inch.

MR. BORDEN: That is the last portion of the last sentence in Option 2A, is that correct?

MS. STARKS: Yes. Option 2A is specific to inconsistencies within LCMAs. That will address the inconsistency.

MR. BORDEN: We're talking about a portion of another option, so I'm fine with that, Mr. Chairman, in terms of standardizing. I think that to the extent

that any standardization takes place, it should apply to a number of different areas. We may want to consider areas from the Mid-Atlantic on some of these provisions.

Just so that we don't have to deal with this repeatedly, I think jurisdictions should have the right to be more restrictive. Maine has chosen, and New Hampshire have chosen to be more restrictive, in terms of their implementation plan, and they should have that right going forward, so that we don't have to repeat that during each one of these discussions.

CHAIR McKIERNAN: Thank you for pointing that out, David. Caitlin, I just so it doesn't fall through the cracks, just so everyone is clear. The way I see this, then Massachusetts would be able to have a statewide 1/8-inch v-notch standard, because it would be able to adopt a 1/8-inch standard for its Area 1 fishermen.

I heard Pat not object to that, because the other northern states would be able to keep the zero tolerance at their discretion. But the way that the question was posed if we went forward with this, then there would be an opportunity to move from zero tolerance to 1/8 for Area 1 fishermen in Massachusetts.

MS. KERNS: Dan, can I just, It seems like there is a little confusion that comes here, and I just want to point out to everyone that the v-notch definition is standard across all the LCMAs except for Outer Cape Cod and Area 1, and Area 1 as you just said, we discussed the states can be more conservative. That is what, if you were to have a standard definition across all areas, then Area 1 would just be considered more conservative. But the only place we don't have that standard is Outer Cape Cod. The Mid-Atlantic states are already at this.

MS. STARKS: Dan, I do think I hear the question that you're asking, which is within Area 1 could Massachusetts allow their fishermen to use a 1/8 definition rather than zero tolerance. Is that what you're asking?

CHAIR McKIERNAN: Yes.

MS. STARKS: Okay, so I think if that is the desire of the Board is to standardize it to 1/8 of an inch across all areas, and just say that Maine can implement a zero-tolerance rule for their Area 1 fishermen. I think that is a different question than standardizing it to 1/8 except for Area 1, which would remain zero tolerance.

If you want to get some clarity from the Board on that. One comment on that is that I do think in general this Addendum is trying to improve stock health, and so I'm not sure if moving from a more conservative measure to a less conservative measure is consistent with that. I think that is one thing to consider.

CHAIR McKIERNAN: Thank you, Caitlin. Anyone else on the Board want to weigh in on this one?

MS. KERNS: I have Cheri Patterson and Sarah Peake.

CHAIR McKIERNAN: Cheri.

MS. PATTERSON: I agree with Pat. I think Maine and New Hampshire should be able to maintain the zero tolerance, so I would like to see that written in, to assure that more conservative measures are allowable. I really am struggling with if these numbers are what we're kind of basing some of our thoughts on maintaining some resiliency, how is this changing from zero tolerance to 1/8 in Area 1 be effective? Because Area 1 goes all the way down through Massachusetts state waters, so I guess I'm struggling with having Area 1 indicate 1/8 inch with or without setal hairs, and then Maine and New Hampshire maintaining that zero tolerance. What would be the benefit of resiliency to that possibility?

CHAIR McKIERNAN: That sounds like a rhetorical question, so I would still go back to you, Cheri. Are you opposed to including an option, or instructing the PDT to craft a rule where we would have 1/8 inch in all of Area 1, but the allowance to allow those two jurisdictions to maintain, well three

jurisdictions, if that is how the Massachusetts fishermen feel as well, to go with zero tolerance?

MS. PATTERSON: Well, I'm for putting it in the public document.

CHAIR McKIERNAN: All right, that's helpful. Sarah.

REPRESENTATIVE SARAH PEAKE: Thanks, Dan. I think if we're going to put this in the public document just for the sake of clarity, because I like some of my colleagues here on the Board are confused by this conversation, so I can imagine how the public will be confused if we don't carefully lay out what we mean, to carve out for Maine and New Hampshire, what Massachusetts wants to do in Area 1 in state waters.

I think it's important to be clear on this. But all of this sort of begs the question about why are we leaving Sub-option 2B in the document for public comment, because I think as I'm reading it anyway, what 2B purports to do is standardizing the measures across all LCMAs, which in general the Board is moving away from, and even within this conversation we're moving away from that, because Maine has a program that works well for them.

I know in my conversations with you and others at DMF and the Law Enforcement, zero tolerance has some enforcement issues, and what the practical matter of that is. But if it's going to be in there, let's put in all of these details about where the carve outs are going to be from the 1/8 inch with or without setal hairs.

CHAIR McKIERNAN: Okay, thank you, Sarah.

MS. KERNS: You have David Borden and then Steve Train.

CHAIR McKIERNAN: Okay, David followed by Steve. David.

MR. BORDEN: Yes, I'll just follow up on what Sarah said and reiterate what I said before, which is I think jurisdictions should have the right to be more restrictive. Two jurisdictions are doing that now, and they should have that right in the future. Then as far as the rest of the areas, we should have a standard definition for one reason and one reason only, one major reason, I should say is for to promote compliance. Enforcement officers should be able to go into a facility and look at a lobster tank, and pick a lobster out, and know what the definition is.

Not get involved in these discussions, oh I caught it south of the Cape, I caught it in state waters, and some of the other jurisdictions. We just complicate greatly the enforcement of these provisions by having disparate definitions, so we have to have a standard definition for the right of states to be more restrictive.

CHAIR McKIERNAN: David, are you suggesting that the language in the document proposed this new standard, but have an asterisk that any state jurisdiction within LCMA 1 would be allowed to maintain the existing more conservative standard, as opposed to carving out naming states?

MR. BORDEN: Yes, I don't think it's necessary to do a so-called carve out or jurisdiction. States should have the right to be more conservative. That's all, thank you.

CHAIR McKIERNAN: Okay, Steve Train.

MR. TRAIN: Actually, David said what I wanted to say, so I can step back. I see it as an enforcement issue, and I think it makes things easier for Massachusetts.

CHIAR McKIERNAN: Okay, thank you.

MS. KERNS: You have one more hand, Alli Murphy.

CHAIR McKIERNAN: Okay, Alli.

MS. ALLISON MURPHY: I'll start out by saying I see no problem with adding this to the document. It's a

reasonable option, and I think should generate some good public comment. I'll just note, you know with different jurisdiction potentially considering different definitions here that could make it challenging for us to try to complement the different states, so it's something that we'll be looking at and probably commenting on when it comes time. Thank you.

CHAIR McKIERNAN: You're welcome, Alli, thank you. Toni, anyone else?

MS. KERNS: That's all your hands.

CHAIR McKIERNAN: Okay, Caitlin let's go back to the questions and see if we can create some more clarity. Under 2 there is that second question, it has to do with standardizing the minimum depth of v-notching the shape when it is cut. I brought this up on a PDT call, because I think the jurisdictions just by chance. You know I don't think there was any intention to have a different standard.

I know in my state the definition of a v-notched lobster or the mandate for v-notching does prescribe a minimum notch size, I think it's 1/4, not to exceed 1/2 inch, so it's in that range. That is just one of the differences between states. I don't think that this is necessarily going to add to a lot of resilience, but it might be worthwhile having the states will get their v-notching requirements, that is for the active notching. I don't know if this requires a lot of debate. Maybe the PDT could examine that and come back with a recommendation as to whether or not this is necessary. Anyone on the Board object to simply asking the PDT to examine the state-by-state rules as to whether or not it would be appropriate to establish a minimum depth of notch in the act of notching. No objections to that?

MS. KERNS: I don't have any hands raised at this time.

CHAIR McKIERNAN: All right, I'm going to use my discretion to move on then, thank you for that. Okay Number 3, does the Board prefer to address the options under Issue 1 separately, no trigger, or part of the measures that would be implemented upon reaching the defined triggers? I think this is one of the trickiest parts of the impacts of this Addendum is that the longer we wait the more likely we're actually going to have to pull the trigger on something.

Because the purpose of the modified Addendum language was to get out ahead of stock declines, and stock declines appear to be occurring on our watch. These are really important questions. The PDT has recommended that some of these actions, such as the minimum size increase and even the more uniform v-notch standards at a minimum within the Outer Cape Cod state/federal jurisdictions be implemented without reaching that trigger.

Alternatively, we could adopt the 17 percent as a trigger, and if so the smart money among the TC members is that it is probably going to result in having to implement those triggerable actions right away. The fork test, the talk among some of the TC members is by the time next summer comes around, and we have another year under our belts of the ventless trap surveys, and the state trawl surveys and federal trawl survey, that we might be passing that 17 percent or reaching it.

This is an important issue for the Board to discuss now, whether they've seen enough, in terms of Kathleen's presentations on the decline of the indices, especially those that were well forecasted, given the reduced young of the year numbers. Can we get some discussion on whether we want to move forward with this as a Board, or do we just want to take it out to the public and have the public weigh in on undoing these as triggerable? Then we're going to have to get into what is the trigger. Let's have some open discussion about that.

MS. KERNS: I'm waiting for hands. I have Pat Keliher and then Ray Kane.

CHAIR McKIERNAN: Great. Go ahead, Pat.

MR. KELIHER: Mr. Chairman, mine is one more process. I think it goes to what Dave Borden brought up earlier. I'm having a little bit of trouble following around by using just this main slide. I think it would be very beneficial to put up the options from the document that was in the supplemental material, and work through that. At least that is how my brain is thinking about it.

CHAIR McKIERNAN: I appreciate that. Caitlin, can you accommodate that? I think we want to be in the Board guidance on Page 5, right?

MS. STARKS: Sure, I wasn't sure if Pat was looking for the options themselves or the question. But just to clarify, this question is asking whether all of these options for standardizing measures at final approval of the addendum. We're wondering if the Board would like these to remain as a separate issue, which is how it's currently proposed, or whether the Board prefers they be added to the options that would be implemented upon reaching a certain trigger. Those sub-options could be added to any of these options under Issue 2.

MS. KERNS: Dan, I think before I said you had Pat and Ray Kane and to this list, I'll add David Borden.

CHAIR McKIERNAN: Okay, so could you go back to the slide, or the previous page where we see the trap tag programs? Yes, I think under Sub-option 2C, Caitlin, we should probably just park that for a bit, because all these others have to do with biological measures and enforcement. This 2C is more of an administrative one. This might be, if the question is whether we do it right away or we do it eventually. I think the state administrators are still struggling with this, and may want to park that for now. But let me get Ray Kane's comments on these options.

MR. RAYMOND W. KANE: Yes, thank you, Mr. Chairman. It's more to the point, what does this Board want to do? I mean this was brought forth back in what, 2017, and we're four years into it? Are we going to be reactive or proactive in this management plan? That is my question.

CHAIR McKIERNAN: I think that question is what we're asking you as a Board member to comment on. Are we willing to make these actions upon approval of the Addendum, or do we want a trigger, and what should that trigger be? I know there are a lot of questions here. But Ray, do you have any recommendation?

MR. KANE: Well, I've heard already this morning that we're going to read some 17 percent all by this summer, so I think if we're talking about triggers it's going to have to be more than 17 percent. The other option I saw was what, 34 percent, 32 percent? Those are my feelings, but it's time the Board was proactive as opposed to reacting to public comment on this. I mean if we're trying to save a species or incorporate an FMP so we have a harvestable species, years down the road. I think it's time for the Board to take action on a trigger.

CHAIR McKIERNAN: Do I have David Borden next, Toni?

MS. KERNS: You forgot about Pat in there, and then David.

CHAIR McKIERNAN: Oh, Pat Keliher, sure. Go ahead, Pat.

MR. KELIHER: Just going back in time here to one of the prior meetings where we did task the PDT to develop triggers, and during that tasking I was clear, at least in my statement, and I think that's where the Board was going at the time, that we were going to be developing triggers for the future, not for something that would be triggered now.

Whether that is proactive or reactive, I mean we would certainly, depending on which triggers were chosen after we take this document out to public hearing. We could be much more proactive, because it's likely to be triggered before the document is even finalized. I am supportive of moving forward with triggers. I am concerned

about the lower end trigger, and would want to see some potential modification or new option, and I can come back to that later, if somebody else doesn't discuss it. Then within these options there is also around the minimum size, I believe the PDT asked for some guidance on where that minimum size should lie as it's being increased. I would recommend for 1A that it not go above 3-3/8, so it is consistent with the other areas.

CHAIR McKIERNAN: Okay, thanks, Pat. David Borden.

MR. BORDEN: There is a lot on the table here, but on the material that's on the board in front of us. That option, Option 2 as it's stated, says whatever those items are, and I'm not arguing for any of those items specifically. I'm just saying whatever is listed under Option 2 would get implemented when the Addendum is approved.

The PDT clearly recommended standardizing some measures for implementation upon approval was one of the keys that we should deal with. I think that should stay the way it is, and then we should have a separate discussion on the trigger options, which are futuristic in nature. That would be my guidance, this separate discussion. What management changes do we want to implement immediately upon implementation, and what would be triggered in the future? Then discuss them separately, because it gets very confusing when we try to comingle those two.

CHAIR McKIERNAN: At this point, David, Sub-option 2A, 2B, and the unnamed one, standardized v-notch. You're comfortable leaving all those in the document for immediate implementation, once the Addendum is approved, well within whatever the timeframe the jurisdictions can implement those changes, leaving it in the document as stated?

MR. BORDEN: We haven't discussed some of those, Mr. Chairman. I'm comfortable with some of those, but like 2C we haven't discussed.

CHAIR McKIERNAN: Understood, but the first three bullets we have discussed those, and are you comfortable with leaving those in the document as upon final approval? It sounds like you are, at least for public comment.

MR. BORDEN: Well, once again, Mr. Chairman, we haven't really discussed standardizing measures within each area, well, I guess we have, excuse me I'll withdraw that comment. I guess we've discussed three of these, and we have not discussed 2C.

CHAIR McKIERNAN: Okay, do we have any objection to leaving these three bullets in, the top three bullets that is called 2A, 2B, and the unnamed one, in the document. Recommending to the PDT that those go into the document. Okay that's good. Sub-option 2C, can I hear from the Administrative Commissioners, Cheri or Pat Keliher?

As the Director at Mass DMF, I think this needs a little bit more work among my colleagues, Cheri and Pat, because of all the administrative changes this would encounter. Can we get some conversation, Pat or Cheri about whether or not this is ready for primetime?

MS. KERNS: You have Cheri and then Pat.

CHAIR McKIERNAN: Thank you, Cheri.

MS. PATTERSON: I think this needs to get refined a little bit more, especially when we are talking about maybe changing trigger percentages, or if we're going to be talking about that, and how that would play into adding these standardized measures that could be notably increasing resiliency pretty quickly, if the trigger percentages are going to be adjusted in any way.

CHAIR McKIERNAN: Pat.

MR. KELIHER: I think, you know 3C is kind of leaning the direction that Maine is currently administrating our trap tag program now. Maybe what I would

recommend is that the three or four northern states, if Rhode Island wants to get involved as well, that we put a little work group together, kind of talk through, explain how we do it, so you would understand the administrative burdens that come along with the approach that we take.

It works, but again there are some administrative components to it I think that folks would need to have an understanding of. Maybe if we park Sub-option 2C until we have a conversation amongst jurisdictions, to check whether people like the idea of a more administratively burdensome approach.

CHAIR McKIERNAN: Okay.

MS. STARKS: If I could follow up, Mr. Chair.

CHAIR McKIERNAN: Yes, go ahead, Caitlin.

MS. STARKS: Based on these comments, I think my thinking is that it would make sense to leave this option in, where it is currently, and between now and the next time the Board meets, have the PDT have a discussion on that, maybe get those states to provide some explanation of the administrative process. We could include that information in the document, so that it can be discussed in the next Board meeting. Then if the Board wishes to keep it in for public comment they can, and if they don't it can be pulled out at that next meeting. Does that make sense?

CHAIR McKIERNAN: It does to me, any objections?

MR. KELIHER: No objections, I think it's a really good idea.

CHAIR McKIERNAN: All right, thank you, so just to repeat. It's going to be transmitted to the PDT that it's still a potential option, but the working group that Pat described will be convened in advance of that, and the PDT will receive a document from the working group as to the wisdom of that moving forward.

MS. KERNS: You have David Borden with his hand up.

CHAIR McKIERNAN: Go ahead, David Borden.

MR. BORDEN: I support that action. I think we may want to reserve some flexibility, depending upon what the conclusions are that come out of it, to extend it to other areas, other than the Gulf of Maine and Georges Bank. In other words, if there is a logic in changing the trap tag issuance process in numbers and percent, maybe that should also apply to Southern New England and the Mid states.

I would hope you would maintain that flexibility. Then the second point is a quick point, which I think it's critical on this issue. If you want effective enforcement of these regulations, we have to have a number of enforcement personnel involved in this whole issue. I'll just point this out that one of the ways people use to circumvent the trap tag requirement is the timing does not align particularly well with the fishery.

If these tags are issued so their new tags are viable on June 1st. Up until that date you put all your traps that have last year's tags in the water. Then when you get your new allocation of trap tags, you simply put more traps in the water with a new tag. In other words, some fishermen are not retagging traps.

If circumventing the requirement solely, almost entirely based on the date that we issue the tag. If we want compliance, I think we have to integrate the enforcement discussion into this as part of the recommendation, and specifically look at things like the timing in the area.

CHAIR McKIERNAN: Caitlin, I think based on David's comments, it would make sense to invite other jurisdictions, even beyond the area of Georges Bank and Gulf of Maine to maybe participate in that discussion, because there may be some issues to consider, or lessons learned among the

jurisdictions. Thanks for that, David. Okay, moving on.

I think at this point we should probably be talking about the triggers and the actions that would result from those triggers. I don't think there is any debate about the nature of the trigger itself. I think we're all confident in the TCs guidance about what that trigger will entail. But then the question becomes, how much do we want to change the biological measures and in response to what? Pat, you spoke earlier about wanting to act after a certain trigger is struck.

You know you made that motion in February. That guidance is still in play. The PDT appears to be asking if we would consider having an instantly pulled trigger or something that is not in the future? What is your feeling about that as the former maker of the motion? And I would welcome other Board members to weigh in, if I could put you on the spot on that, Pat. I apologize in advance, but I'm trying to get us from your motion back in February to where we are today with the PDTs guidance or question.

MR. KELIHER: I'm going to have to apologize, Mr. Chairman. I just ran down the hall to fill up my water glass, and was trying to listen as I was doing it.

CHAIR McKIERNAN: In essence, Pat. Your motion, which is still in play, the PDT is struggling with, because your recommendation, or the Board's. The Board of course voted this up, so it is the Board's motion that was approved, didn't really call for any change to the resiliency necessarily until a certain trigger was going to be met. I think we're all looking at these major changes to the minimum size and possible maximum size, as big resiliency contributions, or certainly to the spawning stock biomass. Can we get some discussion? I'm not going to put you on the spot to lead it, but I have a feeling you may be one of the first to weigh in, about whether or not we would like the document to go forward, to only have the triggerable actions, to have some actions.

Obviously, we have some proposals here, but some actions would occur right away. But on the bigger issues such as gauge increase sizes, if that's what's going to be adopted. What is the trigger and how far do we want to go? What's on the board right now is Issue Number 4. Is the Board willing to consider options that increase the minimum size to 3-3/8 or 3-15/32? I guess that's a fundamental question, so I would put that to the Board, because the PDT has asked, or do you want to put both in the document as options? Anyone.

MS. KERNS: I have Pat Keliher.

CHAIR McKIERNAN: Great, thanks, Pat.

MR. KELIHER: Number 4, is the Board willing to consider options that increase the minimum size. Are you suggesting that that would be automatic the way it would be going into the document? I still see that as related to the triggers. Where it's a trigger then it would increase.

CHAIR McKIERNAN: It is. Do we want to peel back the larger gauge increase, or drop it from the document? That is one question. The second one is, do we want to go right away or do we want it to be triggerable? There are all kind of options here.

MS. STARKS: Dan, if I could interrupt. I think I have some clarification that could help.

CHAIR McKIERNAN: Please do.

MS. STARKS: The PDT is not proposing necessarily, there are three options here for Issue 2 with the trigger mechanism. The first is two triggers, which would make changes to minimum and maximum gauge sizes. The second is one trigger, which would make changes incrementally to the minimum gauge size in Area 1, and then maximum gauge sizes in Area 3 and Outer Cape Cod, and then the third option is an option that would do things more immediately on a schedule.

Starting in 2023, the minimum size would change in Area 1, and then it would change again in 2025. That was an alternative that the PDT put forward, given the Technical Committee's advice that more immediate action could be more effective. The question I had on the screen is related to what minimum sizes in Area 1 the Board is willing to consider. As you can see on this slide, there is some bold text where we're not sure what minimum size to put in, as the option for public comment, because we're not clear on what the Board is looking for.

CHAIR McKIERNAN: Right, thanks, Caitlin. That is a good set of clarifying points. I guess my question to the Board is, is there interest in any of these alternative biological measures that is going to be instant, or are we still going to make it based on a trigger? That is most likely imminent, as Pat mentioned in his earlier comments. Go ahead, Pat.

MR. KELIHER: I think to Caitlin's question. Really for me it revolves around the minimum. If a trigger is pulled, at whatever level we could talk about later, the minimum gauge size would increase, and it would increase to what? I would suggest that the document shows it would increase to 3-3/8, not 3-5/32. I would remove the 3-15/32 from the document.

CHAIR McKIERNAN: Okay Pat, let's stop there. Is there any objection to Pat's recommendation?

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

CHAIR McKIERNAN: Great, okay hearing none, thank you, Pat. Then the two issues that stayed before us are, do we want to consider any actions such as Option 3, with no trigger and only affecting Area 1? Do we want to consider that, and do we want to put that into the document? Let's take comments on that, because then I'll go to the triggers of Option 1. Is there support to go to these more or less, not instantaneous, but phased in minimum size increases for Area 1 beginning in 2023, that are not trigger based?

MS. KERNS: We have David Borden.

CHAIR McKIERNAN: Go ahead, David.

MR. BORDEN: Given the Technical Committee advice on this and the PDT advice on this, they basically pointed out to the Board that, I mean we're growth overfishing, particularly the resource in Area 1. You've got these declining indices. If you want to do something to enhance the biological resilience of this stock, according to our new definition of objective.

The most appropriate way to do that is to raise size. I think there is a logical sequence of events to put in the document. One would be status quo, the second one would be a series of gauge increases, that would get triggered based upon implementation. Then the third option would be triggers that would be put off until the stock declines. That to me would be a logical sequence of options for the public to comment on.

I think we all know before going to the public hearings that the industry is going to be really sensitive about triggering minimum size limits, but that doesn't mean you don't want to ask them what they think and how to develop a good record on that for whatever one of those options you decide to implement finally.

I would support keeping an option in there for gauge increases upon implementation, as an option for public hearing purposes, to generate discussion on it, and also to frame the discussion on the trigger. Then if they don't like that then they can say, well I prefer a trigger which is not as conservative, but it's something we're going to do in the future. I think it's a good range of options.

CHAIR McKIERNAN: Is there anyone else who would like to speak, because it sounds like we have a path forward to keep these options? One based on the trigger of the new index, and the other cannot be triggered by the index, but to do it right

away, without looking at the percent declines in the index. If there is no objection to those, we'll keep those, any comments?

MS. KERNS: Pat Keliher.

CHAIR McKIERNAN: Go ahead, Pat.

MR. KELIHER: I think this is a question to David, if you'll so indulge me. It sounds like David was talking about potential for this to go out to public comment as is, but if I was hearing him right, it sounded like maybe there needs to be something in the middle here from an option perspective.

CHAIR McKIERNAN: It sounded to me like in the range of options, David, it sounded to me like you were leaving the door open for, let's say a Board member to make a recommendation of a different percent decline in the trigger. Is that my interpretation, to Pat's question?

MR. BORDEN: To Pat's question, Mr. Chairman, if I might. I'm suggesting just having a standalone option that basically would raise the minimum size at implementation sequentially, not talking about major changes. That I would point out is another discussion we need to have. Then you would have an alternative, which is the trigger.

The industry would have three choices, as I said before. Do nothing, minimum size changes, or minimum size changes potentially in the future if a stock declines. I think that's a good range, and given the fact that the TC analysis basically indicates that at least in the Area 1A, you can increase SSB by 38 percent.

Kathleen, correct me if I'm wrong. That is a huge increase in spawning stock biomass by triggering. Then the issue for the industry becomes, do you want to go there, yes or no, and how do you want to get there, which one of these options do you prefer? I think it's a good range of options to frame the discussion.

CHAIR McKIERNAN: Okay, David, I think that's helpful. Pat, are you comfortable with that?

MR. KELIHER: I am. Although while I'm concerned about moving forward with a document with a 17 percent trigger in it, because I think it will trigger almost immediately. I think the idea of an option that has a slightly higher percentage for a trigger may be appropriate to include in the document, so we have a broader range of options for industry to consider.

CHAIR McKIERNAN: Okay, well that advice could be captured, Caitlin, to the PDT, because the 17 percent trigger is essentially, it's almost an instantaneous action if the TCs forecast is correct. I think what Commissioner Keliher is asking for is the potential to have a trigger that might be higher than 17 that the industry could consider. Is that accurate, Pat?

MR. KELIHER: Yes, it is, Mr. Chair.

MS. STARKS: I just want to maybe ask a more pointed question. To get to Pat's suggestion. Would it make sense, is what you're asking to essentially take something like Option 2, and change that 17 percent to 32 percent? Is that what you're looking for, Pat?

MR. KELIHER: No, I think what I was thinking of is potentially even a new option, or you know an Option 1A, and instead of increasing the trigger or set as a trigger going off at 22, maybe it would be 20. I mean this is an industry target, right, so I'm not sure it's really based in good science, it's just where we start.

MS. STARKS: Okay, I think I understand, thank you.

CHAIR McKIERNAN: Well, Pat, that makes a lot of sense to me, because the instantaneous and 17 percent options are probably very close to one another. I think you're adding another option the industry could consider, so thank you. I think the other sort of unanswered questions is the reduction in the maximum size for LCMA 3 and OCC, down from the 6-3/4 to 6-1/2 or 6.

I don't know if that needs to be resolved now, but I think the PDT was kind of struggling with that. I don't know if we'll have the time to resolve that now. Is there any discussion that should be had on that? Does anybody want to weigh in, because I do want to move on. I think we're running out of time on this issue.

MS. KERNS: Two things, Pat Keliher your microphone is still open, and David Borden has his hand up.

CHAIR McKIERNAN: Go ahead, David.

MR. BORDEN: Sorry to speak so much, but this is a really important issue. On the triggers, if we structure the document the way I proposed, then we would have triggers. I think it makes perfect sense to have some option other than the options that we're presented with, and I'll be explicit. I think it's fine to keep a trigger at 17 percent in the document. That was the industry recommendation, and it's fine to keep the second trigger at 32.

I think we should have a second set of options on the triggers, and those would basically be a trigger at 20 percent, that would be 4 percent higher than we are now, and a second trigger that would be at 30 percent. That would be more conservative than the science-based trigger that was recommended by the technical folks.

The whole logic of that, I think, is that we're going to be in this position where when this goes out to public hearing, and you say to the average industry member we're at 16 percent, and the trigger is 17 percent. This is a knife edge type situation, just a wobble in the indices is going to put you over the value.

The concept of reducing the second trigger, making it more scientifically conservative, to balance out liberalizing the first one, I think would be appealing to some members of the industry, and I think that should be a second option. As far as the rest of the triggers in the document, I think they should be eliminated. That is probably a separate discussion, Mr. Chairman, but triggering action at 45 percent, at that point you've lost almost 50 percent of the value in a fishery that I think Maine estimates is worth 1.5 billion dollars. You will have lost 750 million dollars for coastal economies. We don't even want to consider something like that. This has to be prospective not retroactive. I think we should limit the triggers to Trigger 1, Trigger 2, the Option 1 and Option 2 with two different values. Thank you.

MS. STARKS: If I could follow up, Mr. Chair.

CHAIR McKIERNAN: Go ahead, Caitlin.

MS. STARKS: I just want to clarify that 45 percent is not being considered at all anymore, that was the recommendation of the TC and the PDT. We're just looking at a 17 percent and 32 percent at this point, but I think I hear you that we want to look at other options for 20 percent and 30 percent, and I think we can do that.

I think that is noted and the PDT can make those changes. What I'm still unclear on is for the purposes of public comment, what maximum size is the Board interested in considering, or is the Board interested in considering dropping it down to 6 inches for LCMA 3 and Outer Cape Cod, or 6-1/4 or 6-1/2.

I think we would like to get some guidance on what to consider just for public comment, and again once that goes out for public comment, the Board always has the opportunity to choose a final option that falls within the range. For example, if you were to take out 6 inches for public comment, you could ultimately choose something less conservative than that, which would be 6-1/2.

CHAIR McKIERNAN: But Caitlin, given that the PDT is still going to have a chance to go over this, do we need to make that decision as a Board now, or can we just leave it as small as 6 inches?

MS. STARKS: The PDT asked this question, because it couldn't agree amongst themselves, so that is why we're asking for Board guidance on it.

CHAIR McKIERNAN: We could try to get that Board guidance. Is there any objection to leaving it in the advice to the PDT that the Board would go as small as 6 inches, and seeks comments, or does the Board feel the need to either eliminate any reduction in the maximum size for those two areas, or eliminating one of them?

MS. KERNS: I have Pat and David with their hand up.

CHAIR McKIERNAN: Okay, Pat.

MR. KELIHER: First of all, I just want to just echo where David was, and how Caitlin rephrased that for the trigger of 20 percent and then an upper trigger of 30 percent. I really like that concept that David put on the table, and I think it would be something that would be well received within the document, compared to just leaving that 17 percent, so I would fully support that. As far as the upper max on Area 3. I would like to hear from, I think we've got three permit holders here in Maine, so I would like to hear what the other jurisdictions who have the predominant bulk of the permit holders in their jurisdiction. I would like to hear what they might have to say on that.

CHAIR McKIERNAN: Pat, to my question, are you comfortable just communicating to the PDT that you would like to just keep all the options available, to go as low as 6, either status quo or down to 6 inches?

MR. KELIHER: Yes, I certainly would be comfortable with that, but I certainly again, I don't have a lot of permit holders here right in the state of Maine who fish Area 3, so hearing from Cheri and David and yourself, as well as Jason, might be a good thing.

CHAIR McKIERNAN: Okay. Toni, is anyone else on the list?

MS. KERNS: Sorry, you have had David and then Cheri.

CHAIR McKIERNAN: All right, David.

MR. BORDEN: On the issue of the max size adjustment, so no one misinterprets what I'm going to say, that Area 3 has a long and distinguished history, I would point out, of taking proactive measures. I don't say that in a self-flattering manner. This is more, most of these measures were implemented by the Commission, and the National Marine Fisheries Service, based on recommendations from the people that preceded me in the Association.

I would also point out that most of the changes when there was any discussion of changing regulations to help the faltering Southern New England stock, the industry always recommended applying those additional restrictions throughout Area 3. Area 3 has developed a whole series of restrictions that were far more restrictive than they actually had to.

At the time, based on a desire to be more conservative and risk averse. Now when we get to this issue of lowering the maximum size. If I go to my members in the Association, I start discussing that. The first thing they're going to want to know is, what is going to happen in the area that catches 90 percent of the lobsters?

Lacking some kind of immediate action in that area, they are not going to want to alter the regulations in Area 3, and there is some logic for doing that. It's based on the fact that as our technical folks have already noted. You're not going to make major changes in SSB in the inshore area, in the stock area, based on fooling around with the maximum size in Area 3. It's just not going to work. I think any change in the Area 3 maximum size should be linked to the changes in the minimum size in the inshore area, would be my recommendation.

CHAIR McKIERNAN: Okay, so if we transmit that advice to the PDT then that should come out as a clear option in the document. That is what you're asking for, so I think that's reasonable. Cheri.

MS. PATTERSON: I agree with Dave. According to TC there is just not a lot of standing for adjusting the maximum in LCMA 3. I would go along with what David was recommending.

CHAIR McKIERNAN: Okay, and again, this is just advice back to the PDT, this isn't a final action by any means. I think that's good advice and it's well stated. I think those are the fundamental questions, right Caitlin, that we needed discussion on?

MS. STARKS: Yes, I think so. You know I was going to ask the question about the trigger levels, and I think that's already been answered for me as well.

CHAIR McKIERNAN: Good, okay. Well, we're running late in the agenda, so if there is no other discussion on that which we will communicate to the PDT, then I think we'll move on, if there are no objections. Hearing none, we'll move on. Thank you very much for that substantive discussion.

I know the PDT will appreciate as much clarity as we gave them.

PROGRESS UPDATE ON DRAFT ADDENDUM XXIX: ELECTRONIC VESSEL TRACKING DEVICES IN THE FEDERAL AMERICAN LOBSTER AND JONAH CRAB FISHERIES

CHAIR McKIERNAN: Next on the agenda is Progress Update on Draft Addendum XXIX: Electronic Vessel Tracking Devices in the Federal American Lobster and Jonah Crab Fisheries. I believe, Caitlin, do you have a presentation on that?

MS. STARKS: I do, I'm pulling it up, one second.

CHAIR McKIERNAN: All right, so I'll just talk while you're working there. I know that this is a really challenging issue among the states and ASMFC, because we really do need to work with our federal partners on this issue. Like a lot of things in lobster management especially, to get out ahead of federal partners, a lot of time the foundations of your measures just don't work out.

We're working very diligently with the GARFO office to try to make these as compatible as possible, to work out some of the questions on state and federal jurisdictions and standards. I think you're going to be speaking to that shortly. I want to thank the federal partners in advance for the cooperative work that they've done on this, and just so the full Board knows, that this is being worked on diligently behind the scenes, but is delayed somewhat by the need to make these compatible between the jurisdictions. Go ahead, Caitlin.

MS. STARKS: For some background. At the Lobster Board meeting in August, 2021, the Board initiated this Draft Addendum XXIX to consider vessel tracking requirements for federally permitted lobster and Jonah crab vessels. This action was initiated based on recommendations of a work group that the Board established in May, and aim to address the need for high resolution spatial and temporal data on effort in the fishery.

As the Board has discussed at the last few meetings, these data are critical for addressing a number of challenges associated with stock assessment, protected species interactions, marine spatial planning and offshore enforcement. Considering that the objective statement for the Addendum is to collect high resolution spatial and temporal data, to characterize effort in the federal American lobster and Jonah crab fisheries for management and enforcement needs. Again, these data will improve stock assessments, inform discussions on management decisions related to protected species, and marine spatial planning, and enhance offshore enforcement. So far, the PDT has met several times in the last few months, and has discussed what requirements would be needed for this program to ensure the data collection objective

is met. The PDT has broken those requirements out into three groups.

Separating out what is needed from the tracking devices and the vendors, what would be needed or required of harvesters, and what processes and rules would be needed at the state level to implement this program, and go into examples of each of those in the next slide. For the tracking devices themselves, the PDT has agreed on the preference for cellular-based tracking devices, given the low cost and accessibility when compared to satellite based systems.

In order to collect the spatial data at the resolution needed to identify fishing or hauling activity from transiting, the PDT recommends the devices be required to report their locations at a rate of 1 ping per minute. The PDT has had some discussions on whether it would be necessary to maintain that rate at all times, even when the vessel is tied up.

They ultimately agreed that the rate could be slowed down when a vessel is moored, but they did note that would require the devices to be capable of recognizing when that vessel is tied up at their dock and not moving. That would put the onus on those tracker devices and vendors to be able to do that.

The PDT also recommended that to be approved for this program, the devices must at a minimum meet the current requirement for precision and accuracy that are specified by the VMS program, and the devices must include the horizontal accuracy of the location data for each ping, as well as a vessel identifier.

They also recommended the devices must be able to provide data in accordance with ACCSPs trip locations API specification. The PDT has had some discussion about the Addendum needing to describe the process for approving devices for use in the fishery, and this has not fully been fleshed out yet, but it's possible that this could be a work group process at the Commission to approve devices for this program. Moving on to the PDT recommendations for harvester requirements.

The recommendation is to keep the language fairly basic and straightforward. For example, the Addendum could simply specify that if adopted, federal permit holders would be required to report spatial data via an approved electronic tracking device at the established rate, and that federal permit holders would be required to have the tracking device onboard their vessel and powered at all times when the vessel is in the water, unless the device is under repairs.

In terms of the state level requirements, the PDT recommendation is that the states would need to administer this program for their federal permit holders, and which federal permit holders are the responsibility of each state could be determined by the primary port identified by the permit holder.

The states would be responsible for verifying that those federally permitted harvesters have installed an approved device to their vessel, and certifying that installation before the vessel goes on a fishing trip. Additionally, there would need to be a process for associating the trackers with a new vessel or new permit holder, if the vessel ownership were to change. The PDT has started working through the processes that will be needed on the data side for this program. For data validation they recommend that GARFO would be responsible for ensuring harvesters are complying with the trip reporting requirements, and the states would be responsible for making sure the harvesters are reporting their required tracking data.

Again, in the case of vessels that land in multiple states, the Addendum would need to be clear on how the states would determine which federal permit holders they are responsible for. ACCSP will then be responsible for linking the tracked location data to the appropriate trip reports, and those are the basics, but the PDT is still working out the details of all of these data processes, in corroboration with some ACCSP staff on the calls, so

we will be providing more clear guidance on this moving forward.

To wrap up, this is the proposed timeline of this Addendum's development. We're currently in October, the Board is getting a progress update from the PDT, and after this meeting the plan is to continue with PDT meetings to develop a draft addendum for public comment. Given the Board's desire to get through this Addendum process relatively quickly, it's been proposed that the Board could meet to consider the Draft Addendum for public comment in December at a special virtual meeting.

If that is possible, then the public hearings and public comment period could occur in January of 2022, and then if desired the Board could have a second special meeting scheduled for late winter or early spring of 2022, where they could consider the Addendum for final approval. Under this timeline NOAA intends to complete the federal rule making process in time for a concurrent implementation with the states in 2023. That is my brief update on the development of Addendum XXIX, and I can take any questions.

CHAIR McKIERNAN: Thank you, Caitlin, well done. Are there any questions for Caitlin at this time?

MS. KERNS: We have Jason, Pat, David, and Steve Train. I just want to make sure it's clear, Dan, since a lot of the discussions that we've been having about trackers at the beginning were at times focused on maybe some of the northern states, but that as Caitlin had in her presentation, it would be any state with a federal permit holder would have to administer the program. This would also be impacting the states south of New England.

CHAIR McKIERNAN: Just a point of clarification. This is designed to monitor the trap fishery, vessels deploying traps. Is that still the expectation?

MS. KERNS: Yes.

CHAIR McKIERNAN: All right, Jason McNamee.

DR. JASON McNAMEE: Just a quick one, it has to do with a state validation. I was just curious. You know a couple states are doing stuff already with these devices, and we have systems. In general, the way it's validated as a state is communicating with the vendor, as far as it being, it was installed, it was installed correctly and it's operational. That's not with that in bounds, as far as the slide you had on that topic? Hopefully that made sense.

MS. STARKS: Yes, I think I've got you, Jason. I think it's worth noting that the Addendum, I think we intend it to be relatively open, so that the states can have flexibility with the processes that makes sense for them, to make sure those federal permit holders have these devices installed on their vessels.

But in general, I don't think that the vendors of these cellular tracking devices would be the ones that are installing them on the vessels, it would be that the harvesters are installing them, and someone would just need to make sure that those harvesters have the approved devices, and they are functioning to send in their data as required first.

CHAIR McKIERNAN: Pat Keliher.

MR. KELIHER: I want to just thank Caitlin for the presentation, and the work of the working group here. There is a lot that's been done in a short amount of time. Caitlin, can you go back to the slide where it talked about, I think it was compliance, and it referenced GARFOs role. I just want to make sure I understood that. The idea of data validation, GARGO responsible for trip reporting compliance and validation. Are you referencing here that GARFO is responsible for making sure that the unit is on as well? Just to clarify that, between that and the second bullet.

MS. STARKS: Sure, Pat. To be clear, this is saying GARFO is responsible for the trip ticket reporting, as they currently are for these federal permit holders. It would be the state's responsibility to make sure

that these tracking devices are reporting the location data for the federal permit holders.

MR. KELIHER: Okay, thank you. I misheard that the way you said it the first time then, thank you for that clarity.

CHAIR McKIERNAN: David Borden.

MR. BORDEN: Caitlin, on the issue of who this applies to. Most of the discussion that I've been privy to, and I've listened to a number of these prior discussions that talked about all federal permit holders, lobster permit holders having to comply with this. I'm a little troubled by this suggestion that we're going to only apply it to pot fishermen.

How about gillnet fishermen? How about trawlers? It seems to me that we have some elements of the fishery that at certain times of year they are trap fishermen, other times of year they are gillnet fishermen. I even know a few boats that comingle dragging with the gear. I don't know how anyone would manage that. To me it would be much cleaner if you've got a federal permit then you have to have a tracking device on. That is just an observation. I would hope that the Committee that's developing this would reflect on that point.

MS. STARKS: If I could follow up.

CHAIR McKIERNAN: Go ahead, Caitlin.

MS. STARKS: Thanks David for that question. I think the clarification here is that these trackers that we are proposing for this program would be collecting spatial data at a much finer resolution than VMS, which those federal permit holders in the offshore fishery that are not fishing with pots and traps, I believe are already required for the most part to use VMS. There is location data for those vessels, it's just not going to be through these finer scale tracking devices.

MS. KERNS: To add to that, the group did discuss, David the fact that we don't need the finer scale for the gillnet fishery, that their VMS data would provide the information that is needed, versus the finer scale that that fishery needs.

MR. BORDEN: If I might, Mr. Chairman. Is the requirement going to be, you either have a VMS on the boat or a tracking device? Maybe I can simplify this. If the answer to that is yes, then I think you've answered by question. I would simply note, there are a bunch of boats out there that don't have, or they do have VMS on the boat but they are not trap vessels.

I think you're going to find there is going to be a group of boats with federal permits that won't have one of the two. To me it is clearer if you just say, if you're a trap fishing vessel you have to have a tracker onboard. If you're going to fish with traps at any point during the year, and if you've got a lobster permit the rest of the lobster permit holders have to have either a tracking devise or a VMS.

CHAIR McKIERNAN: Okay David that's good advice, and because this is still a work in progress, I'm sure the Committee is going to take that into account. Steve Train.

MR. TRAIN: My question is, when this comes in, since we already have similar technology on the scallop fleet and the groundfish fleet. We know there is a failure rate. We know that there are boats that have to stay tied to the dock at times, while they wait for the unit to be changed out or a Tec to show up, so we're talking about a much smaller number of boats.

As we increase the fleet, it might be different technology with cellular. Are we going to have, I don't know what the term, the reference for that, soft opening or something? You know if these things aren't working, are we going to have people tied up instead of fishing because of a new rule we put in, and the technology isn't keeping up with it? I just want to make sure we've got room to try to make this work in the front end, before we start having boats tied to the dock.

CHAIR McKIERNAN: Steve, I'm hearing that as a recommendation to the PDT, and it is noted. Thank you for that. Toni, anyone else on the list?

MS. KERNS: I have no other hands, Dan.

CONSIDER NEXT STEPS FOR THE DEVELOPMENT OF A MANAGEMENT STRATEGY EVALUATION FOR THE AMERICAN LOBSTER FISHERIES

CHAIR McKIERNAN: Excellent, all right next is Considering Next Steps for the Development of a Management Strategy Evaluation for the American Lobster Fisheries. I assume Caitlin you have a presentation.

MS. STARKS: Jeff will actually be presenting. Maya, could you pull up the slide show, please? Making sure, Jeff, are you set to go?

MR. JEFF KIPP: I'm all set, thank you, Caitlin. As the Chairman laid out, I'll be going over some information for considering development of a potential lobster management strategy evaluation, which was postponed back at the August meeting. Going back to the May, 2021 Board meeting.

The Technical Committee presented some recommendations for developing a lobster management strategy evaluation. They proposed sort of an overall path being a prioritized two-phased management strategy evaluation for the Gulf of Maine/Georges Bank stock specifically, and the TC also provided a couple of recommendations, in terms of next steps for developing this potential MSE.

Those included forming a steering committee, sort of their guide development of the MSE, and to convene a Management Objectives and Goals Workshop. After the Board heard these recommendations, they ended up postponing further consideration of MSE development until the August, 2021 meeting, in order to prioritize work on Draft Addendum XXVII.

That brought us to the August, 2021 meeting, our last meeting where this Board met. Again, the Board met and reviewed and considered the TCs recommendations, specifically on the next steps for lobster MSE, and again that consideration was postponed, in order to prioritize workloads for the continuing ongoing actions for Addendum XXVII, and also the initiated Addendum XXIX Caitlin just went over.

That brings us back to considering this potential development of lobster MSE again at this meeting, so in terms of the TCs recommendations for next steps, again was to develop a steering committee. The purpose of this steering committee would be to complete additional scoping, including format of stakeholder outreach, and identifying funding and personnel necessary for an MSE.

The steering committee's charge would be to develop a comprehensive work plan, to ensure a successful MSE process, and not to direct content within the MSE process, which would be handled once that MSE was initiated. The MSE start date would depend on completion of the Management Workshop recommended and the outcome of the Steering Committee's findings.

The Steering Committee was recommended mostly based on some noted limitations in expertise during preliminary MSE discussions. There were things discussed like how important are economic considerations, and what sort of personnel would be needed to fully address those considerations.

The idea here was that we would have a steering committee with a comprehensive coverage of the expertise and folks that would be needed to include in an MSE. Those representatives recommended as part of the Steering Committee would be Board members, Technical Committee members, ASMFC staff, some industry stakeholders, folks from the Commission's Committee on Economic and Social Sciences, and also the Commission's Assessment and Science Committee. The Technical Committee noted that it would be valuable to have some members with applied management strategy

evaluation experience, and the Technical Committee recommended 12 or fewer members on this Steering Committee. The other recommended next step by the Technical Committee was to hold a formal Management Objectives Workshop.

The purpose of this workshop would be to obtain necessary stakeholder input and Board input on big picture goals for both the short- and long-term lobster fishery management to guide this focus of these two phases of this recommended Gulf of Maine/Georges Bank MSE. The Technical Committee noted the Menhaden Management Objectives Workshop that was held before doing ecosystem-based reference points, as a potential example to follow here for a Lobster Management Objectives Workshop.

The idea here would be that this would be conducted parallel to the Steering Committee's work, so that final recommendations from the Steering Committee are relevant to the objectives and goals for the future of the lobster fishery. I did just want to bring some recent developments to the Board's attention.

Since the last time the Board considered this topic at the August meeting, the Commission did hold a Management Strategy Evaluation Training Workshop, and there were several Lobster Technical Committee members that participated on that training workshop. Some promising sign there, and some formal exposure to MSE.

That's certainly a help in bringing some expertise on MSE into the lobster world here, but certainly some room to grow for MSE. This would be sort of the first full blown MSE process by the Commission, so kind of a new frontier here. Then the other thing that's been formalized now since the last time the Board met was that Yong Chen's lab, which is now at Stonybrook University.

One of their projects submitted for funding to Sea Grant has been funded, it's a simulation project. There are a couple of things from this project that are relevant to sort of ASMFCs direction on lobster MSE. First, this project will provide tools that would be necessary to support a lobster MSE, and then also this simulation project is sort of seen as a precursor to a traditional full blown management strategy evaluation.

It would include scenario testing, and I think the PIs on this project have noted that any sort of formal movement and development, in terms of a lobster MSE by the Commission, would certainly be beneficial to this project, to help guide some of those scenarios that are being tested within that simulation project. Just to bring us back to what I think the Board is to consider here under this agenda item. It would be the TCs recommended next steps, I think those are seen as the next steps here for development of a lobster MSE.

These next steps, I just wanted to note, are not intended to represent a commitment by the Board to the full MSE, it's more seen as sort of preliminary steps to an MSE, to get to a comprehensive work plan again, to understand fully what resources are needed, what a timeline would be dependent on, objectives and goals of the Lobster Management Board. I think for consideration here is whether we move forward with development of the Steering Committee, and that would be something where staff would work with the Board and TC members to populate the Steering Committee, and then the Board would meet back once that Steering Committee was populated, and review and determine whether there is consensus on that Steering Committee membership. The last time we had talked about this was the plan with this would be following the completion of Addendum XXVII.

As we've seen earlier this morning, Addendum XXVII is still in development, and also Addendum XXIX is as well. Then very soon here, we will be ramping up work on starting the 2023 Jonah crab stock assessment, which was formalized after the last Board meeting, and so there are again remaining several priorities that would overlap with

some of the folks that would be working on any potential development of an MSE, and are important to consider here.

Just to note, if there is no interest and/or sufficient resources at this time, the Board can postpone considering action to initiate an MSE indefinitely, and revisit this once those resources are freed up, instead of continuing to postpone this into each subsequent Board meeting, so just to pass that note along as well. That is all I have for lobster MSE, and I can stop and see if there are any questions on that.

CHAIR McKIERNAN: Thanks, Jeff. Given that we have ten minutes left in the meeting, I will welcome questions and comments, kind of simultaneously. Is there anyone who would like to ask Jeff a question or comment on this? I think it was a fairly clear presentation.

MS. KERNS: You have Pat Keliher.

CHAIR McKIERNAN: Great, okay Pat.

MR. KELIHER: Considering the competing Board priorities don't include either the ongoing whale issues or wind issues that we're all facing, I can't see moving ahead. I would recommend that we postpone MSE indefinitely at this time.

CHAIR McKIERNAN: Okay Pat, any other Board members wish to weigh in on this?

MS. KERNS: You have Jason.

CHAIR McKIERNAN: Go ahead, Jason.

DR. McNAMEE: I'm actually going to consider what Commissioner Keliher just said, so I'm going to hold off for right now.

CHAIR McKIERNAN: Anyone else?

MS. KERNS: I have no other hands.

CHAIR McKIERNAN: I think we need to give the Commission some signal here. Pat, do you want to speak to your recommendation in any more detail, or do you want me to just put it to the full board for some kind of a consensus vote?

MR. KELIHER: Yes, I think the detail really is around the priorities that we're all facing, right? I mean you can't go without saying that the whale issue alone is going to be a massive driver. Not to take anything away from the important work of the Addendums and the stock assessment that's going to come up. I don't see engaging a lot of staff in this at this time. I don't want to diminish its importance, it's a timing issue, and I think what Jeff put on the board, as far as potential action is appropriate at this time.

CHAIR McKIERNAN: Thank you for that honest assessment. Any other Board members?

MS. KERNS: You have Jason and then Cheri.

CHAIR McKIERNAN: Jason.

DR. McNAMEE: Yes, (muffled) for all of that. This is tough. I feel super disappointed. I think though, Commissioner Keliher is right. Just so much going on on this panel, and again it's all the same people that are impacted by all of these things, plus the stuff that aren't in this really short long list here.

I'm just not sure. Maybe I can ask a question, sorry, I'm struggling a little bit, given my disappointment. What does that mean to postpone considering action indefinitely? It doesn't make it go away forever, correct? Like we can pull it back up at some point, maybe next year at some point? That's a question.

CHAIR McKIERNAN: Jeff, do you want to answer that?

MS. STARKS: Or I can, Mr. Chair.

CHAIR McKIERNAN: Thanks, Caitlin.

MS. STARKS: Yes. If the Board chooses to postpone it indefinitely, it just means that we won't be bringing it up at the next meeting, or the next

meeting until the Board says, we want to talk about MSE again.

DR. McNAMEE: Okay, thanks, Caitlin. It's still alive, it just needs us to sort of prod it back into existence at some point, so that makes sense. With that I guess, you know I kind of support what Commissioner Keliher said. I think it probably makes sense to clear the decks a little bit here. I don't know that the decks every get completely clear with lobster and/or Jonah crab, but there is a lot sort of pending right now, so it does make sense to concentrate, get past those things, and then reengage on this, so thanks, Mr. Chair.

CHAIR McKIERNAN: Thank you, Jason, Cheri.

MS. PATTERSON: I just would not like to see the word indefinitely here. I would like to see postpone these actions until winter 2023, and have it brought forward again at that point in time.

CHAIR McKIERNAN: Pat, any objection to putting this off for about a year and a half?

MS. KELIHER: I don't have any qualms about doing it to a time certain, as Cheri has said. I was looking for more flexibility in case we could bring it up sooner, but in reality, we likely won't, so I'm fine with that approach.

CHAIR McKIERNAN: All right, so that is in the form of a motion, or is it just general consensus, no objection, we won't do a formal motion on that, so it's winter meeting of 2023 we'll reassess the potential for an MSE for the lobster fishery. Any other comments? Hearing none, thank you very much. Is there any other business to come before the Board this morning? Hearing none.

MS. KERNS: No other hands.

ADJOURNMENT

CHAIR McKIERNAN: Great, well thank you everyone, enjoy your four extra minutes for lunch, and thank you all for attending and for some great discussion today. I know the PDT will be pleased that I think we've given them some good guidance today, so thank you everyone, and have a great day.

(Whereupon the meeting adjourned at 11:56 a.m. on October 18, 2021.)

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

AMERICAN LOBSTER MANAGEMENT BOARD

Webinar
December 6, 2021

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

Draft Proceedings of the American Lobster Management Board Webinar
December 2021

TABLE OF CONTENTS

Call to Order, Chair Daniel McKiernan 1

Approval of Agenda 1

Public Comment 1

Consider Draft Addendum XXIX on Electronic Vessel Tracking in the Federal American Lobster and Jonah Crab Fisheries for Public Comment 1

Other Business 21

Adjournment 22

INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).

2. Move to approve Draft Addendum XXIX for public comment with the following modifications (Page 20):

   • Add language to prohibit tampering with devices
   • Add A5W permit to applicable permit table
   • Clarification of Section 2.2.5 on enforcement background
   • Provide a general range of costs of trackers/data.
   • Questions about applicability of tracking requirements.
   • Add language to specify how frequently vendors must PUSH data
   • Add option to allow for a state of federal waiver for permitted vessels to opt out from participating in the trap fishery

   Motion by David Borden; second by Megan Ware. Motion carried (Page 21).

3. **Move to adjourn** by consent (Page 22).

Draft Proceedings of the American Lobster Management Board Webinar
December 2021

ATTENDANCE

Board Members

Pat Keliher, ME (AA)
Sen. David Miramant, ME (LA)
Cherie Patterson, NH (AA)
Ritchie White, NH (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Dan McKiernan, MA (AA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Jason McNamee, RI (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Colleen Bouffard, CT, proxy for J. Davis (AA)
Maureen Davidson, NY, proxy for J. Gilmore (AA)
Joe Cimino, NJ (AA)
Peter Clarke, NJ, proxy for T. Fote (GA)
Adam Nowalsky, NJ, proxy for Sen. Houghtaling (LA)
David Stormer, DE, proxy for J. Clark (AA)
Roy Miller, DE (GA)
Mike Luisi, MD, proxy for B. Anderson (AA)
Pat Geer, VA, proxy for S. Bowman (LA)

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

Ex-Officio Members

Kathleen Reardon, Technical Committee Chair
Rob Beal, Law Enforcement Representative

Staff

Robert Beal
Toni Kerns
Maya Drzewicki
Tina Berger
Emilie Franke
Jeff Kipp
Mike Rinaldi
Julie Defilippi Simpson
Caitlin Starks
Deke Tompkins

Guests

Nicholas Buchan, MA DMF
Nathaniel Burola, MLA
Andrew Button, VMRC
Beth Casoni, MLA
Walter Chew
Bill DeVoe, ME DMR
Marianne Ferguson, NOAA
Joe Fessenden, Am. Comm. Fishing
Erica Fuller, Earth Justice
John Fullmer
Sonny Gwin
Amelia Harrington, Univ ME
Heidi Henninger, Offshore Lobster
Jay Hermsen, NOAA
Chip Lynch, NOAA
Patrice McCarron, MLA
Conor McManus, RI DEM
Zaid Mdaini
Nichola Meserve, MA DMF
Mark O'Brien. NorstarConsulting
Story Reed, MA DMF
Scott Shaffer, MA DMF
Burton Shank, NOAA
Somers Smott, VMRC
Lange Solberg
Rene St. Amand CT DEP
Kristina Thorpe, NOAA
David Thompson, BlankRome
Smit Vasquez, NOAA
Jesica Waller, Univ ME
Anna Webb, MA DMF
Craig Weedon, MD DNR
Jay Wegimont, RI DEM
Angel Willey, MD DNR

The American Lobster Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Monday, December 6, 2021, and was called to order at 1:00 p.m. by Chair Daniel McKiernan.

CALL TO ORDER

CHAIR DANIEL McKIERNAN: All right, welcome everyone to the American Lobster Management Board meeting. Today is December 6, 2021. My name is Daniel McKiernan; I am the Director at the Division of Marine Fisheries in Massachusetts, and the Board Chair.

APPROVAL OF AGENDA

CHAIR McKIERNAN: First on the agenda, I will ask for an approval of the agenda. Is there any objection to the agenda as drafted?

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

CHAIR McKIERNAN: Thank you, I'm going to declare that approved by consent.

PUBLIC COMMENT

CHAIR McKIERNAN: Next, well not on the agenda, I think we should probably give an opportunity for public comment. Is there anyone who would like to speak on anything not on the agenda?

A lot of the workload that will fall on them as well, as they proceed with their own rulemaking. At this time, I think Caitlin has a presentation. Caitlin, would you like to take it from here?

CONSIDER DRAFT ADDENDUM XXIX ON ELECTRONIC VESSEL TRACKING IN THE FEDERAL AMERICAN LOBSTER AND JONAH CRAB FISHERIES FOR PUBLIC COMMENT

MS. CAITLIN STARKS: Yes, thank you, Mr. Chair. Again, I'll be giving this presentation today on Draft Addendum XXIX to Amendment 3 to the American Lobster Fishery Management Plan, which is also Draft Addendum IV to the Jonah Crab Fishery Management Plan. I just want to make that note, but I will be referring to it as Draft Addendum XXIX, and it's on electronic vessel tracking in the federal lobster and Jonah crab fisheries.

In the presentation today, I am first going to go over the background on this action leading up to this meeting. The objective of the Addendum proposed action timeline, and then go into the details of the proposed management options. Then I'll wrap up

MS. KERNS: Giving it a second. I don't see any hands.

CHAIR McKIERNAN: Great, all right well thank you for that, Toni, and the Board. Today we have a Draft Addendum to approve for public hearing over the next month or two, it is an addendum that relies heavily on our federal partners. I want to thank the ASMFC staff, the ACCSP staff, state agency contributors, and of course those from NMFS who have worked diligently to bring this Addendum forward.

This in my opinion is a crucial issue for the sustainability of this lobster trap fishery. I have seen firsthand, and I'm sure the other directors have as well, the firsthand the challenges of trying to describe the footprint of this very valuable fishery in the face of offshore development of wind and aquaculture, and the need to understand the impacts of any conservation closures that will be designed to protect right whales and other endangered species.

I am really pleased today that this is coming forward. I know we're trying to fast track this is a way that accelerates its development. It is always a little more difficult when you have to work with another jurisdiction, namely the National Marine Fisheries Service, but I've been really grateful for their cooperation.

with the Board action for consideration today and next steps.

For the background. At the Lobster Board meeting in August, 2021, the Board initiated this Draft Addendum XXIX to consider vessel tracking requirements for federally permitted lobster and Jonah crab vessels. This action was initiated based on recommendations from a work group that the Board established in May, 2021, and aims to address the need for high resolution spatial and temporal data on effort in the lobster fishery, to address multiple challenges that are currently affecting the fishery, and will into the future.

The Board has recognized the critical need for these data, to characterize effort in the federal fisheries for several years prior to initiating this action. In February, 2018, the Board approved Addendum XXVI, and that was aimed at improving the spatial resolution of lobster and Jonah crab harvester data.

A one-year pilot program was also completed to test electronic tracking devices in the lobster and Jonah crab fisheries, with the goal of identifying appropriate tracking devices for use in these fisheries, and informing the Board on whether electronic tracking should be pursued. Then additional work was also performed, focusing on the data integration and hardware testing aspects of electronic vessel tracking.

The objective for this Addendum is to collect high resolution spatial and temporal data to characterize effort in the federal American lobster and Jonah crab fisheries for management and enforcement needs. Specifically, these data will allow for improvements to the stock assessment, inform discussions and management decisions related to protected species, as well as marine spatial planning efforts for other ocean uses, like land protected areas and aquaculture, and will also enhance offshore enforcement efforts.

The proposed timeline for this Addendum's development is shown here in this table. Again, this Addendum was initiated in August, 2021. The Plan Development Team has been meeting a number of times between then and now to develop the Draft Document, and today the Board is meeting to consider the Draft Addendum XXIX document for public comment.

Then if approved today, the public hearings could occur in January of 2022, and another Board meeting could be held in early 2022 to consider the Addendum for final approval. Following this timeline, the guidance we've gotten from NOAA is that it should be possible to complete their federal rulemaking process in time for the program to be implemented in the federal rules for fishing year 2023. With that I'm going to move into the draft management options that are proposed in the Addendum. There are just two options being considered. Option A is status quo, or no additional requirements for electronic vessel tracking in the lobster and Jonah crab fisheries. Then Option B proposes to implement electronic tracking requirements for federally permitted lobster and Jonah crab vessels with commercial trap gear area permit.

This would mean that all federal lobster and Jonah crab vessels with applicable permit, commercial trap gear area permit, would be required to install an approved electronic tracking device to collect and transmit spatial data, and that device would always have to be remaining onboard the vessel and powered on while the vessel is in the water.

The only exception to that would be if the state that is declared as the principal port of the vessel authorizes that device to be powered down. The intent of this is to allow for devices to only be turned off if the vessel is hauled out for repairs, or not fishing for long periods of time, or if the device itself has to be repaired.

Additionally, I want to make a note of this last item in red, which was not included in the draft document that you received in materials. But under Option B, the Law Enforcement Committee also recommends specifying that tampering with these devices would be prohibited, and if the Board agrees with that language, the intention is to add it

to the document before it goes out to public comment.

These are the federal permit categories for which the tracking requirements under Option B would apply. This includes all of the commercial trap gear area permits for Areas 1 through 5 and Outer Cape Cod. In the last row is the commercial trap gear Area 5 waiver permit, and that's the permit that allows Area 5 permit holders to be exempt from the more restrictive lobster trap gear specifications and trap tagging requirements, so that they can target black sea bass with un-baited traps.

It's in red on this slide again, because it's not currently listed in the draft document, but it is recommended that it be added before the document goes out for public comment. As another note, commercial trap gear Area 6 is excluded from the proposed electronic tracking requirements, because Area 6 is in state waters only.

In this table, these are the numbers of federal permit holders per state that purchased one of the applicable permits in 2020. To clarify, these numbers are the total permits purchased, but not necessarily all these were actively fished. We do not have the data for 2021, but this gives you a frame of reference to approximate the number of permit holders with their principal port in each state that would be required to have a tracking device under Option B.

In terms of the requirements for trackers and vendors, Option B in the Draft Addendum also include the list of minimum criteria and specifications that must be met by tracking devices and product vendors for approval for use in the fishery. First, the devices must be capable of collecting location data at one ping per minute for at least 90 percent of the fishing trip.

This is the rate that was determined to be able to differentiate fishing activity from transiting activity, and to allow the estimation of the number of traps per trawl. I want to note here that the Addendum does not specifically say that cellular devices must be used, but this collection and rate does make cellular the most cost-effective option over satellite. There is a choice there, but with current technology the expectation is that cellular would be the preference. Second, the data that are submitted in each ping must include the devices current date time, the latitude and longitude, and both a device and vessel identifier.

The minimum accuracy of these devices must be within 100 meters and the position fixed precision must be to the decimal, minute hundredth. The devices must have ruggedness specifications that allow them to function in the marine environment, and that can vary, depending on where the device is installed on the vessel.

Then for vendors, they must be able to push the location data to the ACCSP Trip Location's API. They have to provide customer service for the devices to the harvesters, and they must maintain the confidentiality of any personally identifying information and other protected data in accordance with federal law.

The implementation and enforcement of these tracking requirements would require several levels of administrative processes, including at the Commission level, state management agencies, and federal level. I will go through each of these in the next few slides. At the Commission level, a workgroup which would be comprised of state, federal and Commission staff would be established to approve the electronic tracking devices for use in the fishery.

Device approval would be based on required information that would be provided by the vendors to the working group, to demonstrate that they can meet the minimum requirements that are established in the Addendum. The working group would then build and maintain a list of approved devices and additional information on those technologies, so that the states know what devices are acceptable, and can provide that information to their harvesters.

Then additionally, the PDT recommends that changes to those tracking device requirements

could be made by this working group, with approval of the Lobster Board, and that would allow for this program to evolve with technology, as it inevitably changes and improves over time. Then at the state level, the states would be responsible for certifying that approved devices are installed on all vessels in the applicable permit categories before the vessel goes out on a fishing trip.

The state that is responsible for each permit holder would be determined by the principal port location declared on their federal permit. If the permit lists Gloucester as a principal port, then Massachusetts is the state that is responsible for certifying that permit holder has installed their approved tracking device.

The PDT recommended that its standard affidavit be used across the states to certify the devices installation. That language is included in Appendix B to the Draft Addendum for the states to use. Then GARFO would be providing the states with a federal trap gear area permit data needed, to determine which permit holders each state is responsible for. The states would also be responsible for providing support to permit holders, to help them with properly complying with the vessel tracking requirements. This doesn't mean that the states would be responsible for helping with installation or troubleshooting of the vessel trackers, rather that would be a task that would also impact the vendors. Then the states would also be responsible for data validation and compliance monitoring, including contacting permit holders if there are data issues that need to be resolved, like incomplete tracking data or mismatches between vessel trip reports and associated vessel track.

The states would also be the ones making sure that those track data being collected by their permit holders are coming in and meeting the specifications that are established in the Addendum. At the federal level, GARFO will be responsible for providing up-to-date information to the states on American lobster trap gear area permit ownership.

That would include the database information on vessel permit numbers, names, full ID, endorsements, issuance and expirations dates and permit holder information. Then GARFO will also incorporate federal lobster eVTR data into its quality assurance program, once the rulemaking is complete for implementing the federal harvester electronic vessel trip report requirements for a federal lobster permit.

This means that as eVTRs are submitted they will be further validated to ensure data quality, and any errors that are identified through that process will be resolved by GARFO outreach efforts to correct and resubmit trip reports. ACCSP will also have near real time access to the federal eVTR data, so that they can be used to identify fishing activity in the vessel tracking data that is coming in to ACCSP.

There are also recommendations in the Addendum for the data processes that are needed for this program. The main takeaway being that ACCSP will be housing the tracking data. ACCSP would receive the location data from the tracking vendors, and they would get the eVTR data from GARFO.

All of those data must be submitted in accordance with the ACCSP trip locations, API specifications, and with those data ACCSP will be able to match the vessel tracks with trip reports. Then as with all of the data that ACCSP handles, they'll maintain the data confidentiality in accordance with federal law, and allow data access to only the authorized entities with confidential access.

Regarding the trip report data, the state and federal agencies will remain responsible for ensuring compliance with data reporting requirements. GARFO will remain responsible for the validation of eVTR data, and the state management agencies would be responsible for validation of trip location data. To give you a general idea of the data flow and integration process for the vessel tracking data and trip data.

This diagram color codes the two data types with location data from trackers represented by blue, and trip report data in yellow. You can see that

from each vessel trip, location data would be collected on the vessel, sent to the tracking vendor, and then would go either straight to SAFIS before being matched with a vessel trip or could be sent to the eVTR system that would match the location and trip data before they go to SAFIS. Then on the bottom you can see the trip report data would similarly either go straight to SAFIS from the eVTR system without location data, or it would get matched with location data prior to going to SAFIS. That concludes my review of the Draft Addendum options and details, and now I just want to highlight the suggested changes to the document that I mentioned earlier. First, there is the Law Enforcement Committee recommendation on adding language to explicitly prohibit tampering with the tracking devices, and that language is proposed here in italics.

Then secondly, there is a recommendation to add the Area 5 waiver permit category to the list of applicable permits that would be required to use these tracking devices. Again, that Area 5 waiver permit allows Area 5 permit holders to target black sea bass with un-baited lobster traps. But since those permit holders would still be permitted to harvest lobster, the intent is to include them in the vessel tracking requirements as well.

With that, these are the Board considerations for today. First the Board can consider making any modifications to the Draft Addendum document, including those that I've mentioned already, or any additional changes. Then the Board can consider the Draft Addendum document for approval for public comment.

The next step if the Addendum is approved for public comment today is that the public hearings could be held in January of next year, and then following that comment period a virtual board meeting could be held in February or early march, outside the regular ASMFC winter meeting, to consider the Addendum for final approval.

If or when the Addendum is approved, the states could implement the requirements through their state laws and regulations, and NOAA would then go through the rulemaking process to include the requirements in the federal rules. That is the end of my presentation, and I'm happy to take any questions.

CHAIR McKIERNAN: Thanks, Caitlin. Board members, let's take some technical questions for Caitlin if there is anything you are confused by or you think needs clarification. Raise your hand to get into the queue.

MS. KERNS: Dan, in the queue right now I have Cheri Patterson first, Roy Miller, and then Megan Ware.

CHAIR McKIERNAN: Great, thank you. Cheri, my neighbor.

MS. CHERI PATTERSON: Thank you, Mr. Chair. I have a couple questions. On Page 5, on the Offshore Enforcement 2.5. the second paragraph. It indicates enforcement personnel have consistently noted the ability to determine where a boat is steaming versus hauling is critical to determining when fishermen are using illegal gear. Should that just be gear, because how can they determine if they're using illegal gear? I thought the whole purpose of this was to determine where they were fishing, so law enforcement could go out there and check the gear.

MS STARKS: Right, I think maybe we could clarify the language a little bit. But I think the idea is that without knowing where those gear are being set, they cannot go check them to make sure that they are legal. I could probably modify that sentence a bit.

MS. PATTERSON: Okay, thanks. On Page 10, the Federal Permit Data. The first sentence it indicates to successfully administer a vessel tracking program states will need access to up-to-date federal American lobster permit data. Is this going to be guaranteed by NOAA to be real time data, or just up to date? Sometimes up to date means a week over a period of time, as opposed to real time.

CHAIR McKIERNAN: Cheri, what do you mean by real time and which parameters are you looking to be updated?

MS. PATTERSON: Well, if we're having to validate vessels and their gear, and they are not showing up that they are permitted on a real time basis, as opposed to maybe every week or two-week update. This is something that we run into a little bit at times with trap tags.

Sometimes we have to wait for a period of time or give them a call to find out if somebody is permitted, in order for us to issue trap tags. It's not real time, necessarily. Whereas, if we're going to be validating tracking programs, I would like to see real time access, as opposed to a weekly up-to-date data.

MS. KERNS: Dan, I think we can help you some, and then I'm going to go to Alli Murphy. On the PDT level, Cheri, we have, we meaning ASMFC and state staff have specifically requested to NOAA that there is a notification that goes to the states, so we don't have to dig around the permits and find new people. That is what we have asked for. It hasn't been guaranteed to be responded in that way yet. It's something that I haven't heard the resolution on yet, but maybe Alli has a resolution.

CHAIR McKIERNAN: Alli.

MS. ALLISON MURPHY: I don't have a specific mechanism yet, but I know some of our technical staff are working with ACCSP staff to be able to provide this data to the states, I'm going to say in near real time, because it might be one of those things where, you know at the end of the day the data somehow gets refreshed and then becomes visible. We are working to provide this in very near real time to the states, to be able to administer this program. I just don't have that specific mechanism yet.

MS. KERNS: Dan, a lot of specificity for what the states and the Commission are asking NOAA is to provide a notification to us, not necessarily so that the data are available to us, because the burden on the states to find those individuals is significant, and if people are having to apply and check off permits at the NOAA Office, then we're hoping they will provide a notification to Julie. If you have a clarification for a resolution, we would love to hear it, but if there hasn't been a resolution yet, then I'm not sure it's helpful.

CHAIR McKIERNAN: Toni, given my experience with lobster permitting, it seems to me that the challenges you're describing, because this is a limited entry fishery and we don't have that much turnover in permits. Generally, people get them and drop them, and they are usually transferred between parties. It seems to me we're talking about transfers as a case, and a permit coming out of CPH, maybe, where all of a sudden, it's been activated. Are the those the kind of things that have been identified as needing to be near real time?

MS. KERNS: Yes. In addition, though, Dan, when the permit gets renewed, we would need to know that as well, obviously.

CHAIR McKIERNAN: Okay.

MS. KERNS: If someone goes from a non-trap gear to a trap gear permit, we would need to be notified of that.

CHAIR McKIERNAN: Got it, okay.

MS. PATTERSON: Thank you, that helps. Dan, I have one more question, is that okay?

CHAIR McKIERNAN: Yes, go ahead.

MS. PATTERSON: On Page 12, Trip Data. It has eVTR data must be submitted using a NOAA Fisheries, GARFO approved eVTR application. Currently, there is no eVTR data required of those that are lobster only permitted, is that correct? If that is correct, when is the start date? This might be a question for Alli. When is the start date of that? Is that starting in 2023, January or May?

CHAIR McKIERNAN: Go ahead, Alli.

MS. MURPHY: Good question. I think where I've been working away on that proposed rule, and I expect it to be out, you know hopefully in the next couple weeks. I think we're probably targeting January 1, 2023 for the start of the collection of logbook data for the federal lobster fishery.

MS. PATTERSON: Okay, thank you, Alli, because I think that we need to have this Addendum timed to when NOAA has the requirements for mandatory reporting for lobster. That's it, thank you, very much.

CHAIR McKIERNAN: Thank you, Cheri, Roy Miller.

MR. ROY W. MILLER: I'm wondering if I could ask Caitlin to bring up the language for the Area 5 waiver again, since we didn't see that in the draft that was previously sent to us. I may have an additional question.

CHAIR McKIERNAN: There it is, what is your question, Roy?

MR. MILLER: Caitlin, so see bass potters who take lobsters in Area 5, they would be required to have the vessel tracking gear that we're talking about here, or they wouldn't?

MS. STARKS: If included in this table then they would be required to have the vessel tracker. The idea is to take this out for public comment, and as you all are aware, when this comes back to the Board if there was a desire to remove it, that would be up to the Board. But I think the intent is to include it for public comment. It's a very small number of permit holders, but they do harvest lobster, and so getting those effort data on them for the purposes that we've described for this Addendum might be important.

MR. MILLER: The use of the nomenclature waiver confused me at first. I just wanted to make sure that these folks were included in the tracking requirements.

MS. STARKS: Yes, correct, that's the intention here.

CHAIR McKIERNAN: Okay thanks, Megan Ware, you're up next.

MS. MEGAN WARE: I have one question and one suggestion, if that's okay, Mr. Chair. I can hold off on the suggestion if you would like, but my question is. Caitlin, I had a question on the hundred-meter accuracy requirement. That sounds pretty lenient to me, and then it also said in that section that many of the trackers that have been looked at have a much better accuracy than those hundred meters. I was just curious why the PDT set 100 meters as the accuracy minimum. We are kind of ahead of that time I'll say, in terms of what technology is capable of.

MS. STARKS: My understanding is that that came from VMS, kind of trying to be in line with what the VMS requirements are. Yes, the cellular devices that have been tested are mostly much more accurate than that. But we didn't want to exclude, I guess, to just leave some room for things to change. I don't think there was a good rationale for coming up with another number. We believe all of the cellular devices that have been tested and looked at, and most of the other ones on the market would definitely meet that requirement, and would be better than that.

MS. WARE: Okay, thanks, that's helpful. I think maybe this is something we could just watch over for a couple of years maybe. If the tracking addendum is approved, to see if that needs tweaking or not, but I appreciate the answer. Then I had one suggestion/question we'll call it also. I'll also start just by complementing the PDT. I thought this was a really well written document.

One suggestion I had was, I noticed there was no information about cost in the Addendum, and I think the number one question we're going to get at public hearings is what is the cost of this. I'm wondering if some information on that could be added to the document. I realize we may not want to specify cost for specific companies, but if a general range could be provided, I think that might be helpful in kind of up front addressing some of the questions we'll get. In particular, highlighting

that the cost of the cellular device is less than typical VMS.

CHAIR McKIERNAN: I think that's a really good point. Caitlin, do you think it's possible to have a slide in the formal presentation that describes the margin of error around cost?

MS. STARKS: Yes, so my intention was definitely to include cost information in the information that I would present during public hearings. Like Megan said, we didn't include specific companies in the document and their cost information, because A, it's changing constantly, and B, we didn't want to kind of identify or single out companies and leave others out in the document. I would be happy to, either or both add a general range into the document itself if that's desired by the Board, and/or just present cost information during the public hearing.

CHAIR McKIERNAN: I think that would be great, and maybe I could follow up with a brief question. Having looked at the population of potential buyers of these devices, which means the sum within each state of who would be required to get this. That is a list of vessels that hold the permit, as opposed to active vessels. Is it likely that the cost per unit would change if the number of units sold was less, because of the list that we're showing in this public document might be higher, because it includes inactive vessels? Could that have an impact on cost, do you think?

MS. STARKS: That's a good question, and I'm not sure I have an answer. But my understanding is that the cost estimates were not based on a number, like a total number of trackers. I don't think at this point that is expected to change it, but I'm not sure.

CHAIR McKIERNAN: Okay, and if I could do another follow up question, and maybe this is for the folks over at NMFS, Alli. Is it possible to put a federal lobster permit into CPH? If we had a dual permit holder who wanted to fish in state waters and didn't want to participate in this program, they could put their federal permit into CPH, confirmation of permit history? Is that a scenario that is possible in your view? Please, go ahead, Alli.

MS. MURPHY: Yes, I think that is certainly a possibility. I think another caveat to this table is that because we were only considering, or the PDT was only considering boats that were in the water to need these devices that permits that are in CPH would not. I think if a vessel made that business decision, they wouldn't need this tracking device.

CHAIR McKIERNAN: Would that include a business that was in the water but fishing with other non-lobster trap gears?

MS. MURPHY: We don't allow, we treat all of the permits in a permit suite together, so it's kind of an all or nothing thing. Either the entire permit suite gets put in that confirmation of permit history, kind of on the shelf status, or it's on the vessel element.

CHAIR McKIERNAN: Understood, you can't parse out various federal aspects of the permit, it's all or nothing.

MS. MURPHY: Correct.

CHAIR McKIERNAN: Okay, great, that's a good clarification. All right, Toni, do we have any other hands up?

MS. KERNS: We have David Borden, but before you go to David, I just wanted to touch base on the cost question you asked. I know that in some of the discussions that states have had when using trackers in other fisheries. There have been discussions of number of permits and kind of bulk ordering, you may call it. I think that the number of permits and cost of devices could also depend on, in the end, how many different devices get approved. Obviously, the more types of devices that get approved in the larger pool of devices and potentials for competition gets wider. I think there are a lot of factors in there that may impact price.

CHAIR McKIERNAN: David Borden.

MR. DAVID V. BORDEN: I want to pursue the same issue that the Chair just pursued, and I'm looking at Option B, Caitlin, if you could put that up on the screen, please, so everybody will be clear. The first time I read through this, I basically read it in the manner that I assume that everybody with a permit and a trap allocation was going to have to put a tracker on the boat.

But then I kind of got to the realization of the point that Dan just made, which is we do have boats, for instance in Area 3, that they are not active boats, they don't fish. They may be in the water pursuing some other fishery. In some cases, they have all the traps, with the exception of numbers under 10, because you can't transfer numbers under 10, and Alli, correct me if I'm misspeaking.

But because you can't transfer traps under 10, I just don't see any reason to require somebody in that situation to put a tracker on their boat. They are not fishing in the lobster fishery, and that's the logic for it. But rather than have the Board get into the weeds on this, more than I'm already getting into the weeds on it. It might be useful to have more language put around that option.

In other words, ask a couple of questions. Should this apply to everyone with a trap allocation, or should this just apply to boats that are actively fishing in the lobster fishery, and get some input on that. I think that is going to be a question that various members of the public are going to raise.

For instance, another example would be, there are boats that have offshore lobster permits that are actively fishing in the red crab fishery, and they might have an end trap allocation on the boat, clearly, they are not lobstering. I think we've got to be clearer on where this applies, and then I have a question for Caitlin. Caitlin, could you put up the list of active boats? I think it's a previous slide. This is just, as I understand, this is a list of all the permit holders by state, so Rhode Island has 99 permits, is that correct?

MS. STARKS: Right, this is the number of permits purchased in each state, and that is counting as the principal port state in 2020, so it's not necessarily active permits.

MR. BORDEN: Does this include draggers?

MS. STARKS: No.

MS. KERNS: David, this only applies to the individuals that we think would need a tracker from the permits. There are more federal permits in each state that don't need trackers that can have lobster.

MR. BORDEN: Okay, so what I guess the point is the same. We're likely looking at a number less than this. In other words, somebody in Rhode Island may have a federal boat that doesn't fish at all, and therefore wouldn't be required to get a tracker.

MS. KERNS: Because they are not actually actively fishing.

MR. BORDEN: Right.

MS. KERNS: We don't know if these are active or not, and again these were the numbers.

MS. KERNS: Once again, as you move south, and Roy spoke about Area 5. As you move south into those offshore areas, only about half of the permit holders or less are actively fishing. I guess my point, Mr. Chairman, is I think we need more discussion on this, and maybe ask a couple of questions, because we may want to implement a slightly different definition of how this applies in the end.

CHAIR McKIERNAN: Yes, and it just dawned on me that there is a trap tag program, and those could be linked in some fashion, so that if a boat isn't ordering trap tags in a fishing year, then they are not fishing traps. We have that information. I guess the question I would ask, to follow up with what your questions are.

Would a jurisdiction be eligible to seek a waiver for a vessel like you just described? Let's say it's a Rhode Island boat with an 8-trap allocation that they don't want to put their permit in CPH, because

as Alli just mentioned, this suite goes together. It might be of benefit to see if we could create exemptions. David, are you suggesting that we add some questions to the document, so that we can get good feedback?

MR. BORDEN: Exactly, Mr. Chairman. I don't think the Board needs to sort through this, but if we ask some questions we'll get feedback from the industry, and then we can decide what the appropriate course of action is.

MS. KERNS: Dan, can I ask one follow up question?

CHAIR McKIERNAN: Yes, please do.

MS. KERNS: David, in essence what we as a PDT discussed is that if a boat that is using trap gear to catch lobster leaves port, then they would be required to have a tracker. That is in essence who we are trying to capture here.

MR. BORDEN: That's correct.

MS. KERNS: You would know if someone didn't have a tracker, because they would put in a catch report and you would have lobster on there but no track associated with them. That's how you would know that they weren't using a tracker. Are you feeling like that isn't being captured in the document?

MR. BORDEN: Yes, and I'm just nervous, because I don't understand the question Dan asked about, of all the possible combinations that boats can have, can a boat be in confirmation of permit history? Are there circumstances where boats will be in that, and then you've got this whole secondary issue of, do we really want somebody to put a tracker device if they only have 8 pots on the boat?

I know for a fact we can generate a list and circulate it to the Board from the Association. We can give you a list of all those boats that have 8 pot allocations, and the reason they only have 8 pot allocations is because they've consolidated all those traps on other boats. In the case of that boat with an 8-pot trap allocation, there is no need for them to have a tracking device on a boat, because they're not fishing.

CHAIR McKIERNAN: Toni, it seems to me there is a bit of a disconnect, at least conceptually on how a vessel is permitted versus what activities the vessel is conducting. What David is asking for, I think, is to ask the questions of the public, should the Commission's plan and ultimately NMFS regulations, allow vessels that are permitted for traps, but aren't fishing traps from being exempt, maybe with a state issued waiver, or something like that.

MS. KERNS: Okay, I think it would be helpful for someone to give us those questions that you are looking for us to ask, because I'm not sure we will capture all of them. Then if you let me know when you're ready to go to the public, there is some public with their hand up.

CHAIR McKIERNAN: Do we have any more Board members?

MS. KERNS: No.

CHAIR McKIERNAN: Okay, then we'll go to the public.

MS. KERNS: We have Sonny Gwin.

MR. SONNY GWIN: This is Sonny, I did have a quick question. I was looking at like Maryland, and you have eight vessels. Now out of them eight vessels, I believe some of them already have tracking devices. Would that be considered the same, or would you have to get another tracking device for the lobster fishery?

CHAIR McKIERNAN: Caitlin.

MS. STARKS: I'm thinking. I think the intent is that if you have a device that meets the requirements that are laid out in the Addendum, you would not have to get a separate one. Maybe I misheard the question.

MR. GWIN: I just wanted to hear that. I just wasn't sure that you didn't have to get a separate lobster tracking device, that if you already have a tracking device for another fishery that you would be good to go.

MS. STARKS: Yes, the distinction is that these devices that are being required in the Addendum have to be able to get that one ping per minute data collection rate. If the device can do that and it meets the requirements that are in the Addendum, then no, you don't have to get a different specific lobster device. But if it doesn't do that, then you would. This is just for, again trap gear, so something on a mobile fleet. We're not trying to capture mobile gear here.

CHAIR McKIERNAN: Sonny, if I could follow up. Are you envisioning a vessel that has a VMS that is satellite based?

MR. GWIN: I believe so, yes. I think the longline fishery, aren't they tracked? Am I correct in saying that?

CHAIR McKIERNAN: I would look for help from Toni.

MS. KERNS: I believe Sonny is correct, but again Sonny it's a VMS device, and so therefore it's not going to be pinging at one minute, it's going to be pinging at every 30 minutes or every 15 minutes. The reason you want that 1 minute ping rate is because we want to be able to see the difference between transiting and hauling, and then seeing those hauls, so that we can tell the difference between a 5-trap trawl and a 20-trap trawl. You wouldn't be able to see that with a VMS device.

MR. GWIN: Okay, got you. That is the answer I'm looking for. Then the other clarification, one more thing if I could, Mr. Chair.

CHAIR McKIERNAN: Yes, go ahead.

MR. GWIN: Like I know we have a vessel in Maryland that has a lobster permit, and it's on the bank, and he doesn't lobster fish now. I'm reading that right, if the water goes in the boat you have to get the device, but if he keeps that boat on land, and is using it just for permits, he will not have to get a tracking device, is that correct?

MS. STARKS: Yes, I believe that is correct.

MR. GWIN: Okay, I just want to clarify, thanks very much, I appreciate it.

CHAIR McKIERNAN: You're welcome. Toni, anyone else?

MS. KERNS: Yes, Maureen Davidson, and then David, your hand is up again, I'm not sure if that is on purpose or not.

MR. BORDEN: It is.

MS. KERNS: Maureen fist and then David.

CHAIR McKIERNAN: Go ahead, Maureen.

MS. MAUREEN DAVIDSON: I just wanted on Page 10, fourth paragraph, on a sentence that says that Data QA/QC and validation systems for each state must be developed and tested prior to implementation of the program. Each state plans to develop its own system? I'm just kind of curious what specifically are we going to have to develop and test prior to the program initiating?

MS. STARKS: I can try to answer it, Mr. Chair. I might ask for help. I think my understanding is that the states would be looking at the trip data that comes in, making sure that there are no mismatches between the trip reports and the track data. Making sure the track data are complete, and the states would need to set up a way to do this, so that they have a system in place to look at those track data, compare it with their trip report data, to make sure everything is looking good. That is the general, and I don't know if I can get into the details, but maybe Julie could help if she has something to add.

CHAIR McKIERNAN: Julie, are you out there?

MS. JULIE DeFILIPPI SIMPSON: Yes, Mr. Chair. Caitlin covered the majority of it, but yes, we will have those data available for the states, and we're going to try to put together different kinds of reports to help them be able to use the data in the way that they need to.

CHAIR McKIERNAN: Thank you, and if I could follow up. I think to her same question, but with a slightly different twist, compliance monitoring. Could that not include marine patrol observing a vessel coming ashore with lobsters and with traps, and sharing that with the folks in the data collection part of the state agency, and that could be part of the compliance? Hey, there's a lobster boat coming in home ported in your state, without any associated trackers. Wouldn't that also be part of compliance?

MS. STARKS: Yes, I think that is definitely something the states could implement. That is not something we specified in this document, but it is a process that definitely would fit under the compliance making sure that vessels have these trackers installed. I think we were thinking more from a data compliance aspect of being able to just look at the trip data and say, we have this trip with lobster catch, do we have the track data that is required of the trip?

CHAIR McKIERNAN: I have a general question for, probably Toni, since you've been around and seen a lot of these addendums come and go, and understand the dynamics of it. In my experience this is going to be an interesting one, because we're going to pass an addendum that may not have all the details about this level of state compliance.

Could you envision states getting together two or three years into this and say, we need to elevate the standards of compliance? Let's say my state isn't asking the environmental police to look for that, and other states would. Some of that unevenness, do you envision like an MOU among the states, or just maybe something that is short of an addendum, to fill in some of these details. What ASMFC plan mechanism could fill in those kinds of details, without us having a full-blown addendum to add the housekeeping stuff?

MS. KERNS: Dan, it is our intention to create a SOPs for administration, SOPs for approving devices, and a couple other pieces, which we will work on, present to the Board and come back. I think that those types of things could be a part of the SOPs document.

CHAIR McKIERNAN: Standard operating procedures.

MS. KERNS: Procedures, sorry, yes. It doesn't necessarily have to be called SOPs either, it could be general guidelines for the administration of this process for pieces that everybody would be generally that the states would be following, and then states could then be a little bit more specific within their own administration to carry out what they need to do.

CHAIR McKIERNAN: This could be a work product of the monitoring team that look at the compliance with the lobster plan in general. That could be just an added aspect when we do the annual compliance reports.

MS. KERNS: It could be a part of that or it could be something, if those aren't the right people to have that discussion, we can create a different group for trackers and have them meet annually, if necessary.

CHAIR McKIERNAN: You've envisioned kind of a vehicle for those kinds of details that will become apparent after this Addendum would be approved.

MS. KERNS: Correct, and we know that we're going to have a group of individuals that will be doing the vendor verification or device verification and applications, so there will already be that group. But Bob has his hand up as well. I don't know if he has anything to add.

CHAIR McKIERNAN: Bob Beal.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Just to add to what Toni said. You know I think the guidelines or SOPs or whatever this document is called is important, and something that is in the works. Just as a reminder though, if the Board wants to go

down the Atlantic Coastal Act noncompliance route with some of these provisions, and they want them to be binding that all states have to implement them.

Then those measures would need to be recorded in either an addendum or an amendment to the FMP. Including something in a guidelines document doesn't necessarily obligate all the states to comply with that, using the compliance definition under the Atlantic Coastal Act.

CHAIR McKIERNAN: Understood, thanks for that, Bob. Toni, any other hands up?

MS. KERNS: We have David Borden and then you have a member of the public again.

CHAIR McKIERNAN: Great, okay David Borden, go ahead.

MR. BORDEN: Under data integration you've got the words tracking vendors must be able to push location data. My suggestion there is we ask the technical people to insert a minimum standard there, how often. The reason I say that is enforcement is going to want to get access to this data, and we envision them getting access to this data to improve enforcement. When a boat is within 20 miles of the coast, they are going to know exactly where that boat is every minute.

But, we need to ensure that the data is being pushed on a routine basis so they can get it. It might be pushed once a minute, it might be every five minutes, I don't know. That is outside my league. But I think we should state how often in the document, so that it is standardized across all vendors. I've got another point, Mr. Chairman.

CHAIR McKIERNAN: Let me get back to your next point. Julie, can you speak to this? That is kind of a technical aspect, like how frequently the data is pushed.

MS. SIMPSON: I'm sorry, Mr. Chair, can you clarify. How often the data are pushed from the device?

CHAIR McKIERNAN: I think so. I think that was one of the details that is in the Addendum saying it must be pushed, and David Borden is asking that if it should be pushed at a minimum time interval or on a regular basis. Yes, go ahead, David.

MR. BORDEN: Yes, can I just interject this? The language says tracking vendors must be able to push. The way I read this is the device will ping the boat as soon as it comes within cell service the boat is going to get pinged once a minute. That pinging information goes to a vendor, what this is talking about is how often the vendor has to submit the data to the ACCSP program. All I'm suggesting is they put in a timeline there, so that it is standardized across vendors, that's all.

CHAIR McKIERNAN: Julie, is David onto something there? Is that accurate, his concerns?

MS. SIMPSON: Right, so if I were to say the sentence of like, all of the pings must be submitted to the ACCSP within X amount of hours of the trip ending and the boat docking, then would that fit the language you're looking for?

MR. BORDEN: I actually thought that this would be routine, like every couple of minutes. I had a conversation with one of the technical people the other day and said that they could do it so it's real time information not every hour. Most of these boats can cover ten miles in an hour, so if you want this device to be used to improve enforcement, we need almost real time information on the location of the boat when it's within cell service. That means the vendors have to push the data on a routine basis.

MS. SIMPSON: I think the key thing of what you said there, sir, is the within cell service. They usually leave cell service fairly quickly. The device itself will constantly be pinging while they are out on the water, but with the way that the cellular technology works, the pings that are recoded on that device won't be transmitted off that device to the vendor and to ACCSP, until that boat comes back into cellular range. This is one of those places where it does differentiate between something

more like the satellite, where the pings can actually be transmitted differently.

The device has to be within cellular range, in order to submit that. This is more of a post trip rather than a while the vessel is at sea knowing where that vessel is. I'm not a device expert, so I would defer to a few of the other public attendees who are more familiar with devices to correct anything that I may have said incorrectly.

MS. STARKS: If I could follow up, Mr. Chair.

CHAIR McKIERNAN: Certainly, go ahead, Caitlin.

MS. STARKS: Yes, I believe what Julie just stated is correct, and kind of the crux of what we're looking at with this program. The intention throughout the discussions with the PDT was not for real time vessel location data to be accessible by law enforcement or the states, given that limitation of needing the cellular service to transmit those location data.

The expectation is that these data would be selected during the trip, and then would get pushed to ACCSP after the boat is back into cellular service, after the data goes to the vendor and then gets pushed to ACCSP. I just want to make sure that that is clear to everyone. Yes, I think.

CHAIR McKIERNAN: Caitlin, it sounds to me like the uploading of the data once the vessel gets back into cellular service is one aspect, but then the data getting transmitted from the vendor to ACCSP is a second step. Am I correct?

MS. STARKS: Yes, I believe so. I think we could put in language for how often the data need to be pushed from the vendor to ACCSP. I think leaving it as a number of hours is probably more appropriate than minutes, in that case. But if we wanted to add language there, we could.

MR. BORDEN: That's all I'm asking, Mr. Chairman. That should be decided by the technical folks, not us.

CHAIR McKIERNAN: Sounds good. Okay, Caitlin, are we good?

MS. STARKS: Yes, I think so.

CHAIR McKIERNAN: Toni, anyone else?

MS. KERNS: You have members of the public.

CHAIR McKIERNAN: Okay, who is first?

MS. KERNS: First we have Sonny Gwin and then Mark O'Brien.

CHAIR McKIERNAN: Okay, Sonny.

MR. GWIN: I would like to see in the document when it comes out to the public to see what the active vessels would be, all the vessels. I think it would be a great thing to have the cost of some kind of cost, give us some kind of idea. Then also, I don't know if this is a question for the Board or for our state directors. When the states are doing all this work that they have to do, what is the cost of that going to be, and is that going to be transferred to the fishermen? I don't know who could answer that question. I just want to know, is the state going to take the cost of monitoring and doing all this, or is it going to fall back to the fisherman?

CHAIR McKIERNAN: Thanks, Sonny, Caitlin, is it possible for states to add another column to this table that would describe the number of active vessels in say the most recent complete fishing year for which we have data?

MS. STARKS: I can try to work with the states on that. We took this from the federal permit database, and so we haven't run this, I don't believe, Toni, like haven't validated these numbers with the states yet. I could send this table out to the states and try to get that information back, but I think that's a matter of whether the states are able to easily find out how many active permits they had in 2020.

MS. KERNS: David, I actually will come back and say differently than Caitlin. I do not think we can do

that in the amount of time that we will have to turn this document. Matching up federal permits with those vessels that are reporting is not an easy task, especially since there is not required reporting. We would have to go to dealer reports as well in some cases, and we just would not have time for that. Unless Alli can tell me, she could give me a list of active permit holders, but I'm pretty sure she can't, since she wasn't able to give it to us for this.

MS. STARKS: Apologies for my mis-answer.

MS. KERNS: I'm just trying to realistically have a timeframe in which we can get this out to public comment quickly enough. I have Alli with her hand up.

CHAIR McKIERNAN: Yes, well if I could, just back to Sonny. Sonny, I know for my state I'll want that number, and I'll ask my staff to do it. We have trip level reporting, so we could probably do that. I imagine some of the other states may want to have that just for their own edification or own incorporation into the approval of this. Toni, you said you had Alli?

MS. KERNS: Correct.

CHAIR McKIERNAN: Yes, go ahead, Alli.

MS. MURPHY: That is not something that's within my technical expertise to be able to get to you. But I'm happy to speak with our statisticians and see if that is a data request that I can put in, and see if I can get that within the timeframe that you're comment period and public hearings would take place in. I can't promise, but I can put that request in.

CHAIR McKIERNAN: Alli, if I could follow up. Wouldn't you need that information for your rulemaking? Would you not be turning to the states and asking us to estimate that parameter? Well, maybe it's a rhetorical question. I would expect you would, so maybe all of our individual states could try to come up with a precise number, or a ballpark figure of how many vessels we actually have fishing lobster who have federal permits.

MR. GWIN: A follow up question, please?

CHAIR McKIERNAN: Is this Sonny?

MR. GWIN: Yes.

CHAIR McKIERNAN: Go ahead, Sonny.

MR. GWIN: Do you know exactly, isn't there a control date for the American lobster in federal waters, and what is it?

CHAIR McKIERNAN: I'll turn to Alli. Alli, can you weigh in on the control date?

MS. MURPHY: I think we've had several control dates. I don't know the dates off the top of my head, but I think we've had a variety of control dates by management area.

CHAIR McKIERNAN: Each LMA has its own control date.

MR. GWIN: All right, thank you.

CHAIR McKIERNAN: How about Mark O'Brien from the public.

MR. MARK O'BRIEN: Yes, good afternoon, my name is Mark O'Brien, I'm a VMS telematics consultant, and I just thought I would add a couple things to some of the questions that Dave Borden asked. I've been through type approval with NOAA, with 50 governments and a lot of states.

Typically, on the pull data, they will pull the data every five minutes from our database, so it is fairly real time. Secondarily, the one thing that I would add to your specification is that if you have cellular trackers, they should be able to log up to 20,000 GPS reports, because if you're on a two-week trip and out of cellular range, you'll have to log 18 to 20,000 reports and uplink them when they come back into port.

CHAIR McKIERNAN: Okay. All right, thank you. Toni, any other comments or questions?

MS. KERNS: I have David Borden and then another member of the public, John Fullmer.

CHAIR McKIERNAN: Okay, David, we'll go to you and then we'll go to John.

MR. BORDEN: Yes, I just wanted to thank John O'Brien for clarifying that. If the technical people think that that is a good system to have to push the data every five minutes, that totally addresses my concern, so thank you for pointing that out, John.

MS. KERNS: Dan, to follow up from David's point. We will talk to the state folks that have been testing the devices, to figure out what is an appropriate timeframe for pushing the data to ACCSP.
CHAIR McKIERNAN: Okay, thanks. From the public, John Fullmer.

MR. JOHN FULLMER: I'm Jack Fullmer from the New Jersey Council of Diving Clubs. My question, the main question relates to the commercial dive boats, who also take lobsters. Do they have to have, some of these dive boats have a lobster permit and some of them don't, they're not required to, to service the diving public. The question is, what is the story relating to the dive boats?

CHAIR McKIERNAN: They have federal permits? You have a federal lobster permit?

MR. FULLMER: Some may have permits and some may not. They are not required to have a permit just to serve the divers.

MS. STARKS: I can try to respond, Mr. Chair.

CHAIR McKIERNAN: Yes, take a shot.

MS. STARKS: I think the way to be most clear about it is that if this vessel has a permit that's in one of the categories we listed in the table, then yes, it would be required to have a tracker, and if it doesn't then it would not. These are right now the applicable permit categories that are being considered for these tracker requirements. If the vessel has one of these permits, then yes, it would need a tracker.

MR. FULLMER: Two other questions.

CHAIR McKIERNAN: Go ahead, Jack.

MR. FULLMER: It seems to me that requiring the device to be on 24 hours a day while they are in the water in port seems a little extreme. What would happen if the boats power went off and the device turned off, and would they then be in violation?

MS. STARKS: I can try to respond. There is some language in the document already on the ping rate while the vessel is at berth. The idea is that if the tracker can identify the berth location of the vessel, it could automatically slow down the ping rate, so that it would only be pinging not every one minute, once every 24 hours until it leaves berth again.

That is if the device is capable of doing that, and I think many of them are. That would help with both our savings and data storage savings, although data storage really is not a concern, because my understanding is that these devices can handle a lot of data. But if the device can't recognize when it's at berth, then it would still need to ping at its one-minute ping rate.

That is to encourage these vendors to make it possible to determine the berth location, and be able to automatically slow that ping rate down. I think the other part is that from what I understand the power, we did not make power specifications in this document, because it depends on the device whether it would have its own battery backup or be hardwired into the boat, or be powered by some other way. There is a lot of flexibility there, and I don't think it's a concern that I've heard from the folks who have tested these devices that they would shut off just because they've been on overnight at port. But if I've mischaracterized that at all, anyone from the PDT is welcome to raise their hand and follow up.

MR. FULLMER: But the question remains, is he in violation if it goes off through not a fault of his own?

MS. STARKS: I guess the answer is, technically, it doesn't fit with the requirements of the Addendum but we've kind of put the requirement on the vendor to say your device needs to be able to stay powered at all times. The harvester's responsibility is to install an approved device, and if that device has been approved, it means that it should be able to maintain power as required, if that makes sense.

MR. FULLMER: Would there be a phone number that the captain could call to report that his power went off or something like that?

MS. STARKS: Yes, absolutely. That is, I think, part of the affidavit language as well as that the harvesters would notify the state that is responsible for them if there was a problem with their device, so that the states would be aware that it was not collecting the data that it was supposed to be collecting while the harvester works with the vendor to get that device back up and running.

MR. FULLMER: A third question. Who is paying for the tracking vendor? Does that go back to, it may relate something to your previous question really of the cost. But does that go back to the fisherman, or the state has to pay for it, or whatever?

MS. STARKS: Right now, I think that's not determined yet, but I think each individual state is having conversations about that, but I don't think we have an answer to that question yet.

MS. KERNS: Caitlin, I can add to that. Jack, there is a cost for the device, and then each of these companies have a subscription fee, in terms of the data that are associated with them. Some have very low-cost subscription fees, other ones have, I would say medium price subscription fees. You know as Caitlin said, it could be up to the state, but it's likely to be a cost for the fisherman on an annual basis. Dan, you have Eric Reid and Megan Ware.

CHAIR McKIERNAN: I wanted to follow up with Jack, and maybe Alli could help me answer this question. Jack, the dive boat vessel you described, it sounds like it's like a for-hire, like a charter vessel.
MR. FULLMER: Commercial dive boat, there are commercial dive boats, correct.

CHAIR McKIERNAN: Right, but those vessels aren't authorized to set lobster traps for commercial purposes, are they?

MR. FULLMER: No, unless they have the trap code. Some of them have, they had previously been involved in doing both, serving as dive boats and also doing their own trapping. That was what it related to.

CHAIR McKIERNAN: Yes, so it seems to me, Toni and Caitlin, that Jack brings up another example of a vessel that may be authorized to fish traps, but if they're only diving, I wonder if this should be an opportunity for the vessel owner to opt out of the tracking, especially if they didn't order trap tags and they weren't going to participate in the trap fishery. But I'm not sure what data on a dive boat's fishing location is going to give us, in terms of the objectives of this program.

MS. KERNS: Yes, and I can talk to Alli to see if those are separated or not.

CHAIR McKIERNAN: Yes, okay, very good. Toni, you had Eric Reid and who else?

MS. KERNS: Megan Ware.

CHAIR McKIERNAN: Okay great, go ahead, Eric.

MR. ERIC REID: Good afternoon. The vessel and the operator have a certain requirement to supply data to, it sounds like the states and the feds. My question is, what happens when the inevitable discrepancy arises between some entity and the data itself? You can't renew your permits unless all your paperwork is in perfect order, so what's the mechanism to solve discrepancies without having to call two states and the feds and the service provider? Has that been thought through at all, just

to streamline that process, which certainly will happen at least once or twice?

CHAIR McKIERNAN: Toni or Caitlin, do you want to take a shot at that?

MS. KERNS: Eric, I think what we're trying to do. Well one, to renew your permit having a tracker on your boat isn't a condition of renewing the permit, leaving the dock is the condition of the permit to use the tracker. If you're data aren't linking or syncing correctly, you know I think ACCSP is hoping to try to help out the states to create algorithms that would kind of indicate that to us, to give us warnings that things aren't meshing correctly.

Then from there we would say, mmm that's a problem of the device, or mmm, that's a problem of the user. If it's a problem of the device then the fishermen knows to go talk to the vendor. If it's a problem of the user, then maybe that's to go to the state and the state can help them perhaps figure out what's going on with the data.

MR. REID: Okay, so as far as matching up vessel number, trip number, et cetera, et cetera, that would be handled on a reasonably timely, in a fashion pretty timely, so we don't have to go back nine, ten, eleven months to figure out what went wrong.

MS. KERNS: That is our hope, and it is our hope that these sort of regular checks of the data through these magical formulas, I'll call them, will help us see that.

MR. REID: Okay, thank you, and just a quick follow up if I might, Mr. Chair.

CHAIR McKIERNAN: Yes, go ahead, Eric.

MR. REID: As far as if you're offshore and your tracker fails. I can tell you that in the scallop fishery and in some cases of other fisheries, if your device fails, you're getting a note from Uncle Sam saying, your trip is over you're coming home, so that's how that works in reality.

CHAIR McKIERNAN: Yes, I'm not sure this device can tell you it's failing until it goes to push the data when you get back into cell phone service. But yes, I think we'll learn as we go on this one. Thanks, Eric. Megan Ware.

MS. WARE: Not to harp on the pushing of data from one source to another, but I just wanted to confirm my understanding is true, and that when a vessel comes into port and gets cell service, whatever data is on that tracker will automatically be uploaded to the vendor, and then that would automatically be sent to ACCSP. My understanding is it's not a manual push, it's an automated push. Is that correct?

MS. KERNS: Megan, I'm going to phone a friend and ask either Bill DeVoe or Nick to answer that question.

CHAIR McKIERNAN: You could recognize them, Toni, if you want.

MS. KERNS: Okay, I know I've seen Nick on here already. Nick, do you want to answer that? I just need you to raise your hand so I can find you so you can speak. All right, you can go.

MR. NICHOLAS BUCHAN: Bill is definitely the expert on APIs, but the idea is that the data will be pushed from the vendor to ACCSP, if Bill is available to talk.

MS. KERNS: I just unmuted Bill to see if it goes automatically or not. You can go, Bill.

MR. WILLIAM DeVOE: Yes, thank you, Toni. Yes, so it's for the most part, once the device actually publishes that ping. I mean we typically won't see a couple second lag as that ping blows through the various data flows, eventually to ACCSP. Where there can be some delays, depending on the manufacturer of the device, is how long the cache data takes to upload.

For example, with our tracking devices, we're able to push one ping per second, so uploading the entire cache, while the device is out of cell service takes, the one-minute ping rate it takes 1/60 the

time that the device is out of cell range. But once the device actually pushes that ping, we see that in our databases within a couple of seconds.

CHAIR McKIERNAN: It's an automated process, not a manual, right?

MR. DeVOE: Absolutely, I'm not sure who the person would be pushing the manual button if there was one.

CHAIR McKIERNAN: Right, understood. Megan, are you good?

MS. WARE: I'm good, thank you, Bill.

CHAIR McKIERNAN: Toni, anyone else?

MS. KERNS: All right, Dan, I do not see any other hands at this time.

CHAIR McKIERNAN: Okay, so we have a few amendments, obviously the text in red. I mean we've had some other questions come up that have been raised that might improve the document. What do you recommend for us to capture some of those minor amendments into something that could be a motion, to approve this for public hearing?

MS. STARKS: Mr. Chair, I had been keeping a running list of the suggestions, and I think this covers it. I don't know if this looks good to you.

MS. KERNS: Caitlin, could you just add a little text so that people remember what Section 2.2.5 is?

MS. STARKS: Sure, that was on the enforcement background, so I will do that.

MS. KERNS: Just as a memory jogger.

CHAIR McKIERNAN: I guess to follow up on one of the issues that came up, because we want this to be embraced by the National Marine Fishery Service ultimately. I guess maybe a question for Alli. Should the Service consider exempting a vessel that has a permit but has not ordered trap tags and doesn't intend to be trap fishing? Is that something that the Service might want in this document? Is that something the Service would want to see in the final program? Alli, are you there?

MS KERNS: She has her hand up.

CHAIR McKIERNAN: Okay, yes go ahead, Alli.

MS. MURPHY: I think there are a number of ways that this could be implemented and you know I guess I would look to the Board and the PDT for the best way to do that. I mean on the federal side we have most of our fishery is that by issuing a permit you need to have a VMS. By having a federal permit, you need to have a VMS.

We have another fishery where we can issue that permit, but you have to have a VMS on and working before you take your first trip. We do have two models here, and I guess I think it's up to the Board and the PDT for how they want to design this and we can try to work with that.

CHAIR McKIERNAN: Are there any Board members that want to weigh in on that particular issue?

MS. KERNS: You have a member of the public.
CHAIR McKIERNAN: Who is that?

MS. KERNS: Sonny Gwin.

CHAIR McKIERNAN: Oh, go ahead, Sonny.

MR. GWIN: Yes, just to let you know that the Area 5 waiver, you would not buy trap tags, so I don't know how we would fit that in if you're buying the trap tags or not buying trap tags. But you would still have a federal lobster permit.

CHAIR McKIERNAN: And they are fishing traps capable of taking lobsters and that look like lobster traps. I guess I'm thinking about the case of the vessel that doesn't participate in the lobster trap fishery but have the lobster trap permit, and should there be an out for those vessels, like a preseason waiver?

MS. KERNS: David, I don't know how to resolve this problem specifically. I think I would need to have a couple of conversations with Alli to understand how some of these permit's work, and what people are doing, and I don't fully understand that right now. I think what we could do is just add an option for the ability to create a waiver.

That maybe we could go back to the PDT while the document is out for public comment to talk through that, to see if these waivers would actually be something that we need, or if we can resolve this issue some other way or not, and work through it there. I don't know how to move us forward otherwise.

CHAIR McKIERNAN: I think that's an excellent suggestion, Toni, is to put an option in there and accept public comment on the potential for the jurisdiction, I guess that would be NMFS, to allow for a waiver for a vessel, a permitted vessel that would opt out of participating in the trap fishery.

MS. KERNS: We would work with Alli to make sure we're crafting the option in a way that would be viable for rulemaking. You know, it might be that we can solve this problem some other way. But if this is what we need in order to move this Addendum out for public comment today, I think that this is the only thing that I can think of to do.

CHIAR McKIERNAN: Okay, I think it's a good suggestion.

MS. KERNS: Sonny, do you have a follow up to that specific point? Your hand is up again. He took it down. Then you had two Board members that had their hand up previously, the first was Ritchie White and the second was David Borden.

CHAIR McKIERNAN: Okay, Ritchie White, go ahead.

MR. G. RITCHIE WHITE: Just out of curiosity, when the data is pushed to ACCSP, does law enforcement have immediate availability at that point?
CHAIR McKIERNAN: Toni or Caitlin.

MS. KERNS: Actually, Caitlin had a conversation with Mike Rinaldi about this question earlier today. I think it depends on how we build the platform in which you can view the data for the states, and for Law Enforcement Committee. I don't want to say it's immediate, Ritchie. That hasn't been done yet, and so that platform hasn't been built yet. It is our intention to provide the information as quickly as possible, but I don't want to promise that it's real time until we've built the platform. Julie or Mike, if you want to fill in from there, if you have something different, please do.

MS. SIMPSON: I would just second what you said. That was what I would have said.

CHAIR McKIERNAN: All right, David Borden.

MR. BORDEN: Thank you, Mr. Chairman, are you ready for a motion?

CHAIR McKIERNAN: I could be, although the last bullet that Caitlin has on the screen. I wonder if we should say for a state or federal waiver, because I'm thinking ultimately this may be up to NMFS, but maybe state and/or federal waiver, just to include the Service in that. But yes, otherwise I would be ready for a motion.

MR. BORDEN: Okay, so I would move to approve Draft Addendum XXIX for public hearing purposes as perfected by the discussion today.

CHAIR McKIERNAN: Is there a second?

MS. KERNS: You have Megan Ware.

CHAIR McKIERNAN: Very good, discussion on the motion.

MS. STARKS: Maya, could you modify the language of the motion so that it says move to approve Draft Addendum XXIX for public comment with the following modifications. The motion had "approve." Is this okay, David?

MR. BORDEN: That's an excellent perfection.

CHAIR McKIERNAN: All right, do we have any hands up to discuss the motion?

MS. KERNS: We do, we have David Borden with his hand up, and Dan, just before you vote, if you could read the motion into the record once we're ready that would be great.

CHAIR McKIERNAN: I would be happy to. David Borden, you want to speak to the motion?

MR. BORDEN: I had my hand up erroneously, Mr. Chair, thank you.

CHAIR McKIERNAN: Anyone else, Toni?

MS. KERNS: I see no hands.

CHAIR McKIERNAN: Shall I read it?

MS. KERNS: That would be fantastic, thank you.

CHAIR McKIERNAN: All right, here we go. **Move to approve Draft Addendum XXIX for public comment with the following modifications: Add language to prohibit tampering with devices. Add Area 5W permit to applicable permit table. Clarification of Section 2.2.5 on enforcement background.**

Provide a general range of costs of trackers/data. Questions about applicability of tracking requirements. Add language to specify how frequently vendors must PUSH data. Add option to allow for a state or federal waiver for permitted vessels to opt out of participating in the trap fishery. Motion by Mr. Borden, seconded by Ms. Ware.

CHAIR McKIERNAN: Is there any objection to the motion as presented?

MS. KERNS: I see no hands.

CHAIR McKIERNAN: Are there any abstentions?

MS. KERNS: I see no hands.

CHAIR McKIERNAN: Any null votes?

MS. KERNS: I see no hands.

CHAIR McKIERNAN: Then by unanimous consent the motion is approved, so thank you.

OTHER BUSINESS

CHAIR McKIERNAN: Any other business?

MS. KERNS: David Borden has his hand up.

CHAIR McKIERNAN: Go ahead, David.

MR. BORDEN: Yes, Mr. Chairman, as you know, this has been one of the issues which I have advocated for a long time as a mechanism for protecting the lobster industry, given what we all know about it, in which you eloquently characterized at the beginning. I would just like to go on record as thanking Caitlin, and Toni in particular.

But all of the technical people that supported them, I think they really did a wonderful job of putting this together. It was a labor of love, I'm sure, and difficult, given some of the guidance we gave them. But I think they really did an outstanding job, so thank you very much.

CHAIR McKIERNAN: I agree, David, well put. Any other business or any other comments to come before the Board?

MS. STARKS: Mr. Chair, I have one item I wanted to address with the Board if that is all right.

CHAIR McKIERNAN: Yes, please do.

MS. STARKS: I just wanted to let the Board know that I sent out the list of Jonah crab Stock Assessment Subcommittee members for Board approval via e-mail, and I did not receive any objections to that list of task members, so that list is approved.

CHAIR McKIERNAN: Great, thank you, Caitlin. All right, can I get a motion to adjourn?

MS. KERNS: Before you do, David, I just wanted to say one more piece. Thank you, David Borden for those comments. The Committee has been working really hard, and I do appreciate all the help that they have given us. I know Caitlin has e-mailed all the states on public hearings, and so just please continue to work with Caitlin as quickly as you can.

We would like to try to get a press release out once all of those hearings have been finalized on the approval of the addendum for public comment, so just a little pitch to try to solidify those hearings as quickly as possible, and for those members of the public that are here today, we're going to have definitely some virtual hearings, and perhaps a couple in-person ones.

CHAIR McKIERNAN: Great, thank you, Toni. Any motions to adjourn?

MS. KERNS: I'm waiting for a hand. I have motion to adjourn by Cheri Patterson.

CHAIR McKIERNAN: All right, a second.

MS. KERNS: Megan Ware.

CHAIR McKIERNAN: All right, thank you, no objections?

MS. KERNS: No hands.

ADJOURNMENT

CHAIR McKIERNAN: All right, this meeting is adjourned, thank you everyone, have a great holiday season, be safe, and thanks for your attendance today.

(Whereupon the meeting adjourned at 2:40 p.m. on December 6, 2021.)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

November 30, 2021

Bob Beal
Executive Director
Atlantic States Marine Fisheries Commission
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22201

Dear Bob:

Acting within the authority granted under the Antiquities Act of 1906, President Biden issued a Proclamation on October 8, 2021, reinstating a prohibition on commercial fishing within the boundaries of the Northeast Canyons and Seamounts Marine National Monument, except for red crab and American lobster commercial fishing, which may be permitted until September 15, 2023. This new Proclamation reinstates the original prohibited and regulated activities within monument boundaries, consistent with the 2016 monument designation. This 2021 Proclamation also directed the Secretary of Commerce, in consultation with the Secretary of Interior, to manage the activities and species within the Monument under the provisions of the Magnuson-Stevens Fishery Conservation and Management Act and other applicable statutes. Both agencies are directed to prepare a joint management plan for the monument by September 15, 2023.

Therefore, by this letter, I am informing the Atlantic States Marine Fisheries Commission of our intent to work with the Mid-Atlantic and New England Fishery Management Councils to undertake an action to amend, as expeditiously as possible, all of their approved fishery management plans to reflect the action of the President and implement the appropriate fishing regulations for the Marine National Monument. We must also consult directly with the Commission, under the provisions of the Atlantic Coastal Fisheries Cooperative Management Act, in order to develop and implement necessary regulations for the American lobster and Jonah crab fisheries.

To support this effort, staff at the Greater Atlantic Regional Fisheries Office and the Northeast Fisheries Science Center have begun gathering the information and data necessary to implement the prohibitions and restrictions enumerated in the President's Proclamation. This process will culminate in Federal rulemaking consistent with the Magnuson-Stevens Act and the Administrative Procedure Act to issue new regulations amending the fishery management plans prepared by the Councils.

We have requested both Councils to take this issue up as a priority action in 2022. Should the Councils decline to take up this action, we would rely on the authority granted to the Secretary at section 304(c) of the Magnuson-Stevens Act to prepare such amendments as are necessary. As provided at section 304(c)(l)(A) of the Magnuson-Stevens Act, the Secretary may prepare an amendment to a fishery management plan if "the appropriate Council fails to develop and submit

to the Secretary ... any necessary amendment to such a plan."[1] Pursuant to the procedures required under the Magnuson-Stevens Act for such Secretarial action, we would, at a minimum, conduct public hearings and submit the proposed amendments to the Councils for consideration and comment.

In either case—Council-led amendments or Secretarial amendments—our objective is to complete the action and implement the necessary regulations within two years. In striving to meet this objective, we would seek to address prohibited and permitted activities, and to provide clear guidance for affected fisheries on operations within, transiting, or occurring near the Monument within the Magnuson-Stevens Act regulatory framework by which such fishing activities can be most effectively regulated.

We look forward to working with the Commission on this action as we move forward in 2022. Please contact Sarah Bland, Assistant Regional Administrator for Sustainable Fisheries, if you have any questions or would like to discuss further (Sarah.Bland@noaa.gov, 978-281-9257).

Sincerely,

Michael Pentony
Regional Administrator

[1] The full text of section 304(c), with respect to the Secretarial preparation of fishery management plans or amendments to such plans reads as follows:

> (c) Preparation and Review of Secretarial Plans.-(1) The Secretary may prepare a fishery management plan, with respect to any fishery, or any amendment to any such plan, in accordance with the national standards, the other provisions of this Act, and any other applicable law, if-(A) the appropriate Council fails to develop and submit to the Secretary, after a reasonable period of time, a fishery management plan for such fishery, or any necessary amendment to such a plan, if such fishery requires conservation and management; (B) the Secretary disapproves or partially disapproves any such plan or amendment, or disapproves a revised plan or amendment, and the Council involved fails to submit a revised or further revised plan or amendment; or (C) the Secretary is given authority to prepare such plan or amendment under this section.

Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM XXVII TO AMENDMENT 3 TO THE AMERICAN LOBSTER FISHERY MANAGEMENT PLAN FOR PUBLIC COMMENT

Increasing Protection of Spawning Stock in the Gulf of Maine/Georges Bank

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. However, comments on this draft document may be given at the appropriate time on the agenda during the scheduled meeting. Also, if approved, a public comment period will be established to solicit input on the issues contained in the document.

January 2022

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Public Comment Process and Proposed Timeline

In August 2017, the American Lobster Management Board (Board) initiated Draft Addendum XXVII to increase the resiliency of the Gulf of Maine/Georges Bank (GOM/GBK) stock. Work on this addendum was paused due to the prioritization of work on take reduction efforts for Atlantic right whales. The Board reinitiated work on Draft Addendum XXVII in February 2021, and has since revised the goal of the addendum to consider a trigger mechanism such that, upon reaching the trigger, measures would be automatically implemented to increase the overall protection of spawning stock biomass of the GOM/GBK stock. This management action was initially in response to signs of reduced settlement and the combining of the GOM and GBK stocks following the 2015 Stock Assessment, and more recently in response to a continuation of those trends observed in the 2020 Stock Assessment. This document presents background on the Atlantic States Marine Fisheries Commission's management of lobster, the addendum process and timeline, a statement of the problem, and management measures for public consideration and comment.

The public is encouraged to submit comments regarding the proposed management options in this document at any time during the addendum process. The final date comments will be accepted is **Month, Day 2022 at 5:00 p.m**. **EST.** Comments may be submitted by mail, email, or fax. If you have any questions or would like to submit comments, please use the contact information below.

Mail: Caitlin Starks
Atlantic States Marine Fisheries Commission
1050 N. Highland St. Suite 200A-N
Arlington, VA 22201
Fax: (703) 842-0741

Email: comments@asmfc.org
(Subject line: Lobster Draft Addendum XXVII)

May – Dec 2021	Draft Addendum for Public Comment Developed
January 2022	Board Reviews Draft and Makes Necessary Changes
February 2022	Public Comment Period Including Public Hearings
May 2022	Board Reviews Public Comment, Selects Management Measures, Final Approval of Addendum XXVII
TBD	Implementation of Addendum XXVII Provisions

Table of Contents

1.0 Introduction 1
2.0 Overview 2
2.1 Statement of Problem 2
2.2 Status of the GOM/GBK Fishery 2
2.3 Status of the GOM/GBK Stock 3
2.3.1 2020 Stock Assessment 3
2.3.2 YOY Surveys 4
2.3.3 Ventless Trap Surveys and Trawl Surveys 5
2.4 Economic Importance of the American Lobster Fishery 5
2.5 Current Management Measures in the GOM/GBK Stock 6
2.6 Biological Benefits of Modifying Gauge Sizes 7
2.7 Potential Benefits of Increasing Consistency of Measures 8
2.7.1 Stock Boundaries 8
2.7.2 Improve Enforcement 9
2.7.3 Interstate Shipment of Lobsters 9
3.0 Proposed Management Options 9
3.1 Issue 1: Measures to be standardized upon final approval of Addendum XXVII 9
3.2 Issue 2: Implementing management measures to increase protection of SSB 11
3.3 Implementation of Management Measures in LCMA 3 15
4.0 Compliance 16
5.0 Recommendations for Actions in Federal Waters 16
6.0 References 16
7.0 Tables and Figures 17
Appendix A 21
Appendix B 29
Appendix C 48

1.0 Introduction

The Atlantic States Marine Fisheries Commission (ASMFC) has coordinated the interstate management of American lobster (*Homarus americanus)* from 0-3 miles offshore since 1996. American lobster is currently managed under Amendment 3 and Addenda I-XXVI to the Fishery Management Plan (FMP). Management authority in the Exclusive Economic Zone (EEZ) from 3-200 miles from shore lies with NOAA Fisheries. The management unit includes all coastal migratory stocks between Maine and Virginia. Within the management unit there are two lobster stocks and seven management areas. The Gulf of Maine/Georges Bank (GOM/GBK) stock (subject of this draft addendum) is primarily comprised of three Lobster Conservation Management Areas (LCMAs), including LCMA 1, 3, and Outer Cape Cod (OCC) (Figure 1). There are three states (Maine through Massachusetts) which regulate American lobster in states waters of the GOM/GBK stock; however, landings from the GOM/GBK stock occur from Rhode Island through New York and these states regulate the landings of lobster in state ports.

The Board initiated Draft Addendum XXVII as a proactive measure to protect the GOM/GBK spawning stock. Since the early 2000's, landings in the GOM/GBK stock have exponentially increased. In Maine alone, landings have increased three-fold from 57 million pounds in 2000 to a record high of 132 million pounds in 2016. Maine landings have declined slightly but were still near time-series highs at 101.8 million and 96.6 million in 2019 and 2020, respectively. However, since 2012, lobster settlement surveys throughout the GOM have generally been below the time series averages in all areas. These surveys, which measure trends in the abundance of newly-settled and juvenile lobster, can be used to track populations and forecast future landings. Consequently, persistent lower densities of settlement could foreshadow decline in recruitment and landings. In the most recent years of the time series, declines in recruit indices have already been observed.

Given the American lobster fishery is one of the largest and most valuable fisheries along the Atlantic coast, potential decreases in abundance and landings could result in vast economic and social consequences. In 2016, the at-the-dock value of the American lobster fishery peaked at $670.4 million dollars, representing the highest ex-vessel value of any species landed along the Atlantic coast that year. Ex-vessel value has since declined slightly but not proportionally to declines in landings. The vast majority of the overall landings value (>90%) comes from the GOM/GBK stock, and more specifically from the states of Maine through Rhode Island. As a result, the lobster fishery is an important source of jobs (catch, dock side commerce, tourism, etc.) and income for many New England coastal communities. The lack of other economic opportunities, both in terms of species to fish and employment outside the fishing industry, compounds the economic reliance of some coastal communities on GOM/GBK lobster – particularly in Maine.

Draft Addendum XXVII responds to signs of reduced settlement and the combination of the GOM and GBK stocks following the 2015 Stock Assessment and the continuation of reduced settlement observed in the 2020 Stock Assessment. The Board specified the following objective statement for Draft Addendum XXVII:

***Given persistent low settlement indices and recent decreases in recruit indices, the addendum should consider a trigger mechanism such that, upon reaching the trigger, measures would be automatically implemented to increase the overall protection of spawning stock biomass of the GOM/GBK stock*.**

Draft Addendum XXVII considers implementing management measures—specifically gauge and vent sizes—that are expected to add an additional biological buffer through the protection of spawning stock biomass (SSB). The addendum also considers immediate action upon final approval to standardize some management measures within and across LCMAs in the GOM/GBK stock. The purpose of considering more consistency in measures is to resolve discrepancies between the regulations for state and federal permit-holders, to provide a consistent conservation strategy, and simplify enforcement across management areas and interstate commerce.

2.0 Overview

2.1 Statement of Problem

While 2016 landings in the GOM/GBK lobster fishery were the highest on record, settlement surveys over the past five years have consistently been below the 75th percentile of their time series, indicating neutral or poor conditions. Additionally, there is evidence of declines in recruit abundance in ventless trap survey and trawl surveys for the GOM/GBK stock since the most recent stock assessment. These declines could indicate future declines in recruitment and landings. Given the economic importance of the lobster fishery to many coastal communities in New England, especially in Maine, potential reductions in landings could have vast socioeconomic impacts. In addition, the 2015 Stock Assessment combined the GOM and GBK stocks into a single biological unit due to evidence of migration between the two regions. As a result, there are now varying management measures within a single biological stock. In response to these two issues, the Board initiated Draft Addendum XXVII to consider the standardization of management measures across LCMAs.

However, in 2021, the Board revised the focus of Addendum XXVII to prioritize increasing biological resiliency of the stock over standardization of management measures across LCMAs. Increased resiliency may be achieved without completely uniform management measures, so the main objective of the Addendum is to increase the overall protection of SSB while also considering management options that are more consistent than status quo. Increasing consistency across management areas may help to address some assessment and enforcement challenges, as well as concerns regarding the shipment and sale of lobsters across state lines.

2.2 Status of the GOM/GBK Fishery

The GOM/GBK fishery has experienced incredible growth over the last two decades. Throughout the 1980s, GOM/GBK landings averaged 35 million pounds, with 91% of landings coming from the GOM portion of the stock. In the 1990s, landings slightly increased to an average of 53 million pounds; however, landings started to rapidly increase in the mid-2000s. Over a one year span (2003-2004), landings increased by roughly 18 million pounds to 86 million pounds. This growth continued through the 2000s with 97 million pounds landed in

2009 and 113 million pounds landed in 2010. Landings continued to increase and peaked at 156 million pounds in 2016 (Figure 2).

In the peak year of 2016, Maine alone landed 132.7 million pounds, representing an ex-vessel value of over $541 million. The states of Maine through Rhode Island (the four states that account for the vast majority of harvest from the GOM/GBK stock), landed 158 million pounds in 2016, representing 99% of landings coastwide. Total ex-vessel value of the American lobster fishery in 2016 was $670.4 million, the highest value recorded for the fishery and the highest valued fishery along the Atlantic coast in 2016. While landings and ex-vessel value have both declined slightly from peak levels in 2016, they remain near all-time highs. Coastwide landings and ex-vessel value for 2017-2020 averaged 133.2 million pounds and $591.5 million, respectively.

2.3 Status of the GOM/GBK Stock

2.3.1 *2020 Stock Assessment*

Results of the 2020 Benchmark Stock Assessment indicate a dramatic overall increase in the abundance of lobsters in the GOM/GBK stock since the late 1980s. After 2008, the rate of increase accelerated, and the stock reached a record high abundance level in 2018. Based on a new analysis to identify shifts in the stock that may be attributed to changing environmental conditions and new baselines for stock productivity, the GOM/GBK stock shifted from a low abundance regime during the early 1980s through 1995 to a moderate abundance regime during 1996-2008, and shifted once again to a high abundance regime during 2009-2018 (Figure 3). Spawning stock abundance and recruitment in the terminal year of the assessment (2018) were near record highs. Exploitation (proportion of stock abundance removed by the fishery) declined in the late 1980s and has remained relatively stable since.

Based on the new abundance reference points adopted by the Board, the GOM/GBK stock is in favorable condition. The average abundance from 2016-2018 was 256 million lobsters, which is greater than the fishery/industry target of 212 million lobsters. The average exploitation from 2016-2018 was 0.459, below the exploitation target of 0.461. Therefore the GOM/GBK lobster stock is not depleted and overfishing is not occurring.

Stock indicators based on observed data were also used as an independent, model-free assessment of the lobster stocks. These indicators included exploitation rates as an indicator of mortality; young-of-year (YOY), fishery recruitment, SSB, and encounter rates as indicators of abundance, and total landings, effort, catch per unit effort, and monetary measures as fishery performance indicators. Additionally, annual days with average water temperatures >20°C at several temperature monitoring stations and the prevalence of epizootic shell disease in the population were added as indicators of environmental stress. The 20°C threshold is a well-documented threshold for physiological stress in lobsters. Epizootic shell disease is considered a physical manifestation of stress that can lead to mortality and sub-lethal health effects.

While the stock assessment model and model-free indicators supported a favorable picture of exploitable stock health during the recent 2020 Stock Assessment, the assessment conversely

noted YOY indices did not reflect favorable conditions in recent years and indicate potential for decline in recruitment to the exploitable stock in future years (Table 1). Specifically, YOY indices in two of five regions were below the 25th percentile of the time series (indicating negative conditions) in the terminal year of the assessment (2018) and when averaged over the last five years (2014-2018); the remaining three regions were below the 75th percentile (indicating neutral conditions).

Mortality indicators generally declined through time to their lowest levels in recent years. Fishery performance indicators were generally positive in recent years with several shifting into positive conditions around 2010. Stress indicators show relatively low stress, but indicate some increasingly stressful environmental conditions through time, particularly in the southwest portion of the stock.

As recommended in the 2020 stock assessment, a data update process will occur annually to update American lobster stock indicators, including YOY settlement indicators, trawl survey indicators, and ventless trap survey indices. The first annual data update was completed in 2021 and the results are provided in Appendix A.

2.3.2 *YOY Surveys*

Since the terminal year of the assessment (2018), YOY indices have continued to show unfavorable conditions in the GOM/GBK stock. There have been sustained low levels of settlement observed from 2012 through the assessment and in the time period since the assessment terminal year in 2018. In Maine, 2019 and 2020 YOY indices were below the 75th percentile of their time series throughout all statistical areas sampled. In New Hampshire, sustained low levels of settlement have been seen from 2012 through 2020. In Massachusetts, the 2019 index was below the 25th percentile of its time series and rebounded slightly in 2020, but remained well below the 75th percentile.

Sustained and unfavorable YOY indices are concerning as they could foreshadow poor future year classes in the lobster fishery. Lobster growth is partially temperature-dependent and it is expected that it takes seven to nine years for a lobster to reach commercial size. Thus, decreased abundance of YOY lobsters today could foreshadow decreased numbers of lobsters available to the fishery in the future. Given there have been eight consecutive years of low YOY indices in the GOM, this trend may soon be reflected in the GOM/GBK stock. What is more concerning is that declines in the Southern New England (SNE) stock, which is currently at record low abundance, began with declines in YOY indices. Specifically, SNE YOY indices began to decline in 1995, two years before landings peaked in 1997, and roughly five years before landings precipitously declined in the early 2000's.

There are several hypotheses as to why the YOY indices have been low and what this could mean for the future of the GOM/GBK stock. One hypothesis is that declines in the YOY indices are reflecting a true decline in the newly-settled portion of the stock, and are related to declining food resources (specifically zooplankton). Carloni et al. (2018) examined trends in lobster larvae to explore linkages between SSB and YOY abundance. The study found a

significant increasing trend in stage I larval abundance consistent with the increases in SSB in the GOM. Planktonic postlarvae on the other hand, had a declining trend in abundance similar to trends for YOY settlement throughout western GOM. The study also found significant correlations between lobster postlarvae and the copepod *C. finmarchicus*, but there were no relationships with other zooplankton. This suggests recruitment processes in the GOM could be linked to larval food supply.

Declines in the YOY indices could also be an artifact of the lobster population moving further offshore. Recent work suggests warming in the GOM on the scale of decades has expanded thermally suitable habitat areas and played a significant role in the increase of observed settlement into deeper areas, particularly in the Eastern Gulf of Maine (Goode et al. 2019), so lobster settlement may be diluted across a greater area. Given the YOY surveys typically occur inshore, the surveys may be unable to account for increased abundance of YOY lobsters farther offshore. In an effort to test this theory, the TC looked at potential increases in the habitat available for recruitment in the GOM/GBK stock due to warming waters. Specifically, the TC calculated the quantity of habitat by depth in the GOM. Results showed that incremental increases in depth result in incremental increases in recruitment habitat and small observed decreases in recruit densities in shallow waters; there is no evidence that incremental increases in depth result in exponential increases in available habitat. In order for the diffusion of YOY lobsters over a larger area to completely explain the observed decreases in the YOY indices, the habitat available to recruitment would have to more than double. This suggests dilution effects from increased habitat availability alone are not sufficient to explain decreases in the YOY indices, and there are likely other changes occurring in the system.

2.3.3 *Ventless Trap Surveys and Trawl Surveys*

While YOY surveys have detected declines in the number of newly settled lobsters, results of the ventless trap survey (VTS) and trawl surveys, which encounter larger sized lobsters just before they recruit to the fishery, have only exhibited evidence of potential decline in the most recent years and interpretation of these trends are complicated by sampling restrictions and limited surveys in 2020 resulting from the COVID-19 pandemic. VTS indices show declines since peaking in 2016, especially in the eastern regions. The ME/NH Fall Trawl Survey, which was the only trawl survey to sample in 2020, showed a decline in recruit lobster abundance, while 2019 indices for other trawl surveys remained at high levels and were above the previous year for spring surveys but consistently below the 2018 levels for the fall surveys.

It is important to continue to closely monitor these surveys as marked decreases in the VTS and/or trawl surveys would confirm the declines seen in the YOY surveys.

2.4 Economic Importance of the American Lobster Fishery

Much of the concern regarding the declines in the lobster indices result from the vast economic importance of the lobster fishery to much of the GOM. For the states of Maine through Massachusetts, lobster is one of the most valuable fisheries and the large majority of landings come from the GOM/GBK stock.

For Maine, American lobster is an essential economic driver for the coastal economy. Lobster annually represents more than 75% of Maine's marine resource landings by ex-vessel value (79% in 2020). The landings and value peaked in 2016 with more than 132 million pounds harvested and provided more than $540 million dollars in ex-vessel value[1]. The lobster harvester sector includes more than 5,770 license holders of which 4,200 are active license holders who complete more than 270,000 trips a year selling to 240 active lobster dealers (Maine DMR, unpublished data). The lobster distribution supply chain contributes an additional economic impact of $1 billion annually ("Lobster to Dollars", 2018). Not included in these numbers are the vessel crew members and other associated businesses (bait vessels and dealers, boat builders, trap builders, and marine supply stores) that are essential in delivering lobsters to consumers worldwide, supporting the industry, and driving Maine's coastal communities.

The American lobster fishery is the most valuable commercial fishery in New Hampshire with an ex-vessel value of over $35 million in 2019, the last year prior to the economic impacts of the COVID-19 pandemic, and over $25 million in 2020. The value of lobster landed accounted for over 94% of the value of all commercial species landed in New Hampshire. The lobster fishery in New Hampshire includes over 300 licensed commercial harvesters, over 200 of which are active, who sold to more than 30 licensed lobster dealers (Renee Zobel, personal communication). The importance of the economic impact of the lobster fishery to New Hampshire is also seen in the over 450 businesses licensed to sell lobster to consumers at the retail level.

For Massachusetts, American lobster is the second most valuable fishery in terms of overall landings value, and the most valuable of all fisheries conducted within Massachusetts state waters. The total estimated value for annual lobster landings in Massachusetts has been over $85 million per year on average for 2015-2019. On average, landings from the GOM/GB stock make up 93% of the total lobster landings for Massachusetts; 70% of this comes from LCMA 1, 14% from LCMA 3, and 8% from LCMA OCC (Massachusetts DMF, unpublished data).

Though the state is not directly situated on the GOM, a significant contingent of the Rhode Island commercial lobster fleet harvests lobsters in GOM/GBK. In 2019 and 2020, approximately 30% of Rhode Island's commercial landings (2019: 604,459 pounds, 2020: 497,705 pounds) came from statistical areas in GOM/GBK. The estimated ex-vessel value for lobsters from this stock was approximately $3.8 million in 2019 and $2.9 million in 2020.

2.5 Current Management Measures in the GOM/GBK Stock

Lobster are currently managed under Amendment 3, and its 26 addenda. One of the hallmarks of Amendment 3 was the creation of seven LCMAs along the coast. The GOM/GBK stock is primarily comprised of LCMAs 1 and OCC as well as the northern half of LCMA 3. Each management area has a unique set of management measures. Table 2 shows the current measures for each area. Because the GOM/GBK stock is now assessed as a single area the result

[1] https://www.maine.gov/dmr/commercial-fishing/landings/documents/lobster.table.pdf

is a diverse suite of regulations for each LCMA within a single stock unit, creating challenges for assessing the impacts of management measures within the stock. Specifically, the minimum gauge size (the smallest size lobster that can be legally harvested) in LCMA 1 is 3 ¼" while it is $3^{3}/_{8}$" in LCMA OCC and $3^{17}/_{32}$" in LCMA 3. Likewise, the maximum gauge size (the largest size lobster that can be legally harvested) differs among the three areas, with a 5" maximum gauge size in LCMA 1, a 6 ¾" maximum gauge size in LCMA 3 and for federal permit holders in LCMA OCC, and no maximum gauge size for state-only OCC permit holders. V-notch definitions are inconsistent where LCMA 1 implements a no tolerance for possession of any size v-notch or mutation and LCMA 3 defines a v-notch as greater than $^{1}/_{8}$" with or without setal hairs while OCC has different definitions for federal permits (similar to LCMA 3) state only permits (> ¼" without setal hairs). V-notch requirements are also inconsistent, with LCMA 1 requiring all egg-bearing lobsters to be V-notched, LCMA 3 only requiring V-notching above 42°30' line, and no requirement in OCC.

Several concerns have been noted regarding the current management measures beyond these disparities. At the current minimum sizes, growth overfishing is occurring in the LCMAs within the GOM/GBK stock. Growth overfishing refers to the harvest of lobsters at sizes smaller than the size where their collective biomass (and fishery yield) would be greatest, and when they have very large scope for additional growth. This is demonstrated by the potential increases in catch weight associated with increasing the minimum gauge size (see Appendix B). In LCMA 1, most of the catch consists of individuals within one molt of minimum legal size, which results in a much smaller yield-per-recruit (YPR) than could be achieved if lobsters were allowed to survive and grow to larger sizes before harvest. While the size distribution of the lobsters harvested lobsters in LCMA 3 is much broader than inshore (the fishery is less recruit-dependent) there is still considerable potential for additional growth, and delaying harvest could increase yield per recruit in this region as well. Another concern is the loss of conservation benefit of measures across LCMA lines due to inconsistent measures between areas. The 2015 assessment combined the GOM and GBK areas into one stock because the NEFSC trawl survey showed evidence of seasonal exchange and migration of lobsters between areas. Loss of conservation benefit occurs when lobsters are protected in one area but can be harvested in another when they cross the LCMA boundaries.

2.6 Biological Benefits of Modifying Gauge Sizes

Of the existing biological management measures for the lobster fishery, the minimum and maximum gauge sizes are most likely to have biological impacts on the GOM/GBK stock and fishery. Analyses were performed by the American Lobster Technical Committee to evaluate the impacts of alternate minimum and maximum sizes for the LCMAs within the stock. For LCMA 1, analysis involved updating existing simulation models with more recent data to estimate the impacts of specific minimum and maximum gauge size combinations on total weight of lobsters landed, number of lobsters landed, SSB and exploitation. A separate analysis for LCMA 3 was performed due to concerns that the offshore fishery in LCMA 3 is considerably different from the inshore (which tends to drive stock-wide modelling results). For OCC, simulations were run with both LCMA 1 and LCMA 3 parameters because it is considered a transitional area. The full report on these analyses is included in Appendix B.

Based on these analyses, several general assumptions can be made about potential changes to the minimum and maximum gauge sizes. Increasing the minimum legal gauge size in LCMA 1 is projected to result in large increases in SSB; while increasing the minimum gauge size for LCMA 3 and OCC is projected to result in much smaller increases in SSB relative to LCMA 1. This is primarily because of the significantly larger magnitude of the LCMA 1 fishery and that the current minimum legal size in LCMA is significantly below the size at maturity; meanwhile, the current minimum gauge sizes in LCMA 3 and OCC are much closer to the size at maturity and, additionally, landings from these areas account for only a small fraction of the fishery. Minimum sizes that approach or exceed the size at maturity produce increasing returns on SSB as this allows a much larger portion of the population to reproduce at least once. Therefore, increasing minimum legal size in LCMA 1 to $3^{15}/_{32}$" (88 mm) is projected to result in a near doubling of SSB. This would significantly increase egg production potential and may provide some buffer against the effects of future changes in productivity. At the same time, this change would be expected to produce only marginal decreases in the total number of lobsters landed but result in a net increase in YPR and total weight of catch.

Generally, decreasing maximum gauge sizes is projected to have larger effects for LCMA 3 both relative to increasing the minimum size in LCMA 3 and to changing the maximum sizes for the other LCMAs. However, relative to increasing the minimum size in LCMA 1, the positive impact to the overall stock projected to result from decreasing the maximum gauge sizes in LCMA 3 and OCC is significantly smaller.

2.7 Potential Benefits of Increasing Consistency of Measures

Beyond the biological concerns for the GOM/GBK lobster stock, the disparities in the current measures also create challenges for stock assessment, law enforcement, and commerce. Increasing consistency among the measures for the LCMAs within the stock could have benefits in each of these areas, which are described in the following sections.

2.7.1 Stock Boundaries

A complicating factor in the management of lobster is that the boundaries of the LCMAs do not align with the biological boundaries of the stocks (GOM/GBK vs. SNE). This is particularly challenging in LCMA 3 which spans both GOM/GBK and SNE. The intricacy of the stock boundaries is further complicated by the fact that many vessels fishing out of Rhode Island and Massachusetts, which are harvesting lobsters on Georges Bank, must travel through the SNE stock area to reach their port of landing. In addition, these vessels may be permitted to fish in multiple management areas, including areas that span both lobster stocks.

To date, no Commission addendum has included a recommendation that Federal permits delineate which stock a harvester in LCMA 3 is eligible to fish. In addition, management actions responding to the decline in the SNE stock have been applied throughout LCMA 3. In this case, management measures targeting the GOM/GBK stock would also be applied to all LCMA 3 harvesters regardless of location and stock fished.

2.7.2 Improve Enforcement

A potential advantage of more consistent management measures is the ability to improve enforcement throughout the stock. Currently, disparate management measures hinder the ability for law enforcement to enforce various regulations in the lobster fishery. For example, vessels landing in Massachusetts harvest lobsters from four LCMAs, each of which has a different set of minimum gauge sizes (ranging from 3 ¼" to 3 $^{17}/_{32}$") and maximum gauge sizes (ranging from 5" to no maximum gauge size). As a result, at dealers only the most liberal measure can be implemented as a strict possession limit. The Law Enforcement Committee has continually recommended the use of standardized management measures in the lobster fishery, as inconsistent regulations mean that the least restrictive regulations becomes the enforceable standard once product leaves the dock. In addition, regulatory inconsistencies decrease the likelihood of successful prosecution of violators.

2.7.3 Interstate Shipment of Lobsters

Increasing consistency in regulations may also address concerns regarding the sale and shipment of lobsters across state lines. With decreased landings in SNE and expanding markets for the GOM/GBK stock, there has been increased demand for the shipment of lobsters across state lines. This movement of lobster can be complicated by the fact that the gauge sizes differ across LCMAs, and many states implement the minimum and maximum gauge sizes as possession limits rather than landing limits per state regulation or law. This means the gauge sizes apply to anyone in the lobster supply chain, not just harvesters. While these strict regulations improve the enforcement of gauge sizes, it can complicate interstate shipment of lobsters, particularly given the minimum size in LCMA 1 is smaller than the other management areas. As a result, some dealers must sort lobster by size in order to ship product across state lines.

Moving toward more consistent minimum sizes within the inshore LCMAs would help alleviate this issue by easing the ability of states to participate in the GOM/GBK lobster supply chain. This would not only reduce the burden on dealers that sort product by size but also enhance the enforcement of gauge sizes in the fishery.

3.0 Proposed Management Options

The following management options consider modifications to the management program with the goal of increasing protection of the GOM/GBK spawning stock. The final management program selected will apply to LCMAs 1, 3, and OCC.

- 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 SSB.

3.1 Issue 1: Measures to be standardized upon final approval of Addendum XXVII

This issue considers options to modify some management measures immediately upon final approval of the Addendum to achieve more consistency in measures within and across LCMAs.

One option proposes to modify some of the OCC measures to address differing regulations for state and federal permit holders. Specifically, for state-permitted fisherman in state waters there is no maximum gauge size and the V-notch definition is $^1/_4$" without setal hairs. For federal permit holders, the maximum gauge size is 6 $^3/_4$" and the V-notch definition is $^1/_8$" with or without setal hairs. The disparity between regulations for different harvesters within the same area creates challenges for enforcement.

Options are also proposed to standardize V-notch regulations across the LCMAs within the GOM/GBK stock, as well as regulations related to the issuance of tags for trap tag losses. Uniformity in these measures would benefit enforcement and apply a consistent conservation strategy across the stock unit.

Option A: Status Quo
This option would maintain the current management measures for each LCMA at final approval of the addendum.

Option B: Standardized measures to be implemented upon final approval of addendum
The Board may select more than one of the below options. The states would be required to implement the selected management measures for the fishing year specified by the Board at final approval of the addendum.

- **Sub-option B1**: Upon final approval of the addendum, implement standardized measures within an LCMA to the most conservative measure where there are inconsistencies between state and federal regulations within GOM/GBK stock LCMAs. This would result in the maximum gauge being standardized to 6-3/4" for state and federal permit holders, and the V-notch possession definition being standardized to $^1/_8$" with or without setal hairs in OCC. This means harvest is prohibited for a female lobster with a V-shaped notch greater than $^1/_8$".
- **Sub-option B2**: Upon final approval of the addendum, implement a standard V-notch requirement across all LCMAs in the GOM/GBK stock. This would result in mandatory V-notching for all eggers in LCMA 1, 3, and OCC.
- **Sub-option B3**: Upon final approval of the addendum, implement a standard V-notch possession definition of $^1/_8$" with or without setal hairs for LCMAs 1, 3, and OCC. Any jurisdiction could implement more conservative regulations.
- **Sub-option B4:** Upon final approval of the addendum, standardize regulations across LCMAs 1, 3, and OCC to limit the issuance of trap tags to equal the harvester trap tag allocation. This would mean no surplus trap tags would be automatically issued until trap losses occur and are documented.

3.2 Issue 2: Implementing management measures to increase protection of SSB

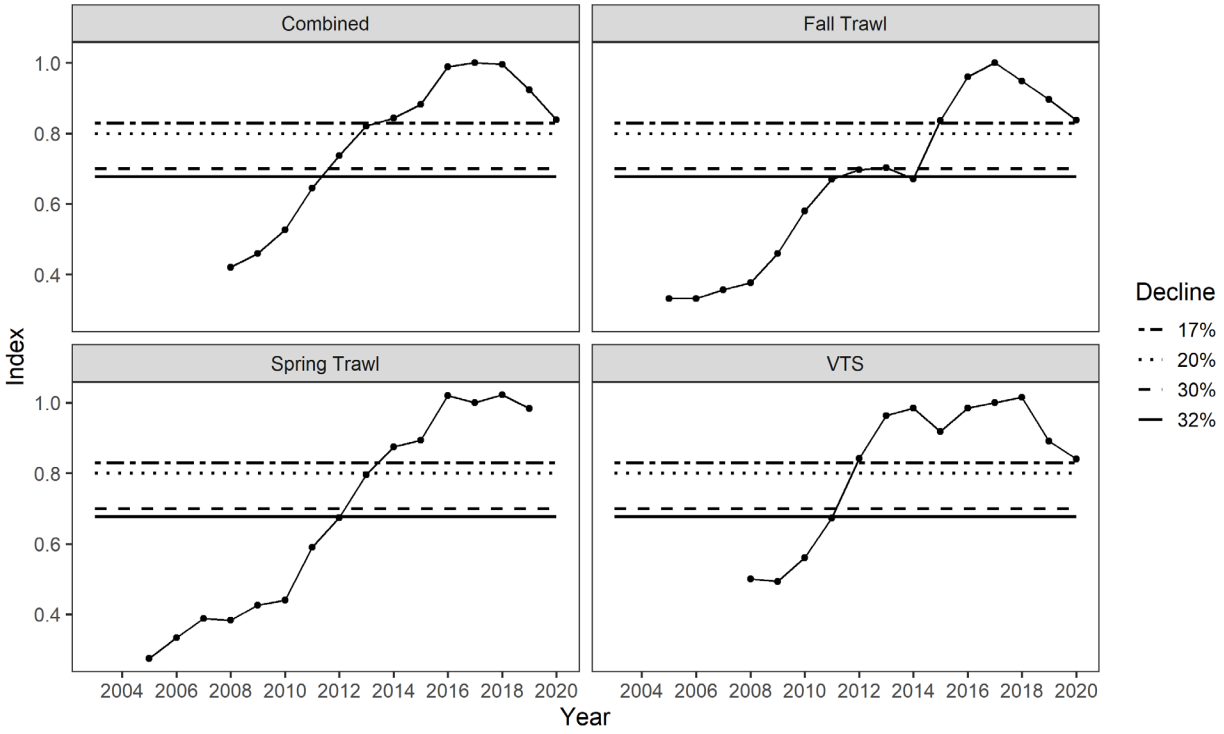
The primary objective of this action is to increase the protection of SSB in the GOM/GBK stock. The proposed options consider changes to the minimum and maximum gauge sizes along with corresponding vent sizes for the LCMAs within the stock. The proposed measures are expected to 1) increase SSB, and 2) result in the minimum gauge size increasing to meet or exceed the size at 50% maturity (L50) for each LCMA (LCMA 1: eastern GOM L50 = 88 mm, western GOM L50 = 83 mm, LCMA 3: Georges Bank L50 = 91 mm). Appendix B includes a full technical report of analysis performed to project the impacts of various gauge size combinations on total weight of lobsters landed, number of lobsters landed, SSB and exploitation.

This issue proposes two approaches for implementing management changes to increase protection of SSB. One approach, which is applied in Options A through D, is to establish a trigger mechanism whereby pre-determined management changes would be triggered upon reaching a defined trigger level based on observed changes in recruit (71-80 mm carapace length) abundance indices. The proposed mechanism includes establishing up to two management triggers based on recruit conditions observed in three surveys that were used to inform the assessment model estimates of reference abundance and stock status for the GOM/GBK stock. These recruit indices include: 1) combined ME/NH and MA spring trawl survey index, 2) combined ME/NH and MA fall trawl survey index, and 3) model-based VTS index.

Each management trigger is defined by a certain level of decline in the indices from an established reference period. The reference value for each index is calculated as the average of the index values from 2016-2018. The percent declines in the indices are expected to approximate comparable declines in overall abundance of the stock, and relate to the abundance reference points established by the Board. The analyses conducted to develop the trigger mechanism and evaluate its performance in appropriately triggering management are described in detail in Appendix C. Figure 1 (top left panel) shows the calculated trigger index compared to the four proposed trigger levels in this document.

A second approach, which is applied in Option E, is to establish a pre-determined schedule for future changes to the management measures. This approach is proactive in nature and addresses the issue of growth overfishing by increasing the minimum legal size while the stock conditions are favorable.

Figure 1. Scaled survey-specific indices and combined trigger index compared to proposed trigger levels. Top-left: combined trigger index which would be used to trigger changes in management measures. Top-right: moving three year average of fall trawl survey indices. Bottom-left: moving three year average of spring trawl survey indices. Bottom-right: moving three year average of VTS indices.



Option A: Status Quo
Under this option there would be no additional changes to the management measures for the LCMAs within the GOM/GBK stock beyond the option selected under Issue 1.

Option B: Gauge size changes triggered by 17% decline, and 32% decline in trigger index
This option would establish two triggers based on observed changes in indices of recruit abundance compared to the reference level of the trigger index. The first trigger point would be a change in the recruit abundance indices greater than or equal to a 17% decline from the reference abundance level (equal to the average of the index values from 2016-2018). Upon this trigger level being reached, the minimum gauge size for LCMA 1 would increase by $^{1}/_{16}$" from the current size (3¼") to $3^{5}/_{16}$" for the following fishing year. All other measures would remain status quo unless triggered by a change in recruit abundance indices. The second trigger point would be a change in the recruit abundance indices greater than or equal to a 32% decline from the reference abundance level. Upon this trigger level being reached, the minimum gauge size for LCMA 1 would increase again by $^{1}/_{16}$" from the $3^{5}/_{16}$" to $3^{3}/_{8}$" for the following fishing year, and the maximum gauge size in LCMA 3 and OCC would decrease to 6". The table below lists the management measures that would be automatically implemented when each trigger point is reached, with changes from the current measures in bold. The vent size in LCMA 1 would be adjusted once, corresponding with the final minimum gauge size

change associated with Trigger 2. The final gauge and vent size changes are expected to maintain similar retention rates of legal lobsters and protection of sub-legal sizes to the current gauge and vent sizes. The final vent size is also consistent with the current vent size used in SNE for the same minimum gauge size of $3^{3}/_{8}$".

Option B	LCMA 1	LCMA 3	OCC
Trigger 1 (17% decline)	**Minimum gauge: 3 $^{5}/_{16}$" (84 mm)** Maximum gauge: status quo, 5" Vent size: status quo	Minimum gauge: status quo, 3 $^{17}/_{32}$" (90 mm) Maximum gauge: status quo, 6 ¾" (171 mm) Vent size: status quo	Minimum gauge: status quo, 3 $^{3}/_{8}$" (86 mm) Max: status quo, 6 ¾" (171 mm) Vent size: status quo
Trigger 2 (32% decline)	**Minimum gauge: 3 $^{3}/_{8}$" (86 mm)** Maximum gauge: status quo **Vent size: 2 x 5 $^{3}/_{4}$" rectangular; 2 $^{5}/_{8}$" circular**	Minimum gauge: status quo **Maximum gauge: 6"** Vent size: status quo	Minimum gauge: status quo **Maximum gauge: 6"** Vent size: status quo

The proposed increases to the minimum gauge sizes in LCMA 1 and OCC are expected to increase the proportion of the population protected from harvest by the fishery before being able to reproduce. The proposed decreases to the maximum gauge sizes in LCMA 3 and OCC are expected to enhance resiliency by placing forever protections on a small proportion of the population, including larger lobsters of both sexes.

Option C: Gauge size changes triggered by 20% decline, and 30% decline in trigger index
This option is identical to Option B above, with the exception of the trigger levels that would result in changes to the management measures. Under this option, the first trigger point would be a change in the recruit abundance indices greater than or equal to a 20% decline from the reference abundance level (equal to the average of the index values from 2016-2018), and the second trigger point would be a change in the recruit abundance indices greater than or equal to a 30% decline from the reference abundance level. The measures that would be implemented when each trigger level is reached are shown in the table below.

Option C	LCMA 1	LCMA 3	OCC
Trigger 1 (20% decline)	**Minimum gauge: 3 $^{5}/_{16}$" (84 mm)** Maximum gauge: status quo, 5" Vent size: status quo	Minimum gauge: status quo, 3 $^{17}/_{32}$" (90 mm) Maximum gauge: status quo, 6 ¾" (171 mm) Vent size: status quo	Minimum gauge: status quo, 3 $^{3}/_{8}$" (86 mm) Max: status quo, 6 ¾" (171 mm) Vent size: status quo

Trigger 2 (30% decline)	**Minimum gauge: 3 3/8" (86 mm)** Maximum gauge: status quo **Vent size: 2 x 5 3/4" rectangular; 2 5/8" circular**	Minimum gauge: status quo **Maximum gauge: 6"** Vent size: status quo	Minimum gauge: status quo **Maximum gauge: 6"** Vent size: status quo

Option D: Gradual change in gauge sizes triggered by 17% decline in trigger index

This option considers establishing a trigger level which, upon being reached, would initiate a series of gradual changes in gauge sizes for the LCMAs in the GOM/GBK stock. The minimum gauge size would change in increments of 1/16", and the maximum gauge size would change in increments of ¼". The first change would be triggered by a change in the recruit abundance indices greater than or equal to a 17% decline from the reference abundance level (equal to the average of the index values from 2016-2018). Following this initial change, incremental changes to the gauge sizes would occur every other year. The gauge size changes that would be implemented at each step, and the final gauge sizes that would be reached for each area are shown in the table below. The vent size in LCMA 1 would be adjusted once, corresponding with the final minimum gauge size change in year 5. The final gauge and vent size changes are expected to maintain similar retention rates of legal lobsters and protection of sub-legal sizes to the current gauge and vent sizes. The final vent size is also consistent with the current vent size used in SNE for the same minimum gauge size of 3 3/8".

Option D	**LCMA 1**	**LCMA 3**	**OCC**
Current Measures (Year 0)	Minimum gauge: 3 ¼" Maximum gauge: 5" Vent size: status quo	Minimum gauge: 3 17/32" Maximum gauge: 6 ¾" Vent size: status quo	Minimum gauge: 3 3/8" Maximum gauge: 6 ¾" Vent size: status quo
Trigger 1 (17% decline) (Year 1)	**Minimum gauge: 3 5/16" (84 mm)** Maximum gauge: status quo Vent size: status quo	Minimum gauge: status quo **Maximum gauge: 6 ½"** Vent size: status quo	Minimum gauge: status quo **Maximum gauge: 6 ½"** Vent size: status quo
Intermediate gauge sizes (Year 3)	**Minimum gauge: 3 3/8" (86 mm)** Maximum gauge: status quo Vent size: status quo	Minimum gauge: status quo **Maximum gauge: 6 ¼"** Vent size: status quo	Minimum gauge: status quo **Maximum gauge: 6 ¼"** Vent size: status quo
Final gauge and vent sizes (Year 5)	Minimum gauge: 3 3/8" Maximum gauge: status quo **Vent size: 2 x 5 3/4" rectangular; 2 5/8" circular**	Minimum gauge: status quo **Maximum gauge: 6"** Vent size: status quo	Minimum gauge: status quo **Maximum gauge: 6"** Vent size: status quo

Option E: Scheduled changes to minimum gauge size in LCMA 1
This option considers establishing a predetermined schedule for implementing gradual changes to the minimum gauge and vent size in LCMA 1 to increase the SSB (see table below for the proposed changes). The first step increases the minimum gauge size in LCMA 1 by $^{1}/_{16}$" to $3^{5}/_{16}$" for the 2023 fishing year. In the final year of adjustments, the minimum gauge size in LCMA 1 would be increased to $3\ ^{3}/_{8}$" for the 2025 fishing year. The vent size in LCMA 1 would also be adjusted once, at the same time the final gauge size is implemented in 2025. The final gauge and vent size changes are expected to maintain similar retention rates of legal lobsters and protection of sub-legal sizes to the current gauge and vent sizes.

Option E	LCMA 1	LCMA 3	OCC
2023 fishing year measures	**Min: $3\ ^{5}/_{16}$" (84 mm)** Max: status quo Vent size: status quo	Min: status quo Max: status quo	Min: status quo Max: status quo
2025 fishing year measures	**Min: 3-3/8 (86 mm)** Max: status quo **Vent size: 2 x $5\ ^{3}/_{4}$" rectangular; $2\ ^{5}/_{8}$" circular**	Min: status quo Max: status quo	Min: status quo Max: status quo

3.3 Implementation of Management Measures in LCMA 3
Although only a portion of LCMA 3 encompasses the GOM/GBK stock (see Section 2.8 Stock Boundaries for additional information), any measures selected by the Board pertaining to LCMA 3 would apply to all LCMA 3 permit holders, including those that fish in the SNE stock.

Given the objective of this addendum is specific to protecting the GOM/GBK spawning stock, new management measures must either apply to all LCMA 3 harvesters regardless of location and stock fished (and therefore also impact the SNE fishery) or new measures would have to be stock (and geographic area) specific in order to only affect the GOM/GBK fishery. For example, an LCMA 3 harvester seeking to continue fishing in GOM/GBK would either have to declare and be permitted to fish within the GOM/GBK stock area to be held accountable, or opt to not participate in the GOM/GBK fishery to avoid the more restrictive measures. Applying the selected measures to only the GOM/GBK portion of LCMA 3 would create a significant administrative burden to appropriately divide LCMA 3 in a way to minimize impacts and issue permits and enforce measures based on this division. In addition, dividing LCMA3 creates potential for confusion and noncompliance among LCMA 3 permit holders, particularly as there are other ongoing activities in this area affecting a permit holder's fishing plans, including closures for protected species, development of other ocean uses, and the overlap with the Jonah crab fishery. To date, there have been no Commission addenda that included a recommendation that Federal permits specify the stock area in which an LCMA 3 harvester is eligible to fish.

Applying the measures across the entire management area is consistent with previous changes to the management measures in LCMA 3. When several addenda implemented reductions in

fishing capacity (Addendum XVIII) and the Area 3 conservation tax (Addendum XIX) to address the declining condition of the SNE stock, the measures were also applied to the GOM/GBK portion of LCMA 3, which was not overfished nor experiencing overfishing. Though the impacts of the proposed measures on the SNE stock and fishery have not been analyzed, it is likely that the proposed changes would have only trivial negative impacts to catch and positive impacts to SSB considering the current depleted status of the stock.

4.0 Compliance

If the existing FMP is revised by approval of this draft addendum, the American Lobster Management Board will designate dates by which states will be required to implement the provisions included in the addendum. A final implementation schedule will be identified based on the management tools chosen.

5.0 Recommendations for Actions in Federal Waters

The management of American lobster in the EEZ is the responsibility of the Secretary of Commerce through the National Marine Fisheries Service. The Atlantic States Marine Fisheries Commission recommends that the federal government promulgate all necessary regulations in Section 3.0 to implement complementary measures to those approved in this addendum.

6.0 References

Atlantic States Marine Fisheries Commission (ASMFC). 1997. Amendment 3 to the Interstate Fishery Management Plan for American Lobster.

ASMFC. 2015. American Lobster Benchmark Stock Assessment and Peer Review Report.

ASMFC. 2020. American Lobster Benchmark Stock Assessment and Peer Review Report.

Maine DMR. "Commercial Fishing." State of Maine Department of Marine Resources, https://www.maine.gov/dmr/commercial-fishing/index.html

Lobsters to Dollars: The Economic Impact of the Lobster Distribution Supply Chain in Maine by Michael Donihue, Colby College. June 2018. http://www.colby.edu/economics/lobsters/Lobsters2DollarsFinalReport.pdf.

Goode, A. G., D. C. Brady, R. S. Steneck, & R. A. Wahle. 2019. The brighter side of climate change: How local oceanography amplified a lobster boom in the Gulf of Maine. Global change biology, 25(11), 3906-3917.

Gulf of Maine Research Institute (GMRI), 2014. Understanding Barriers and Opportunities to Profitability in the Maine Lobster Industry.

Steneck, R. S., Hughes, T. P., Cinner, J. E., Adger, W. N., Arnold, S. N., Berkes, F., Boudreau, S. A., Brown, K., Folke, C., Gunderson, L., Olsson, P., Scheffer, M., Stephenson, E., Walker, B., Wilson, J., and B. Worm. 2011. Creation of a Gilded trap by the High Economic Value of the Maine Lobster Fishery. *Conservation Biology,* 25(5):904-912.

7.0 Tables and Figures

Table 1. Existing LCMA specific management measures.

Mgmt. Measure	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	OCC
Min Gauge Size	3 1/4"	3 3/8"	3 17/32"	3 3/8"	3 3/8"	3 3/8"	3 3/8"
Vent Rect.	1 15/16 x 5 3/4"	2 x 5 3/4"	2 1/16 x 5 3/4"	2 x 5 3/4"	2 x 5 3/4"	2 x 5 3/4"	2 x 5 3/4"
Vent Cir.	2 7/16"	2 5/8"	2 11/16"	2 5/8"	2 5/8"	2 5/8"	2 5/8"
V-notch requirement	Mandatory for all eggers	Mandatory for all legal size eggers	Mandatory for all eggers above 42°30'	Mandatory for all eggers in federal waters. No V-notching in state waters.	Mandatory for all eggers	None	None
V-notch Definition[1] (possession)	Zero Tolerance	1/8" with or w/out setal hairs[1]	1/8" with or w/out setal hairs[1]	1/8" with or w/out setal hairs[1]	1/8" with or w/out setal hairs[1]	1/8" with or w/out setal hairs[1]	State Permitted fisherman in state waters 1/4" without setal hairs Federal Permit holders 1/8" with or w/out setal hairs[1]
Max. Gauge (male & female)	5"	5 ¼"	6 3/4"	5 ¼"	5 ¼"	5 ¼"	State Waters none Federal Waters 6 3/4"
Season Closure				April 30-May 31[2]	February 1-March 31[3]	Sept 8-Nov 28[4]	February 1-April 30

Table 2. GOM/GBK model-free indicators for the 2020 Stock Assessment. The left table shows the GOM spawning stock abundance, the right table shows GBK spawning stock abundance.

SPAWNING STOCK ABUNDANCE Mean weight (g) per tow of mature females						
Survey	NESFC		ME/NH		MA 514	
	fall	spring	fall	spring	fall	spring
1981	175.32	400.28			502.65	430.53
1982	39.45	113.58			626.48	151.21
1983	206.03	234.21			844.76	67.08
1984	234.64	443.81			593.77	126.47
1985	499.62	2771.23			919.56	93.81
1986	267.97	502.99			231.88	112.97
1987	85.35	497.40			194.34	148.62
1988	186.56	244.92			200.58	88.14
1989	325.69	247.15			293.61	230.26
1990	216.65	516.20			1048.72	241.94
1991	247.11	430.56			335.80	165.54
1992	193.95	453.31			512.83	212.89
1993	284.34	484.30			120.59	229.72
1994	430.32	720.67			783.17	285.01
1995	464.96	390.15			520.26	171.71
1996	734.25	872.53			569.39	156.53
1997	568.34	1083.76			235.18	114.78
1998	381.81	1182.44			282.79	170.21
1999	1444.07	807.41			365.53	282.12
2000	585.66	1281.05	4430.55		533.40	236.55
2001	511.25	1498.42	2446.85	690.89	165.74	235.85
2002	1789.42	2022.04	4638.64	1436.34	324.34	175.73
2003	985.93	2343.63	3949.63	1226.05	129.67	72.99
2004	685.89	2773.35	3610.67	907.07	120.27	259.35
2005	465.35	1670.29	4805.25	1990.08	248.23	489.12
2006	681.87	1810.96	3698.94	1327.93	240.27	410.97
2007	445.78	1536.47	3163.24	1437.85	176.95	139.94
2008	805.10	1894.91	4080.36	1107.00	559.70	300.35
2009	1787.92	1864.92	6906.45	1747.30	630.52	219.83
2010	2850.60	2476.79	5793.51	1886.61	1424.75	211.52
2011	2317.94	2089.39	6169.40	2013.80	1268.44	267.51
2012	3215.29	3516.38	4174.85	2287.55	889.87	124.81
2013	3299.56	2499.71	5363.14	2007.92	1135.54	300.86
2014	4979.28	3083.09	5891.58	3010.73	768.88	382.81
2015	3553.44	3665.39	8488.62	2233.05	1947.04	418.46
2016	3692.26	5142.42	7691.01	2613.49	3712.66	1119.26
2017	3274.69	6566.80	4629.68	2530.74	2309.44	564.30
2018	2093.20	3555.09	5242.34	2005.07	2782.55	550.68
2014-2018 mean	3518.57	4402.56	6388.65	2478.62	2304.11	607.10
25th	272.06	487.57	4015.00	1355.03	242.26	149.27
median	539.79	1389.74	4638.64	1938.34	526.83	224.78
75th	1789.05	2443.50	5842.54	2178.24	878.60	296.52

SPAWNING STOCK ABUNDANCE Mean weight (g) per tow of mature females		
Survey	NESFC	
	fall	spring
1981	707.14	69.71
1982	670.07	123.96
1983	643.84	152.05
1984	397.33	45.17
1985	504.87	39.00
1986	491.96	307.05
1987	537.31	113.27
1988	695.27	307.49
1989	933.18	161.43
1990	761.64	103.62
1991	848.03	164.32
1992	817.25	213.11
1993	626.81	126.03
1994	774.61	41.77
1995	939.85	71.74
1996	1051.09	482.61
1997	754.00	62.46
1998	993.56	64.67
1999	1363.68	395.66
2000	945.69	132.57
2001	1756.38	313.41
2002	2183.80	341.90
2003	1030.19	842.92
2004	1557.16	298.95
2005	1404.20	491.00
2006	2123.43	465.72
2007	1859.53	728.26
2008	3074.33	1827.61
2009	3703.99	1336.34
2010	2120.51	1126.52
2011	4681.76	1113.11
2012	2696.38	1510.08
2013	2530.26	1369.39
2014	3012.69	1833.98
2015	3743.71	1509.13
2016	3020.98	2138.96
2017	6627.18	3749.60
2018	9630.86	725.09
2014-2018 mean	5207.09	1991.35
25th	755.91	124.47
median	1040.64	310.45
75th	2443.64	1045.56

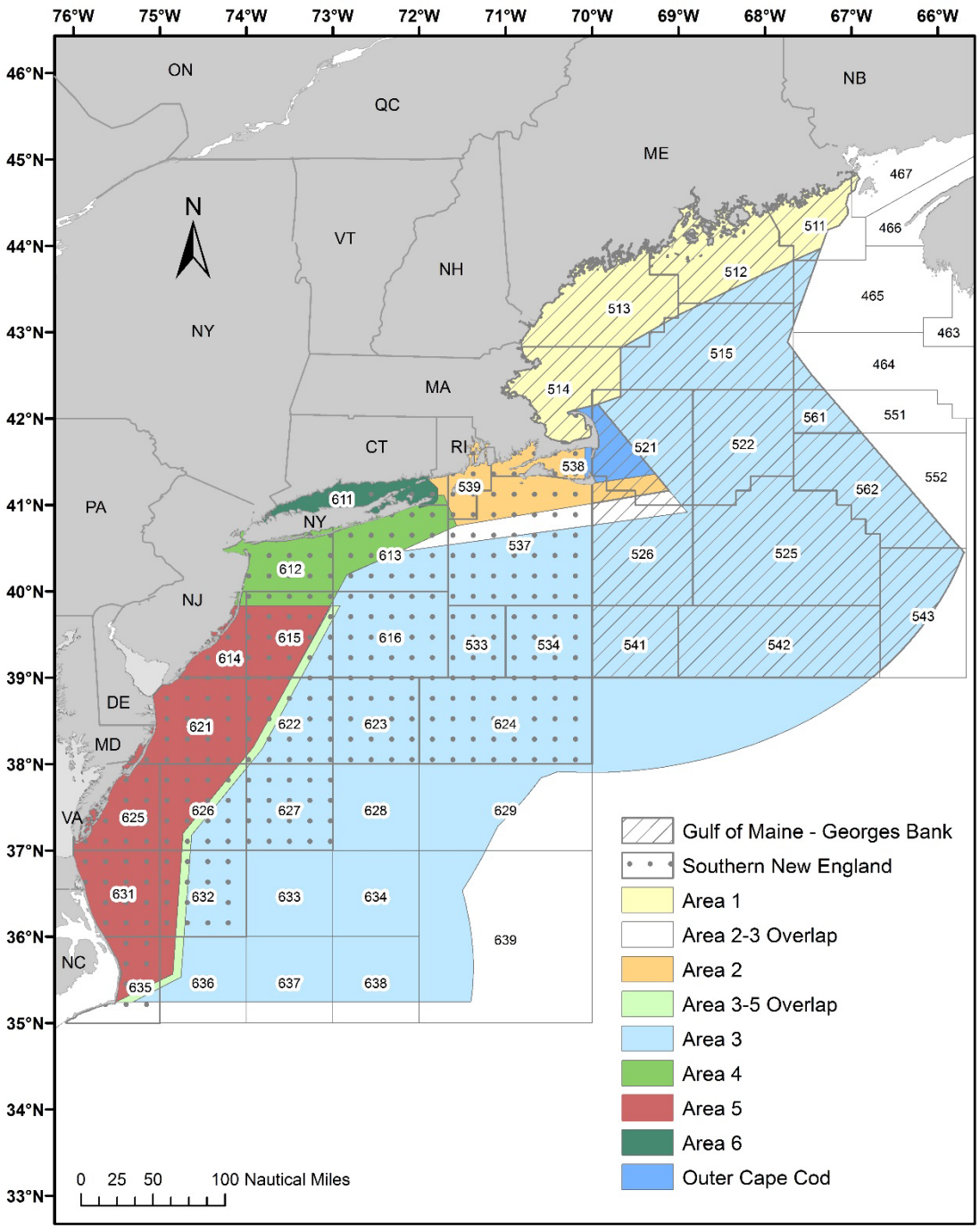


Figure 1. Lobster conservation management areas (LCMAs) in the American lobster fishery. LCMAs 1, 3, and OCC make of the majority of the GOM/GBK stock.

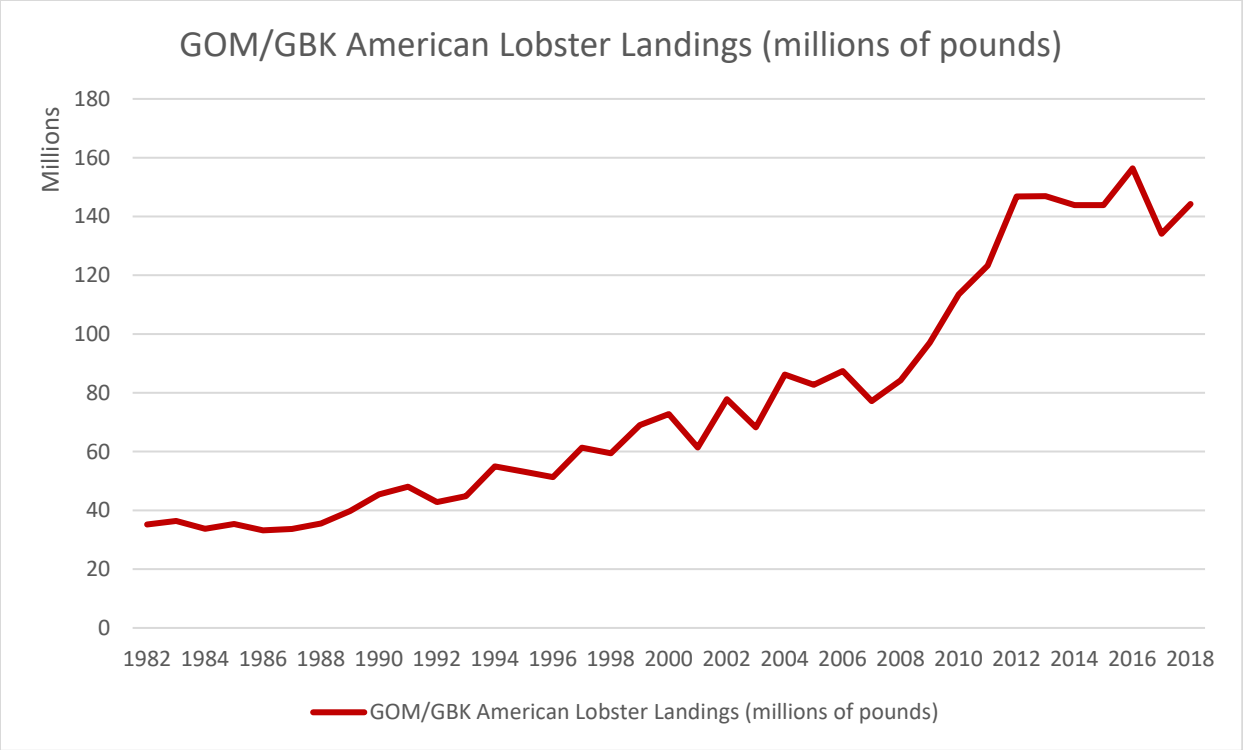


Figure 2. Landings in the GOM/GBK stock (1982-2018). Stock specific landings are updated during each benchmark stock assessment.

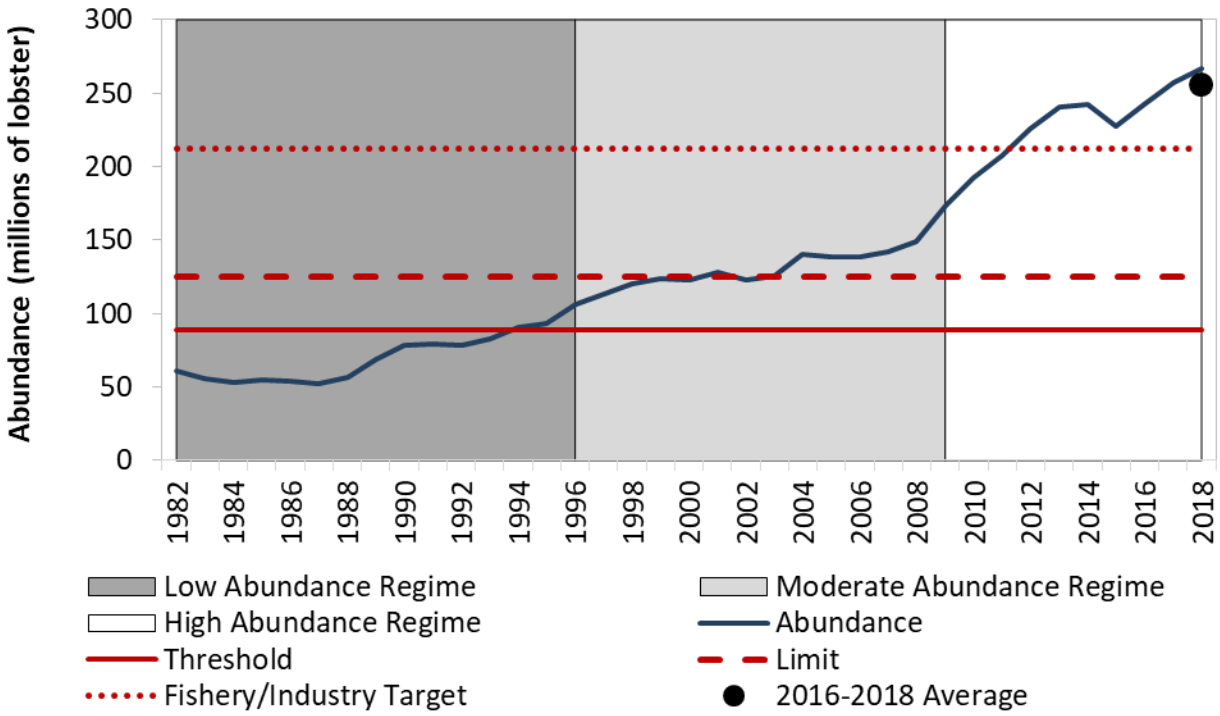


Figure 3. Stock abundance

Appendix A. 2021 Annual Data Update of American Lobster GOM/GBK Stock Indicators

Background

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

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

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

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

The five year means provided during the stock assessment (2014-2018) for terminal indicator status determinations were also updated with the new years of data. This treatment of data is consistent with the stock indicators provided during stock assessments (see Section 5 in the stock assessment report for more detail) with two important notes. First, the ventless trap survey abundance indices have not been presented as stock indicators in past assessments due to concerns that the short time series is not representative of the stock's productivity potential. These indices are included in this Data Update, along with the other data sets, specifically to show changes in stock conditions since the 2020 stock assessment. The Technical Committee recommended these indices be presented as indices by NOAA statistical area. Stratification of the ventless trap survey was designed around these statistical areas, unlike the trawl surveys, and these indices provide better spatial resolution to examine abundance trends within the stock boundary. The ventless trap survey index model developed during the stock assessment was structured to estimate stockwide indices and has not been evaluated for estimating indices by statistical area, so these indices are design-based calculations as opposed to model-based indices originally recommended for the Data Update process. Second, the covid-19 pandemic had substantial impacts on data collection in 2020 and many of the trawl surveys providing these data sets did not sample which impacts the updated five year means provided in the results. Below are the results of the data updates by sub-stock.

Results

Gulf of Maine (GOM)

- YOY conditions showed improvements, but were still not positive (Table 1 and Figure 1).

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

Georges Bank (GBK)

- Trawl survey recruit abundance indicators showed deteriorating conditions since the stock assessment (Table 5 and Figure 5).
    - No indicators were available for 2020 due to covid-19 sampling restrictions.
    - Updated means for one of the two indicators changed from neutral to negative. Both were neutral during the stock assessment.
    - These indicators tend to be noisier than some of the other abundance indicators, with high interannual variability and lack of discernible trends.
- Trawl survey encounter rates were positive and similar to conditions during the stock assessment (Table 6 and Figure 6).
    - No indicators were available for 2020 due to covid-19 sampling restrictions.
    - Updated means for both indicators were positive. This is unchanged from the stock assessment.

Tables and Figures

Table 1. GOM abundance indicators: YOY indices.

YOUNG-OF-YEAR INDICES					
Survey	*ME*				*MA*
	511	*512*	*513 East*	*513 West*	*514*
1981					
1982					
1983					
1984					
1985					
1986					
1987					
1988					
1989			1.64		
1990			0.77		
1991			1.54		
1992			1.30		
1993			0.45		
1994			1.61		
1995		0.02	0.66		1.01
1996		0.05	0.47		0.00
1997		0.05	0.46		0.10
1998		0.00	0.14		0.03
1999		0.04	0.65		0.43
2000	0.00	0.10	0.13	0.17	0.07
2001	0.24	0.43	2.08	1.17	0.43
2002	0.13	0.29	1.38	0.85	1.00
2003	0.22	0.27	1.75	1.22	0.78
2004	0.18	0.36	1.75	0.67	1.13
2005	1.59	1.36	1.77	0.82	1.11
2006	0.58	1.13	0.84	0.82	0.46
2007	0.84	1.34	2.01	1.27	1.38
2008	0.42	0.83	1.08	0.97	0.33
2009	0.69	0.48	1.25	0.45	0.17
2010	0.28	0.72	0.80	0.47	0.50
2011	0.41	1.10	2.33	0.67	0.64
2012	0.53	0.73	1.06	0.22	0.09
2013	0.10	0.20	0.48	0.12	0.00
2014	0.16	0.43	0.83	0.33	0.11
2015	0.11	0.22	0.43	0.05	0.00
2016	0.13	0.21	0.47	0.12	0.08
2017	0.16	0.36	0.70	0.20	0.08
2018	0.27	0.32	0.71	0.20	0.03
2014-2018 mean	0.17	0.31	0.63	0.18	0.06
2019	0.42	0.61	1.03	0.35	0.06
2020	0.29	0.49	1.17	0.25	0.19
2016-2020 mean	0.25	0.40	0.82	0.23	0.09
25th	0.15	0.18	0.52	0.20	0.08
median	0.24	0.34	0.84	0.47	0.25
75th	0.48	0.72	1.59	0.84	0.67

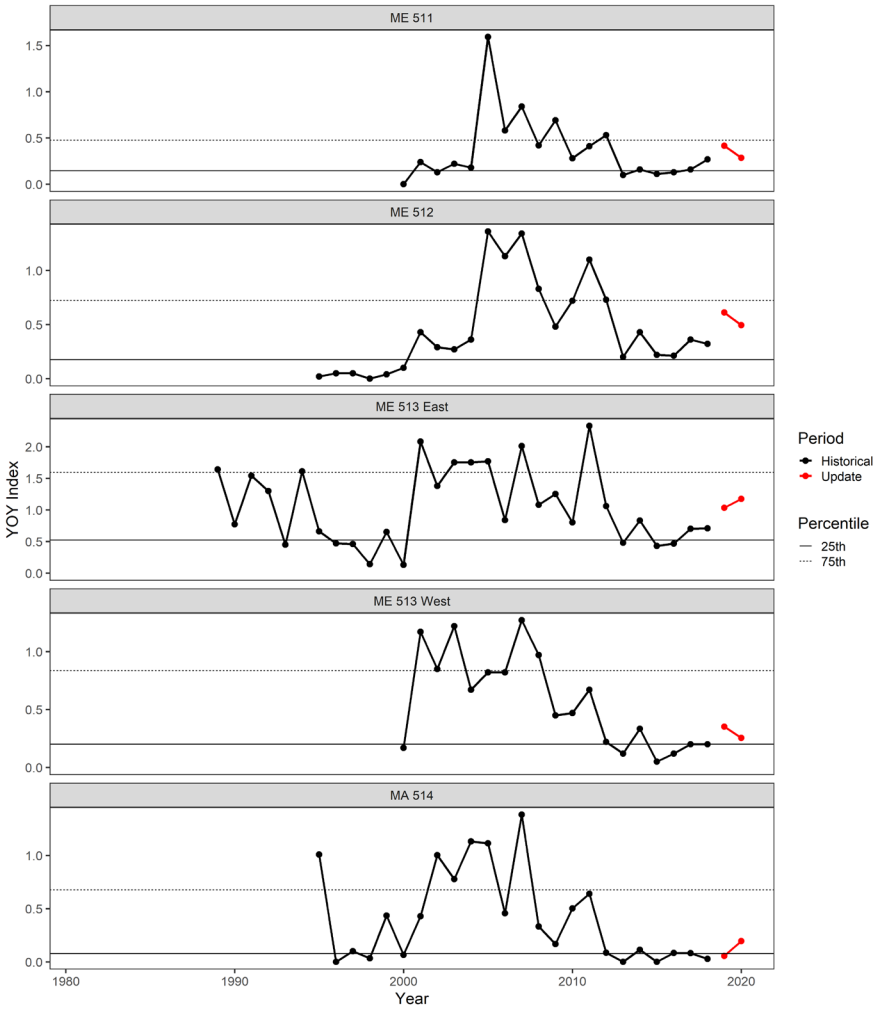


Figure 1. GOM abundance indicators: YOY indices.

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

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

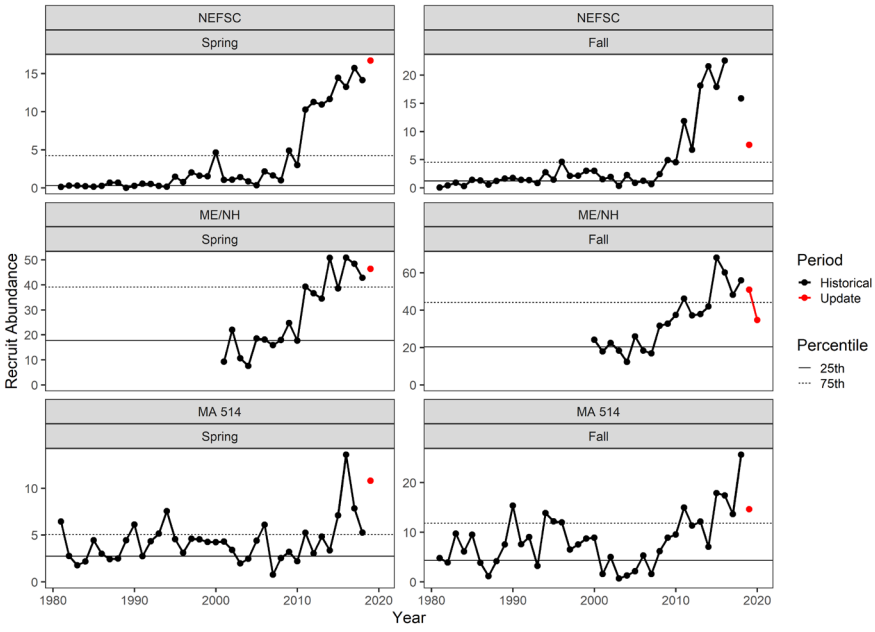


Figure 2. GOM abundance indicators: trawl survey recruit abundance.

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

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

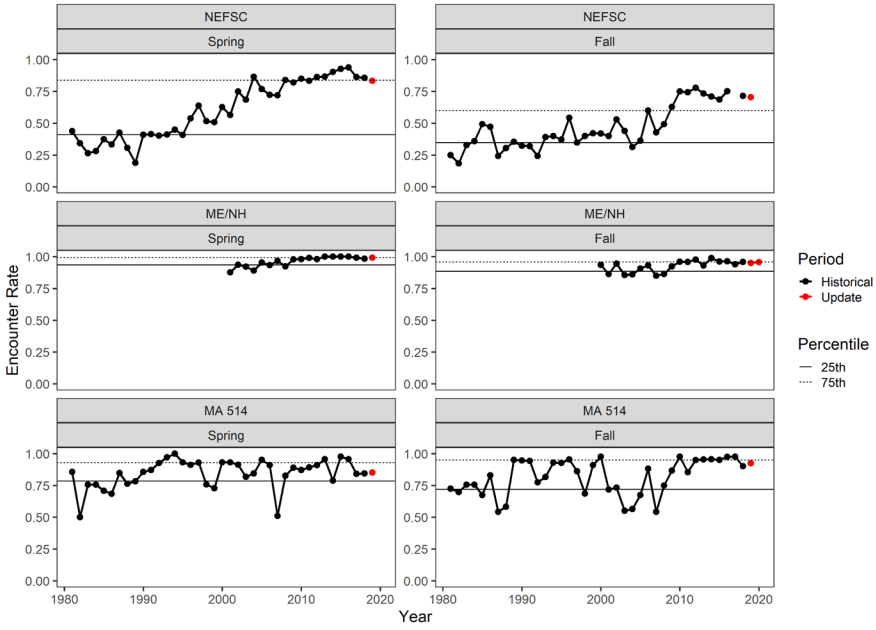


Figure 3. GOM abundance indicators: trawl survey encounter rate.

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

VENTLESS TRAP ABUNDANCE								
Abundance of lobsters ≥ 53 mm CL								
Survey	*511*		*512*		*513*		*514*	
	Female	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*
1981								
1982								
1983								
1984								
1985								
1986								
1987								
1988								
1989								
1990								
1991								
1992								
1993								
1994								
1995								
1996								
1997								
1998								
1999								
2000								
2001								
2002								
2003								
2004								
2005								
2006	7.65	5.34	6.87	5.38	5.73	4.37	3.10	3.40
2007	5.06	3.91	3.95	3.83	5.82	4.35	1.85	1.84
2008	4.94	3.87	5.78	4.95	5.78	4.97	2.77	2.51
2009	3.60	2.65	6.31	5.35	6.89	5.53	2.72	2.66
2010	5.66	3.90	6.95	5.69	6.61	5.27	2.49	2.22
2011	8.70	6.52	11.10	8.48	7.32	5.60	3.47	2.60
2012	10.95	7.64	12.06	9.47	11.40	7.72	5.21	4.52
2013	11.14	7.95	11.87	8.64	9.36	6.49		
2014	10.38	6.63	11.92	8.04	7.74	4.96	3.15	2.35
2015	8.47	4.63	10.39	7.70	8.57	5.50	4.01	3.16
2016	14.59	9.15	14.34	10.75	10.78	7.56	4.79	3.56
2017	11.69	7.07	11.61	8.52	8.46	5.56	3.38	2.45
2018	15.10	9.43	11.26	8.23	9.57	6.37	3.47	2.43
2014-2018 mean	12.05	7.38	11.90	8.65	9.02	5.99	3.76	2.79
2019	12.93	8.27	8.23	5.96	8.59	5.20	2.85	1.93
2020	7.65	5.44	7.95	5.95	9.29	6.61	2.50	1.69
2016-2020 mean	12.39	7.87	10.68	7.88	9.34	6.26	3.40	2.41
25th	5.66	3.91	6.87	5.38	6.61	4.97	2.76	2.41
median	8.70	6.52	11.10	8.04	7.74	5.53	3.27	2.56
75th	11.14	7.64	11.87	8.52	9.36	6.37	3.61	3.22

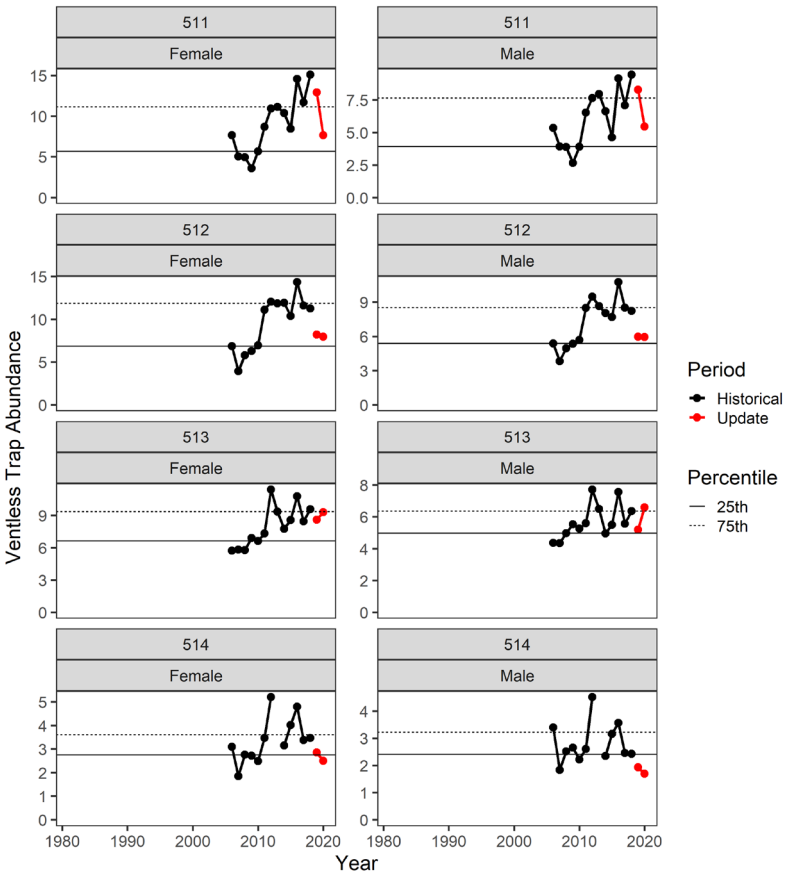


Figure 4. GOM abundance indicators: ventless trap survey abundance.

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

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

25th	0.06	0.18
median	0.11	0.29
75th	0.25	0.40

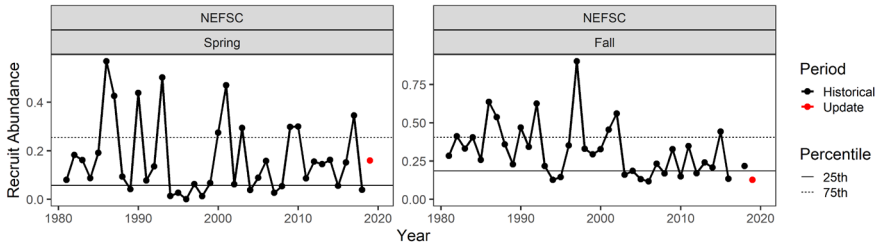


Figure 5. GBK abundance indicators: trawl survey recruit abundance.

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

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

25th	0.18	0.40
median	0.23	0.48
75th	0.29	0.55

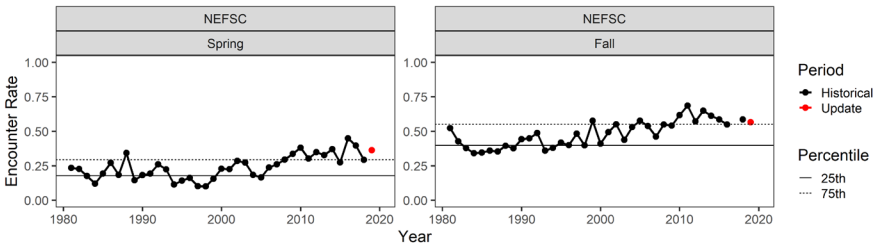


Figure 6. GBK abundance indicators: trawl survey encounter rate.

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

Burton Shank and Jeff Kipp

Sept. 9, 2021

The Lobster TC provided analysis to the ASFMC Lobster Board ahead of the Spring 2021 meeting with estimated outcomes to the Gulf of Maine / Georges Bank lobster fishery given the implementation of alternative management measures (min and max gauge size), including changes to total weight of lobsters landed, number of lobsters landed, Spawning Stock Biomass (SSB) and Exploitation. The analysis included an attempt to examine how fisheries in different LCMAs would be affected though the population simulation model was not re-parameterized for each LCMA. In discussions, we concluded that the simulations for LCMA1 were probably reasonably accurate because:

1. Many of the inputs for the simulations are taken from the 2020 stock assessment. Because the vast majority of the landings come from LCMA1, the stock assessment parameters are essentially already tuned to the parameters of the LCMA1 fishery.
2. LCMA1 is primarily a recruitment-based fishery in inshore or nearshore habitats and, therefore, likely to be representative of the full stock model.

However, there was concern that the offshore fishery in Lobster Management Area 3 was considerably different from the full stock model and, thus, may have inaccurate outcomes due to a mis-parameterized simulation model. The parameters for the Outer Cape Cod fishery are probably somewhere between LCMA1 and LCMA3 as it consists of both a resident lobster population and a seasonally-migrating population, moving between inshore and offshore habitats.

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

1. For the LCMA1 simulations, we used the stock assessment parameters as the inputs.
2. For LCMA3 simulations, we attempted to manually tune the population simulation model to match the catch characteristics of the LCMA3 fishery, under the assumption that a simulation model that could reproduce the catch characteristics of the fishery may more accurately project changes in the fishery given changing management measures.
3. For the OCC simulations, we ran two sets of simulations, using the input parameters for both LCMA1 and LCMA3 under the assumption that this bounds the dynamics we might see in OCC.

For all simulations, populations were initiated with zero abundance and run for 50 years with constant recruitment to allow population abundances and length comps to reach equilibrium.

The equilibrium populations were then compared across the various legal selectivity scenarios to determine the effect of these different management alternatives.

For a simple, model-free analysis of the fishery catch composition for LCMA1 and LCMA3, we calculated the cumulative proportion of catch by weight at length by converting catch-at-size to weight-at-size and weighting for unequal sex ratios and seasonality of landings.

LCMA1 Simulations

The input parameters for the LCMA1 simulations were primarily drawn from the 2020 stock assessment. This includes the recruitment seasonality, length composition and sex ratio, growth model, gear, legal and conservation selectivities and mean estimated fishing mortality from the terminal years.

LCMA1 Results

The cumulative catch weight-by-length curve indicates that the mean size of lobsters landed in the LCMA1 fishery is within the smallest legal size bin (83-91mm, Figure 1). Nearly 90% of the catch are below 100mm CL and only about 2% of the catch are over 120mm CL. This supports the perspective that LCMA1 landings involve a narrow range of small lobster sizes and is primarily a recruitment-dependent fishery.

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

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

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

Increasing legal size would result in moderate to large decreases in exploitation as more of the stock becomes protected (Table 4) with exploitation decreasing by nearly 30% at a minimum legal size of 88mm. As with catch weight and number, changing maximum legal size has little effect on exploitation rates as these sizes represent a very small portion of the LCMA1 population.

LCMA3 Simulations

We first analyzed the port and sea sampling data provided for the 2020 benchmark assessment but constrained to LCMA3 to estimate fishery characteristics, including catch size composition, catch sex ratio, and conservation selectivity (discarding due to egg-bearing or V-notch status).

We then specified the conservation selectivity from the biosamples and current legal selectivity appropriate for LCMA3 in the population simulation model and iteratively tuned the following parameters:

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

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

Once the model was tuned to perform as well as might be expected, given minor, seasonal lack-of-fit that could not be easily resolved, the simulation model was then run with the tuned parameters for all combinations of proposed minimum and maximum size limits. We then summarized the outputs from the different simulations as values relative to the current minimum and maximum size regulations in place for LCMA3.

Results

The cumulative catch weight-by-length curve indicates that 110 mm carapace length is the approximate mean size of lobsters landed in the LCMA3 fishery (Figure 1). However, the cumulative curve is nearly linear from 90mm through 130mm, indicating lobsters across this size range are about equally important to the landings of this fishery. Lobsters less than about 92mm constitute the lower 10% quantile of landings while lobsters greater than 136mm constitute the upper 10% quantile with lower and upper quartiles around 98mm and 123mm respectively. This suggests that LCMA3 landings include a broad range of lobster sizes, unlike typical inshore lobster fisheries that are primarily recruitment-driven.

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

recruitment is attributed to growth with the remainder of new individuals coming from immigration from outside the LCMA.

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

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

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

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

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

OCC Simulations

Due to time and data constraints, we did not attempt to tune a simulation model for OCC. Rather, we assume that population dynamics and fishing mortality rates in OCC are bounded by

the conditions observed in the LCMA1 and LCMA3 fisheries. Thus, we ran simulations for OCC using the OCC legal size range with both the LCMA1 and LCMA3 parameterizations and present both sets of results with the understanding that results for OCC should fall between these extremes.

In general, outputs (catch weight, number, SSB and exploitation) show different responses for the LCMA1 than the LCMA3 parameterizations. LCMA1 parameterizations tend to produce simulations that are very sensitive to changes in minimum legal size but not maximum legal size, while simulations with LCMA3 parameterization only slightly sensitive to changes in minimum legal size but moderately to highly sensitive to changes in maximum legal size.

Total weight of landings is projected to be sensitive to changing minimum legal size with the LCMA1 parameterization but be insensitive with the LCMA3 parameterization (Table 9 A & B). With the LCMA1 parameterization, decreasing minimum size is projected to decrease landings by ~5% while increasing legal size to 88mm would increase landings by 8%. Conversely, landings weight is insensitive to changes in maximum legal size for the LCMA1 parameterization but sensitive to changes for the LCMA3 parameterization.

Total catch number simulations shows trend similar to catch weight with the LCMA1 parameterization being sensitive to changes in minimum size and the LCMA3 parameterization sensitive to changes in maximum size (Figure 10 A & B). The pattern otherwise holds that larger minimum legal sizes result in lower catch numbers.

For SSB, the LCMA1 parameterization is responsive to both changes in minimum and maximum legal size while the LCMA3 parameterization is more sensitive to changes in maximum size (Figure 11 A & B). For example, decreasing minimum legal size to 127mm would increase SSB by between 24% and 65% for the LCMA1 and LCMA3 parameterizations, respectively. The ranges of minimum size tested in simulations produce changes in SSB in the rage of -26% to +76% for the LCMA1 parameterization and -1% to +6.8% for the LCMA3 parameterization.

Decreasing minimum legal size produce increases moderate to small increases in exploitation (16% to 4% for LCMA1 and LCMA3 parameterizations, respectively, Figure 12 A & B). Either increasing minimum legal size or decreasing maximum legal size decrease serve to decrease exploitation with a maximum decrease of ~39% observed at the largest minimum and smallest maximum size and the LCMA3 parameterization.

Discussion

There is a stark difference in cumulative landings by size between LCMA1 and LCMA3. LCMA1 is clearly a recruitment-based fishery that would be highly sensitive to variations in recruitment. The LCMA3 fishery, in contrast, is fishing a broad range of lobster sizes, and therefore ages, and is thus somewhat buffered from interannual variation in recruitment dynamics.

The LCMA1 fishery is highly sensitive to changes in minimum legal size because of high exploitation rates on newly-recruited lobsters. The range of minimum sizes tested in

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

Generally, decreasing maximum gauge sizes have larger effects for LCMA3 both relative to decreasing minimum sizes in LCMA3 or for changing maximum sizes for the other LCMAs. This matches the conclusions based on the cumulative catch curve (Figure 1) that showed that the LCMA3 fishery lands a much broader size range of individuals than the inshore LCMAs, with the upper portion of length compositions overlapping proposed alternative maximum sizes.

This analysis for LCMA3 matches previous analysis conducted for inshore LCMAs, finding that larger minimum legal sizes had positive effects across population parameters including higher catch weights, increased SSB and decreased exploitation. However, decreasing maximum legal sizes has mixed effects, decreasing immediate landings but increasing SSB, potentially by a larger margin. Because recruitment subsidies from increasing SSB are not included in this simulation, the net effect of these two opposing changes are uncertain. While decreasing maximum legal sizes would decrease immediate landings and make a larger portion of the population inaccessible to the fishery permanently (i.e. excluded lobsters won't grow into a legal size in the future), this increase in SSB may eventually produce a recruitment subsidy that could offset this loss of catch. The net effect would depend on multiple factors including the connectivity of the added SSB to larval settlement habitat and the migration patterns of these large females into adjacent habitats including inshore Gulf of Maine and international waters.

Finally, it is important to note the importance of large female lobsters that dominate the landings for much of LCMA3. This both highlights the partial dependence of this fishery on immigration from adjacent habitats and adds uncertainty to this analysis. The growth and molt cycling of such large females is poorly understood and are not particularly well informed in the current growth model. Thus, the tuned parameters may be biased by mis-specification of the growth model and results in this analysis may be sensitive to the growth model used in some cases. Interpretation of tuned parameters and confidence in the precise results of this analysis should be taken with some caution. However, the general patterns of changing catch, SSB and exploitation with changes in minimum and maximum legal sizes is consistent across this and previous analyses so may be treated with higher confidence.

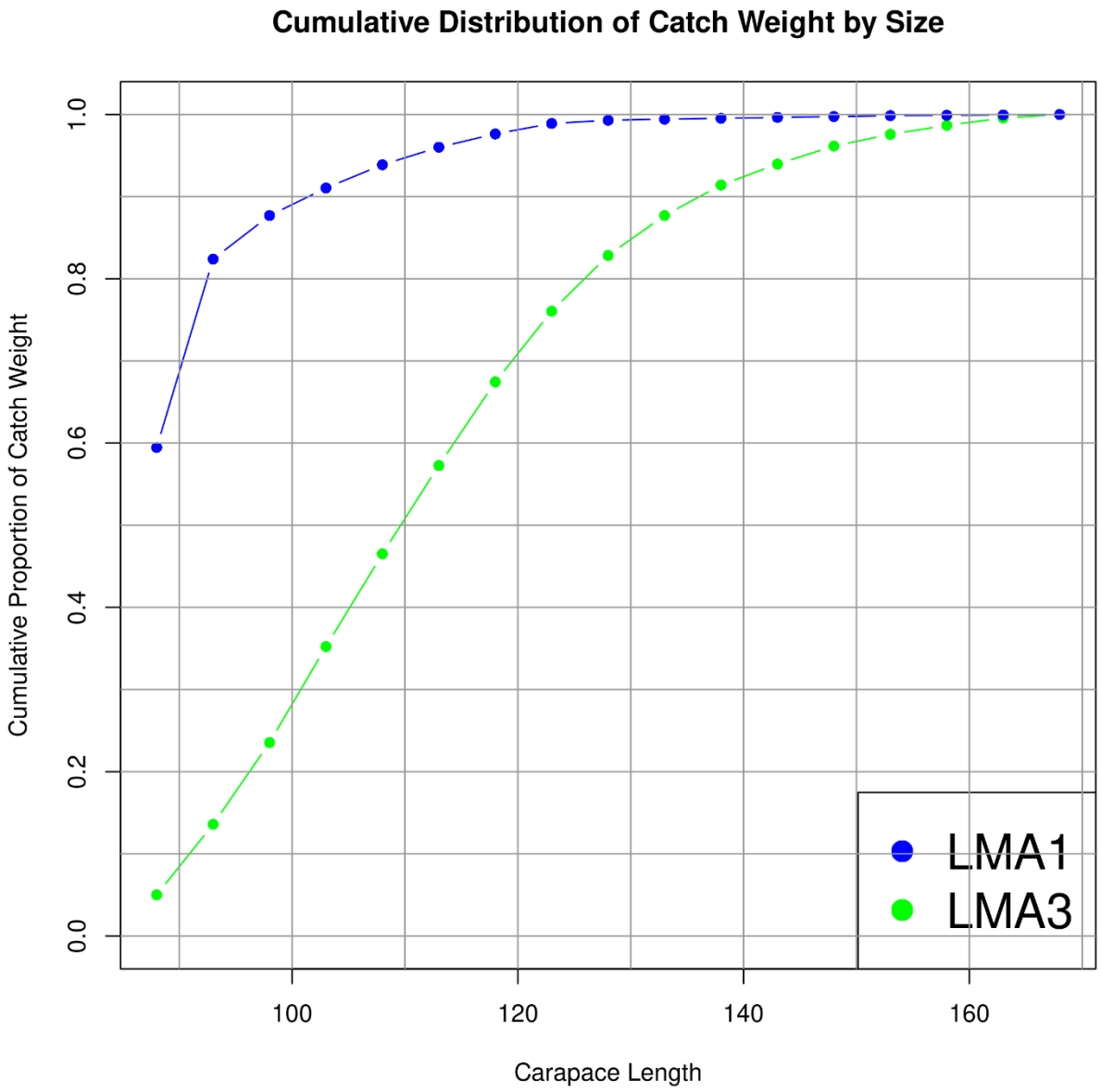


Figure 1. Cumulative proportion of catch weight by carapace length. To interpret, lobsters less than 90mm constitute approximately 8% of landings, while lobsters less than 130mm constitute approximately 85% of landings.

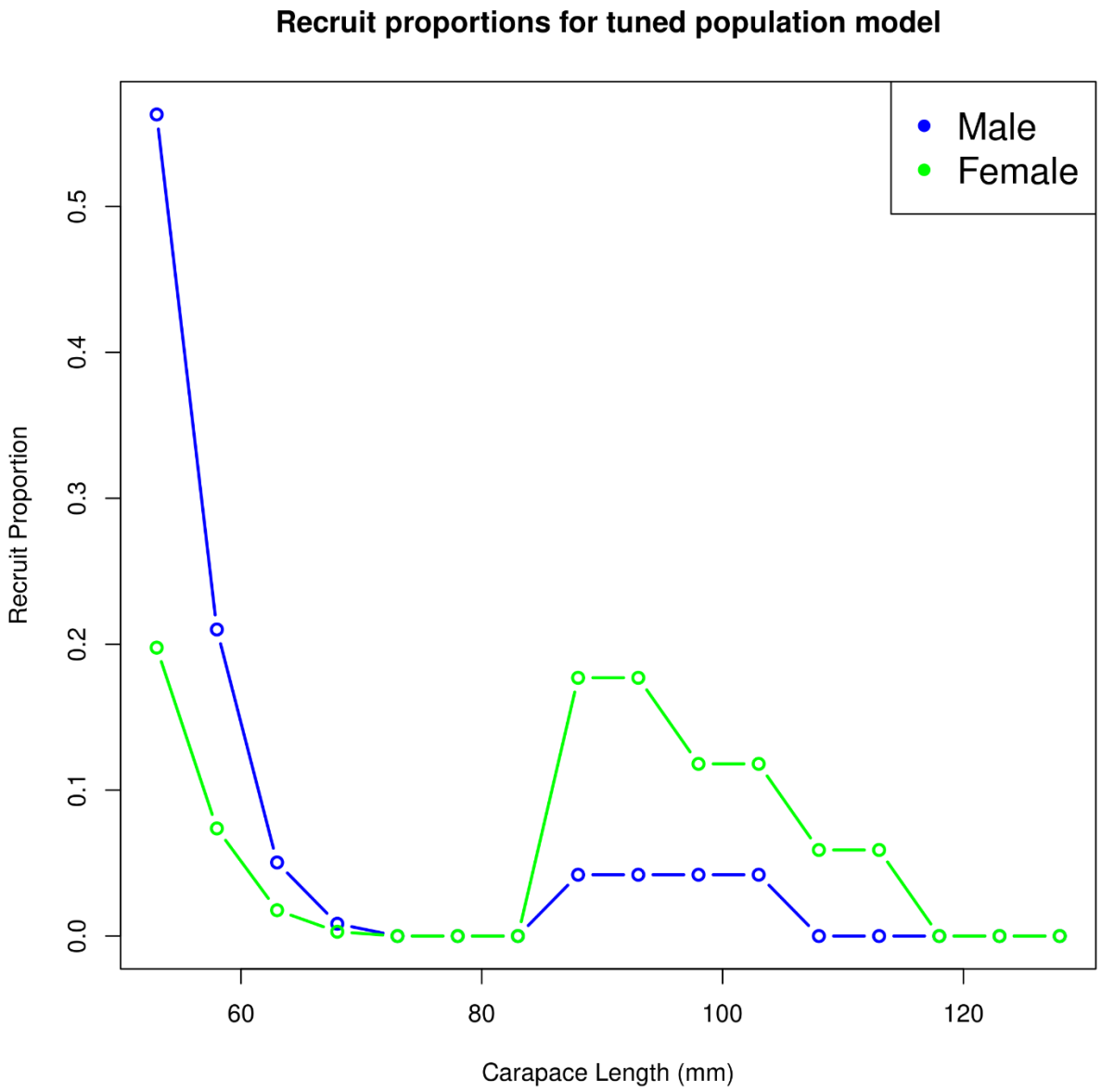


Figure 2. Tuned recruitment length compositions for the fitted model. The bi-modal length distribution suggests a combination of recruitment by growth (individuals <70mm) and migration (individuals >85 mm) with males primarily recruiting by growth and females primarily recruiting by migration as mature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

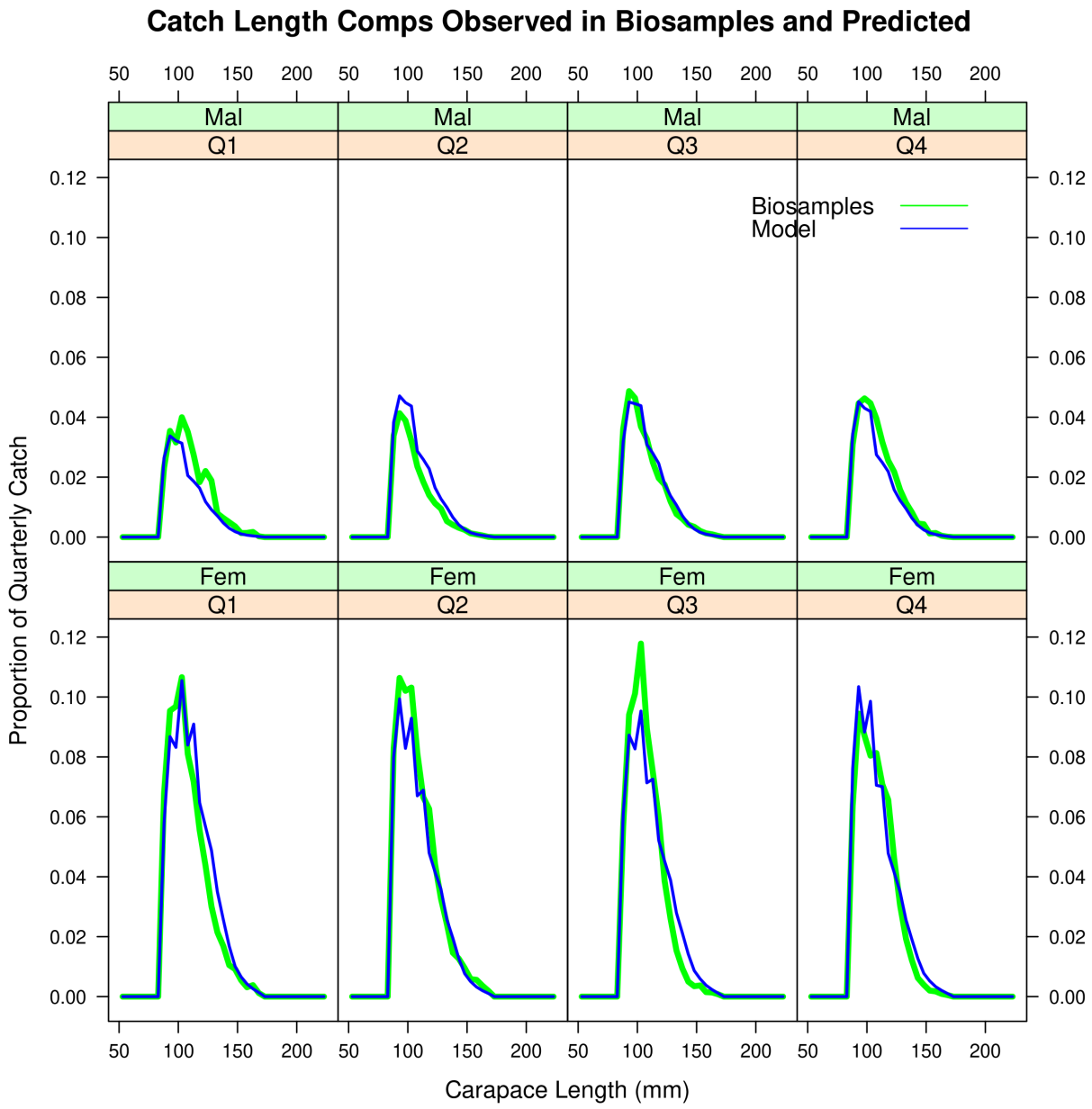


Figure 3. LCMA 3 catch length compositions by sex and quarter based on biosampling and from the tuned population model.

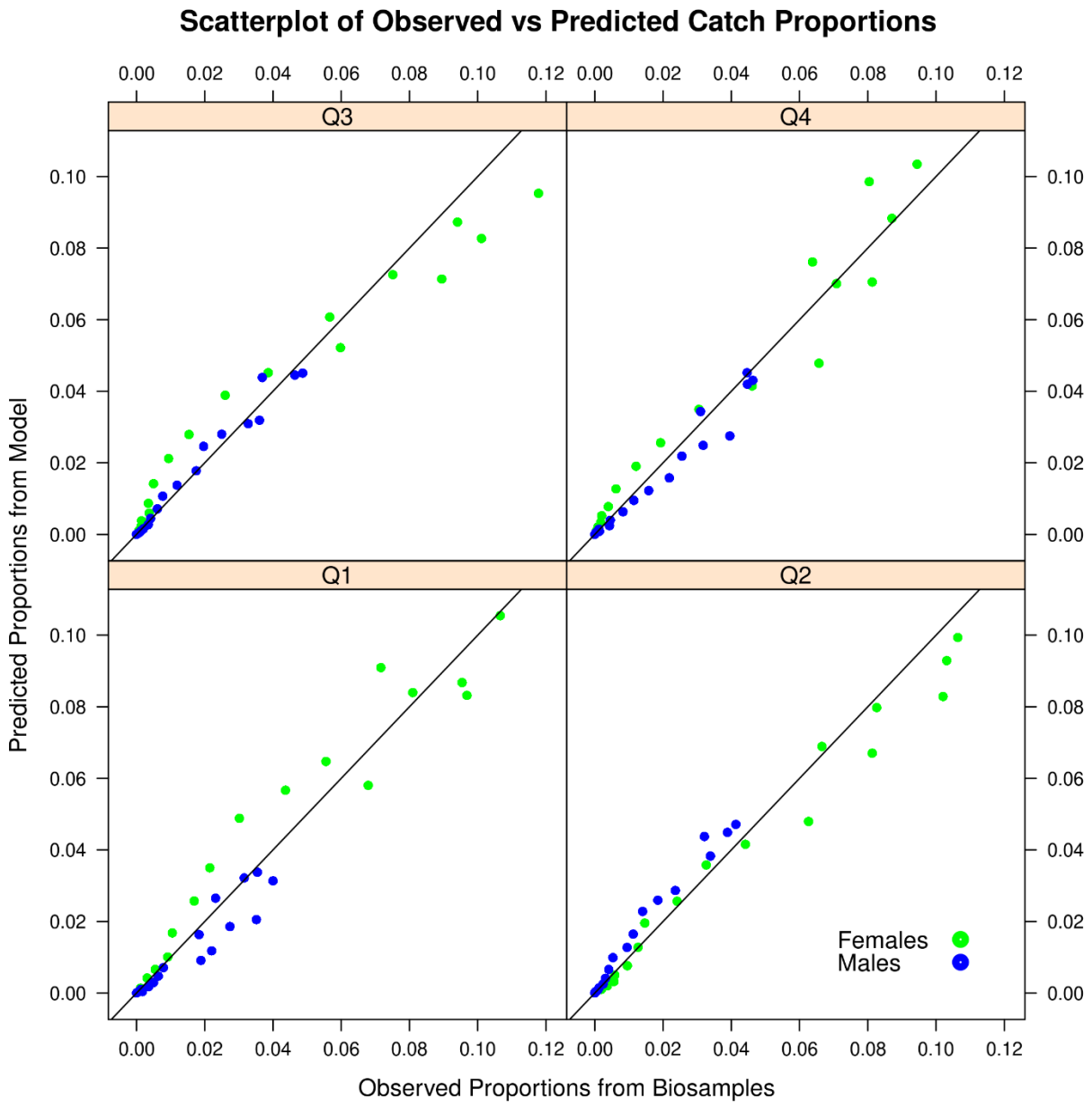


Figure 4. Relationship between length composition proportions observed in biosamples and predicted in the tuned population model by quarter and sex. The diagonal 1:1 line shows an ideal fit between the data sets.

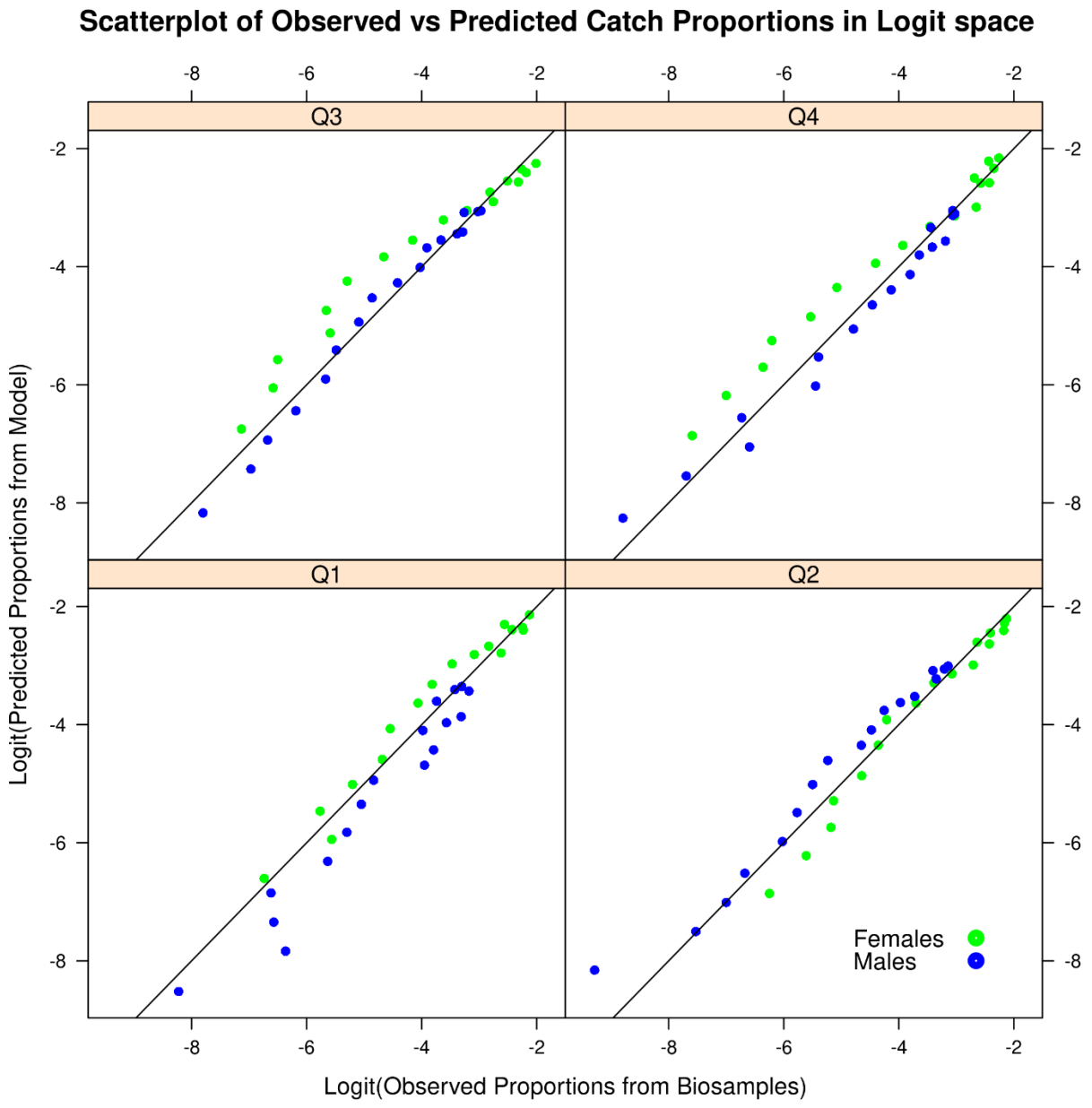


Figure 5. Relationship between length composition proportions observed in biosamples and predicted in the tuned population model by quarter and sex. Data points are logit-transformed to emphasize fit to lengths that occur in low proportions. The diagonal 1:1 line shows an ideal fit between the data sets.

Table 1. LCMA1 projected relative changes to Weight of Landings resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

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

Table 2. LCMA1 projected relative changes to Number of lobsters Landed resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

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

Table 3. LCMA1 projected relative changes to Spawning Stock Biomass resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

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

Table 4. LCMA1 projected relative changes to Exploitation resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

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

Table 5. LCMA3 projected relative changes to Weight of Landings resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

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

Table 6. LCMA3 projected relative changes to Number of lobsters Landed resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

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

Table 7. LCMA3 projected relative changes to Spawning Stock Biomass resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

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

Table 8. LCMA3 projected relative changes to Exploitation resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell).

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

Table 9. OCC projected relative changes to Weight of Landings resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell), based on (A) LCMA1 or (B) LCMA3 paramerizations.

A.

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

B.

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

Table 10. OCC projected relative changes to Number of lobsters Landed resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell), based on (A) LCMA1 or (B) LCMA3 parameterizations.

A.

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

B.

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

Table 11. OCC projected relative changes to Spawning Stock Biomass resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell), based on (A) LCMA1 or (B) LCMA3 parameterizations.

A.

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

B.

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

Table 12. OCC projected relative changes to Exploitation resulting from alternative minimum and maximum options, relative to the current regulations (yellow cell), based on (A) LCMA1 or (B) LCMA3 paramerizations.

A.

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

B.

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

Appendix C. Trigger Mechanism Analysis and Recommendation

Recruit (71-80 mm carapace length) indices are used as model-free indicators of recruitment to the lobster fishery in the following year. During the 2020 stock assessment, recruit indicators were found to be correlated with the stock assessment model estimates of reference abundance (78+ mm carapace length), providing a reliable means to track abundance changes and potential need for management response more frequently than through intermittent stock assessments. There are eight GOM/GBK stock recruit indicators updated for each assessment: spring and fall indices for each of the ME/NH, MA DMF, NEFSC GOM, and NEFSC GBK bottom trawl surveys. The NEFSC indicators in the GOM and GBK regions are considered to be indicators of offshore recruitment which differs from the GOM/GBK stock-wide recruitment dynamics. Therefore, the American Lobster Technical Committee (TC) recommended using only the inshore surveys (ME/NH and MA DMF) where the bulk of the population and fishery occur, which are assumed to be more representative of stock-wide recruitment. These trawl surveys employ similar methodologies and, along with selectivity and swept area calibration factors, can be combined into two indices, a spring index and a fall index. Additionally, the TC recommends using the standardized index from the Ventless Trap Survey as an indicator of recruitment during the summer.

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

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

index. That is, the 2017 reference level was the 2017 point value for the annual index trigger method, the 2015-2017 average for the three-year running average trigger method, and the 2015-2017 running median for the three-year running median trigger method. The scaled individual and combined indices are compared to various trigger points related to assessment abundance reference points in Figure 1.

The TC treated 0.68 (i.e., a 32% decline) as the trigger for action in the simulation analysis. This decline represents the proportional change between the terminal year stock assessment reference abundance level and the boundary between the high and moderate abundance regimes. Each individual index was projected from 2018 to 2025 following a steady decline that reflected a 32% decline from the observed 2017 index value in 2021. This projected trend is hypothetical to evaluate the performance of the three calculation methods being considered and does not necessarily reflect the true status or projection of the population. It was unclear what impacts the method used to calculate the starting point of the projected trend would have on performance of each trigger mechanism, so declines projected from the (1) 2017 point value, (2) 2015-2017 running average, and (3) 2015-2017 running median were evaluated in three separate scenarios. Indices were then sampled from these simulated trends with CVs equal to the average CV over the respective index's time series, assuming a lognormal error structure. These simulations only consider observation error and do not account for process error. Indices were scaled to their reference level as described above, averaged across surveys, and the combined trigger index was evaluated for whether or not it would trigger action ($\leq$0.68) in each year of the projection period. This was repeated 1,000 times for each scenario and action determinations were tallied by year for each of the methods.

Results show similar patterns between the scenarios using a simulated decline from the 2017 point value and from the 2015-2017 average (Table 1; Figures 2-3). The 2015-2017 running median was equal to the 2017 point value for all indices, so the results with a simulated decline from this value were identical to the 2017 point value scenario (Table 2; Figure 4). Incorrect action is triggered very infrequently (< 3% of the time) by the annual and running median methods in the first two years of the projection period and never by the running average method. On average, the annual and running median methods incorrectly triggered action about 9% of the time and about 15 times more frequently than the running average method the year before the decline reached the threshold (2020), but also correctly triggered action ≈38% of the time and roughly twice as frequently as the running average method in the year when the threshold was met (2021). The running average method then tended to perform as well as or better than the other methods from 2022-2025, albeit generally at smaller margins of difference, as all methods tended to perform relatively well in these later years when the decline is exacerbated. The delayed response of the running average method can be seen in Figures 5-7, where the median trigger index value across simulations tends to be slightly higher than the annual and running median methods. The variance in index values, however, is lower for the running average method resulting in more consistency across simulations in terms of guidance for management action, whereas the other methods result in mixed guidance for some of the more extreme simulations in more years than the running average method.

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

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

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

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

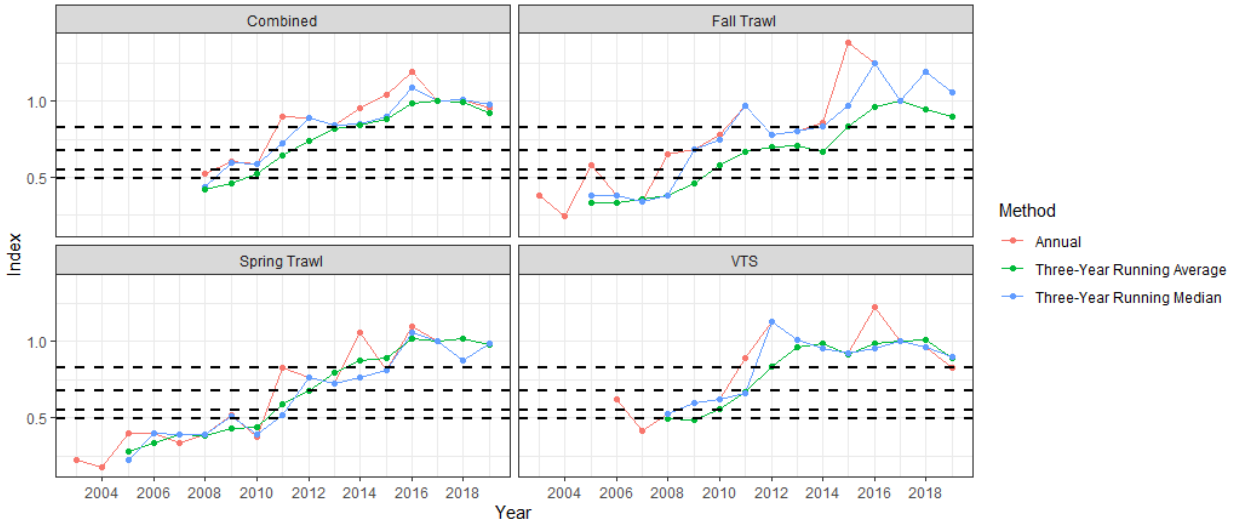


Figure 1. Scaled individual and combined indices using three calculation methods compared to four trigger levels (0.83 – Fishery/Industry Target, 0.68 – Moderate/High Abundance Regime Shift Level, 0.55 – Abundance Limit, 0.49 – Abundance Threshold) identified from potential reference abundance declines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

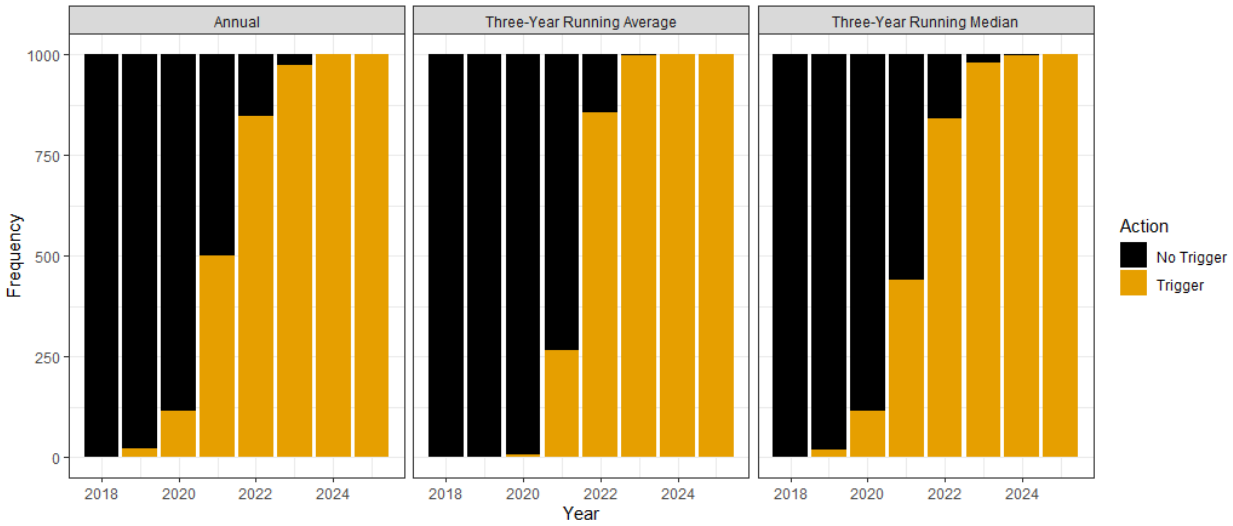


Figure 2. Annual action determinations by method from 1,000 simulated indices with the simulated population declining from the 2017 point value. The simulated stock was projected to decline 32% in 2021.

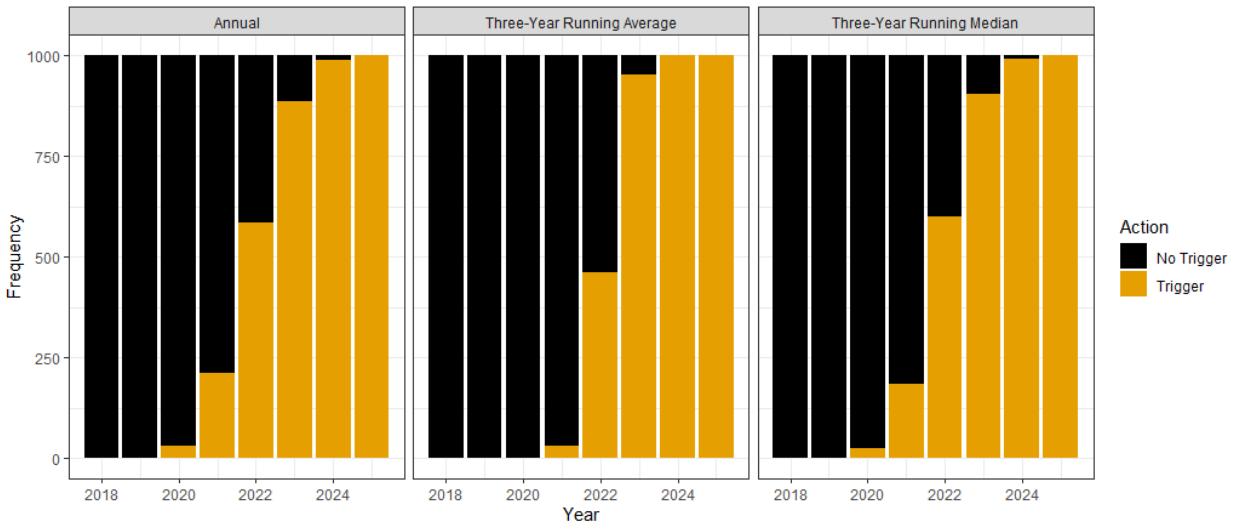


Figure 3. Annual action determinations by method from 1,000 simulated indices with the simulated population declining from the 2015-2017 average. The simulated stock was projected to decline 32% in 2021.

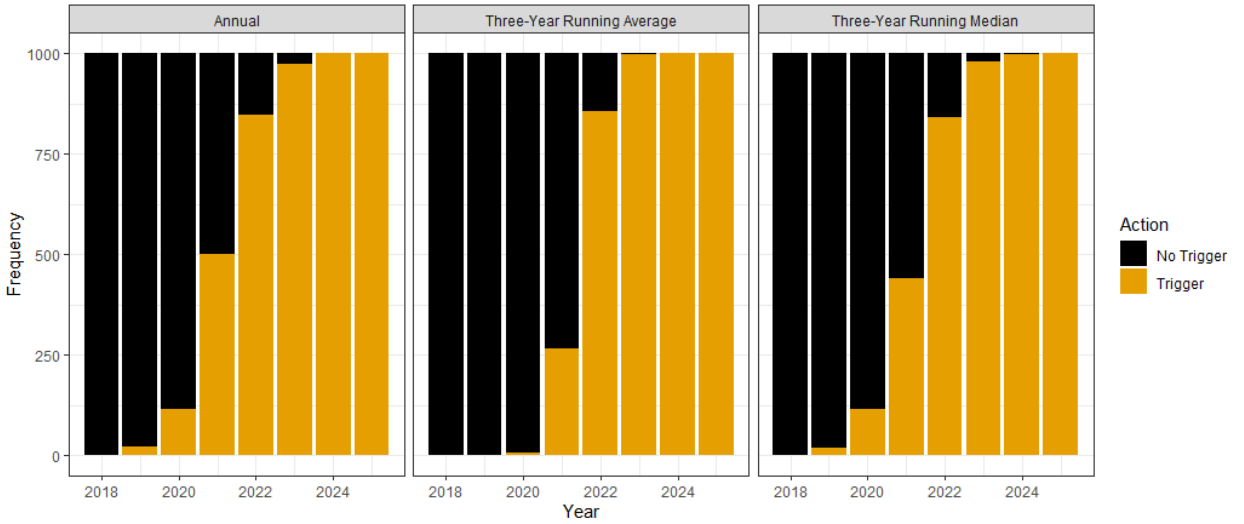


Figure 4. Annual action determinations by method from 1,000 simulated indices with the simulated population declining from the 2015-2017 median. The simulated stock was projected to decline 32% in 2021.

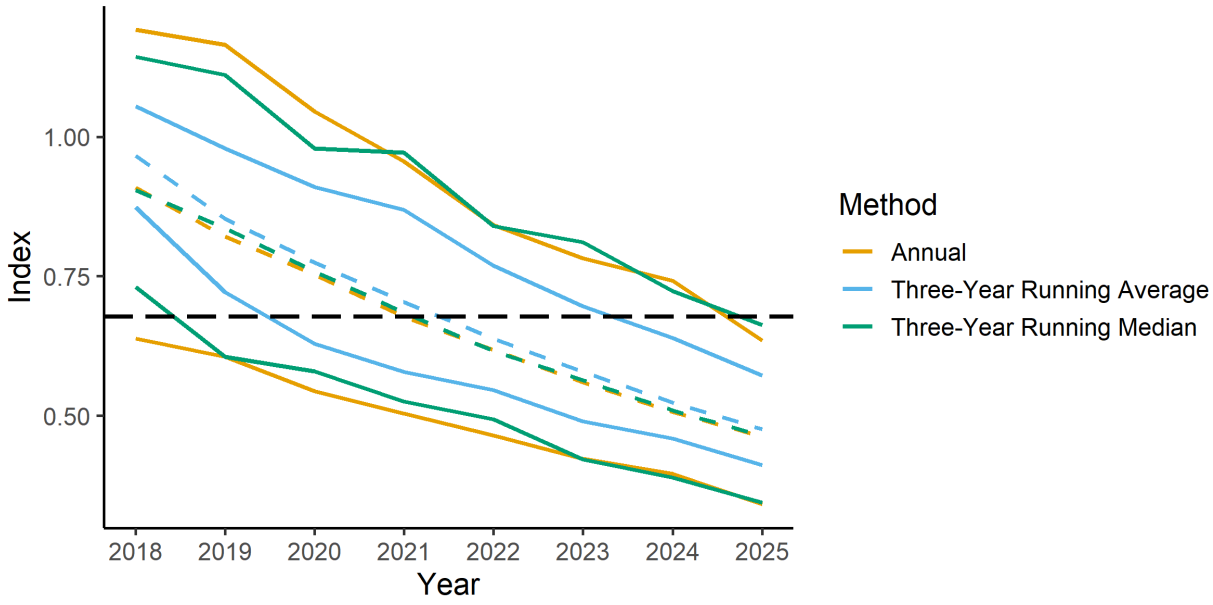


Figure 5. Distribution of index values by method from 1,000 simulations with the simulated population declining from the 2017 point value. The dashed colored lines are the median index values across simulations, the solid color lines are the minimum and maximum index values across simulations, and the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

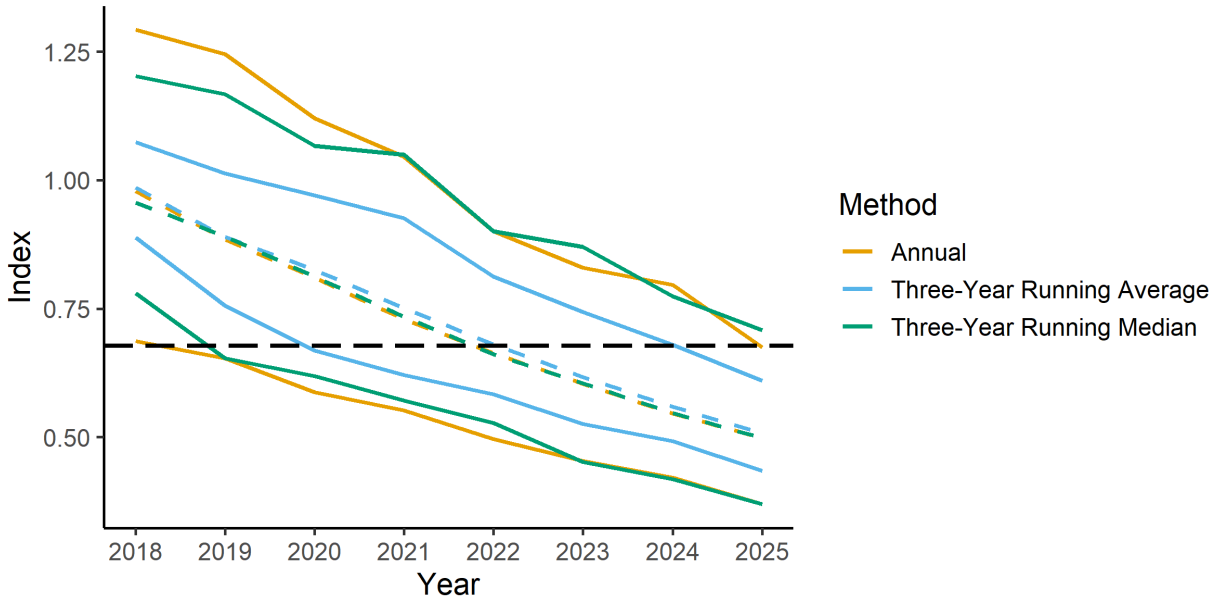


Figure 6. Distribution of index values by method from 1,000 simulations with the simulated population declining from the 2015-2017 running average. The dashed colored lines are the median index values across simulations, the solid color lines are the minimum and maximum index values across simulations,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

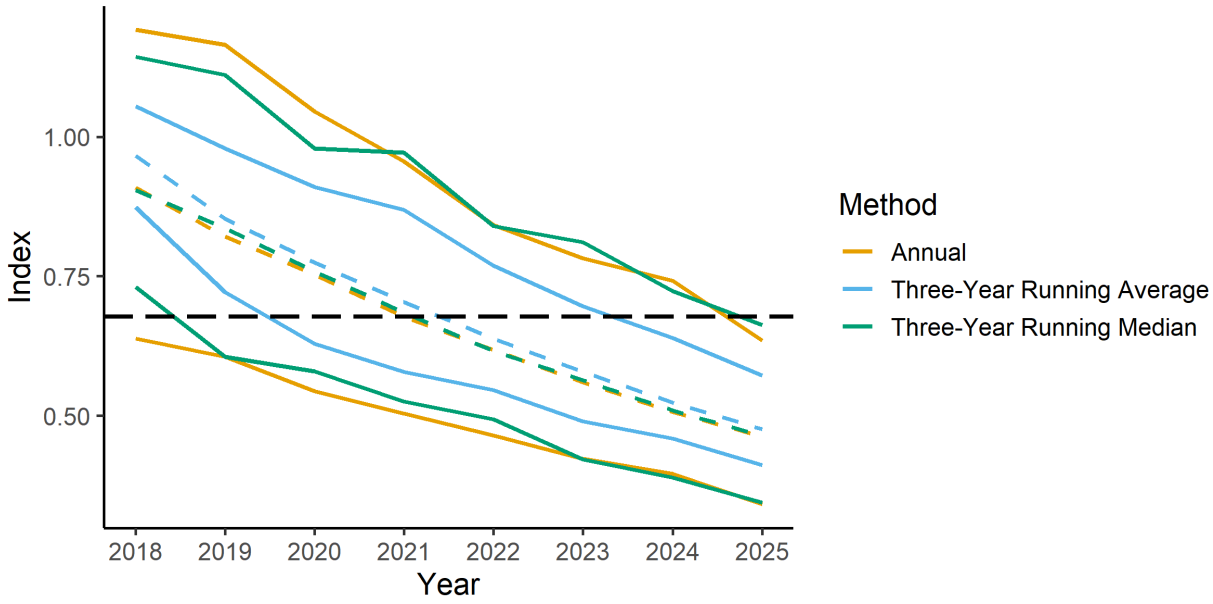


Figure 7. Distribution of index values by method from 1,000 simulations with the simulated population declining from the 2015-2017 running median. The dashed colored lines are the median index values across simulations, the solid color lines are the minimum and maximum index values across simulations,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

Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

MEMORANDUM

TO: **American Lobster Management Board**

FROM: **Jonah Crab Technical Committee and Jonah Crab Stock Assessment Subcommittee**

DATE: **January 7, 2022**

SUBJECT: **Jonah Crab Stock Assessment Terms of Reference and Timeline**

The first coastwide Jonah crab stock assessment is scheduled to be completed in 2023. The Jonah Crab Technical Committee (TC) and Stock Assessment Subcommittee (SAS) have recommended the Board consider the following terms of reference (TORs). The first set of TORs are to be addressed by the TC and SAS during the stock assessment. The second set of TORs are to be addressed by the peer review panel that reviews that stock assessment upon completion by the TC and SAS. A timeline of the stock assessment process, including major milestones, is also included.

Terms of Reference for the Jonah Crab Assessment

1. Characterize precision and accuracy of fishery-dependent and fishery-independent data used in the assessment, including the following but not limited to:
    a. Provide descriptions of each data source (e.g., geographic location, sampling methodology, potential explanation for outlying or anomalous data).
    b. Describe calculation and potential standardization of abundance indices.
    c. Discuss trends and associated estimates of uncertainty (e.g., standard errors).
    d. Justify inclusion or elimination of available data sources.

2. Discuss the effects of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, sample size) on model inputs and outputs.

3. Develop simple, empirical indicators of stock abundance, stock characteristics, and fishery characteristics that can be monitored annually between stock assessments.

4. Develop models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, and analyze model performance.
    a. Describe stability of model (e.g., ability to find a stable solution, invert Hessian).
    b. Justify choice of CVs, effective sample sizes, or likelihood weighting schemes.
    c. Perform sensitivity analyses for starting parameter values, priors, etc. and conduct other model diagnostics as necessary.
    d. Clearly and thoroughly explain model strengths and limitations.

e. Briefly describe history of model usage, its theory and framework, and document associated peer-reviewed literature. If using a new model, test using simulated data.
f. If multiple models were considered, justify the choice of preferred model and the explanation of any differences in results among models.

5. State assumptions made for all models and explain the likely effects of assumption violations on synthesis of input data and model outputs. Examples of assumptions may include (but are not limited to):
    a. Choice of stock-recruitment function.
    b. Calculation of M. Choice to use (or estimate) constant or time-varying M and catchability.
    c. Choice of equilibrium reference points or proxies for MSY-based reference points.
    d. Constant ecosystem (abiotic and trophic) conditions.

6. Characterize uncertainty of model estimates and biological or empirical reference points.

7. Recommend stock status as related to reference points (if available). For example:
    a. Is the stock below the biomass threshold?
    b. Is F above the threshold?

8. Other potential scientific issues:
    a. Compare reference points derived in this assessment with what is known about the general life history of the exploited stock. Explain any inconsistencies.
    b. Explore, identify, describe, and, if possible, quantify environmental/climatic drivers.

9. If a minority report has been filed, explain majority reasoning against adopting approach suggested in that report. The minority report should explain reasoning against adopting approach suggested by the majority.

10. Develop detailed short and long-term prioritized lists of recommendations for future research, data collection, and assessment methodology. Highlight improvements to be made by next benchmark review.

11. Recommend timing of next benchmark assessment and intermediate updates, if necessary relative to biology and current management of the species.

Terms of Reference for the Jonah Crab Peer Review

1. Evaluate the thoroughness of data collection and the presentation and treatment of fishery-dependent and fishery-independent data in the assessment, including the following but not limited to:
    a. Presentation of data source variance (e.g., standard errors).
    b. Justification for inclusion or elimination of available data sources,
    c. Consideration of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, sample size),
    d. Calculation and/or standardization of abundance indices.

2. Evaluate empirical indicators of stock abundance, stock characteristics, and fishery characteristics for their appropriateness to monitor the stock between assessments.

3. Evaluate the methods and models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, including but not limited to:
    a. Evaluate the choice and justification of the preferred model(s). Was the most appropriate model (or model averaging approach) chosen given available data and life history of the species?
    b. If multiple models were considered, evaluate the analysts' explanation of any differences in results.
    c. Evaluate model parameterization and specification (e.g., choice of CVs, effective sample sizes, likelihood weighting schemes, calculation/specification of M, stock-recruitment relationship, choice of time-varying parameters, plus group treatment).

4. Evaluate the diagnostic analyses performed (e.g., sensitivity analyses to determine model stability and potential consequences of major model assumptions, retrospective analysis).

5. Evaluate the methods used to characterize uncertainty in estimated parameters. Ensure that the implications of uncertainty in technical conclusions are clearly stated.

6. If a minority report has been filed, review minority opinion and any associated analyses. If possible, make recommendation on current or future use of alternative assessment approach presented in minority report.

7. Recommend best estimates of stock biomass, abundance, and exploitation from the assessment for use in management, if possible, or specify alternative estimation methods.

8. Evaluate the choice of reference points and the methods used to estimate them. Recommend stock status determination from the assessment, or, if appropriate, specify alternative methods/measures.

9. Review the research, data collection, and assessment methodology recommendations provided by the TC and make any additional recommendations warranted. Clearly prioritize the activities needed to inform and maintain the current assessment, and provide recommendations to improve the reliability of future assessments.

10. Recommend timing of the next benchmark assessment and updates, if necessary, relative to the life history and current management of the species.

11. Prepare a peer review panel terms of reference and advisory report summarizing the panel's evaluation of the stock assessment and addressing each peer review term of reference. Develop a list of tasks to be completed following the workshop. Complete and submit the report within 4 weeks of workshop conclusion.

Jonah Crab Stock Assessment Preliminary Timeline

Item	Participants	Purpose	Date(s)
ASMFC Winter Meeting	Board, Staff	Board approval of ToRs and Timeline	January 2022
Data Submission Deadline	TC, public data holders	Provide data for assessment	April 29, 2022
ASMFC Spring Meeting	Board, Staff	Board update (if necessary)	May 2022
Data Workshop	TC, SAS, Staff	Review data; Identify data tasks	3 days, June 2022
ASMFC Summer Meeting	Board, Staff	Board update (if necessary)	August 2022
Methods Workshop	TC, SAS, Staff	Review results of data tasks from Data Workshop; Identify assessment methods to pursue	3 days, September 2022
ASMFC Annual Meeting	Board, Staff	Board update (if necessary)	October 2022
Assessment Workshop	SAS, Staff	Review results of assessment methods	4 days, February 2023
TC Review Webinar	SAS, TC, Staff	TC review and approval of assessment	May 2023
Peer Review Planning Webinar	TC, SAS, Peer Reviewers, Staff	Introductions, Q&A, reviewer requests for workshop	June 2023
Peer Review Workshop	SAS Subgroup, Peer Reviewers, Staff	Review assessment	July 2023
ASMFC Summer Meeting	Board, Staff	Board update (if necessary)	August 2023
ASMFC Annual Meeting	Board, SAS Chair, Peer Review Chair	Present final reports for Board consideration	October 2023

ATLANTIC STATES MARINE FISHERIES COMMISSION

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR AMERICAN LOBSTER
(*Homarus americanus*)

2020 FISHING YEAR

Prepared by the Plan Review Team

January 2022

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Table of Contents

1.0 Status of the Fishery Management Plan 2
2.0 Status of the Fishery 2
2.1 Commercial Fishery 2
2.2 Recreational Fishery 3
3.0 Status of the Stock 3
4.0 Status of Management Measures 4
4.1 Implemented Regulations 4
4.2 On-Going Management Action 8
5.0 Ongoing Trap Reductions 8
6.0 Fishery Dependent Monitoring 9
7.0 Status of Fishery Independent Monitoring 9
7.1 Trawl Surveys 9
7.2 Young of Year Index 10
7.3 Ventless Trap Survey 11
8.0 State Compliance 13
9.0 De Minimis Requests 13
10.0 Regulatory Changes 13
11.0 Enforcement Concerns 14
12.0 Research Recommendations 15
13.0 Plan Review Team Recommendations 18
14.0 Tables 19
15.0 Figures 24

***This document covers fishery activities in 2020 as well as trap reductions which took place ahead of the 2021 fishing year*.**

1.0 Status of the Fishery Management Plan

Year of ASMFC Plan's Adoption:	Amendment 3 (1997)
Plan Addenda:	
Addendum II (2001)	Addendum XIV (2009)
Addendum III (2002)	Addendum XV (2009)
Addendum IV (2003)	Addendum XVI (2010)
Addendum V (2004)	Addendum XVII (2012)
Addendum VI (2005)	Addendum XVIII (2012)
Addendum VII (2005)	Addendum XIX (2013)
Addendum VIII (2006)	Addendum XX (2013)
Addendum IX (2006)	Addendum XXI (2013)
Addendum X (2007)	Addendum XXII (2013)
Addendum XI (2007)	Addendum XXIII (2014)
Addendum XII (2008)	Addendum XXIV (2015)
Addendum XIII (2008)	Addendum XXVI (2018)
Management Unit:	Maine through North Carolina
States with a Declared Interest:	Maine through Virginia (Excluding Pennsylvania and DC)
Active Committees:	American Lobster Management Board, Technical Committee, Lobster Conservation Management Teams, Plan Development Team, Plan Review Team, Advisory Panel, Electronic Reporting Subcommittee, Electronic Tracking Subcommittee, Stock Assessment Subcommittee

2.0 Status of the Fishery

2.1 Commercial Fishery

The lobster fishery has seen incredible expansion in landings over the last 40 years. Between 1950 and 1975, landings were fairly stable around 30 million pounds; however, from 1976 to 2008 the average coastwide landings tripled, exceeding 98 million pounds in 2006. Landings continued to increase until reaching a high of 159 million pounds in 2016 (Table 1). In 2020, coastwide commercial landings were approximately 121.9 million pounds, a 4% decrease from 2019 landings of 127.2 million pounds. The largest contributors to the 2020 fishery were Maine and Massachusetts with 80% and 14% of landings, respectively. Landings, in descending order, also occurred in New Hampshire, Rhode Island, New Jersey, Connecticut, New York, Delaware, Maryland, and Virginia. The ex-vessel value for all lobster landings in 2020 was approximately $529 million.

Historically, Lobster Conservation Management Area (LCMA) 1 has had the highest landings, and accounted for 80% of total harvest between 1981 and 2012. This is followed by LCMA 3 which accounted for 9% of total landings during the same time period. In general, landings have increased in LCMA 1 and have decreased in LCMAs 2, 4, and 6. According to state compliance reports, in 2020, approximately 91% of the total landings came from LCMA 1, while the remaining 9% were contributed by LCMA 3, OCC, 2, 4, 6 and 5, in descending order. A map of the LCMAs is found in Figure 1.

Landings trends between the two biological stocks have also changed, as a greater percentage of lobster are harvested from the Gulf of Maine/Georges Bank (GOM/GBK) stock. In 1997, 26.3% of coastwide landings came from the Southern New England (SNE) stock. However, as the southern stock declined and abundance in the Gulf of Maine increased, proportional harvest has significantly changed. In 2000, only 15.6% of landings came from the SNE stock and by 2006, this declined to 7%. In 2020, approximately 2% of coastwide landings came from the SNE stock. In 2020 the GOM/GBK stock accounted for 119 million pounds while the SNE stock accounted for 2.5 million.

2.2 Recreational Fishery

Lobster is also taken recreationally with pots, and in some states, by hand while SCUBA diving. While not all states collect recreational harvest data, some do report the number of pounds landed recreationally and/or the number of recreational permits issued. In 2019, New York reported 1,741 pounds of lobster harvested recreationally, representing 1.4% of state landings. New Hampshire reported 5,305 pounds of lobster harvested recreationally, representing 0.11% of total landings in the state. Maine, Rhode Island, and Connecticut do not collect information on the number of pounds recreationally harvested. For 2020, Rhode Island issued 509 lobster licenses, and lobster licenses sold in Connecticut declined from 875 in 2019 to 286 in 2020. Massachusetts did not provide recreational landings data for 2020 due to data delays related to the COVID-19 pandemic, but for the past five years that data were available (2011-2015) recreational lobster landings represented an average of 1.4% of the total state landings.

3.0 Status of the Stock

The recent 2020 American Lobster Benchmark Stock Assessment presents contrasting results for the two American lobster stock units, with record high abundance and recruitment in the Gulf of Maine and Georges Bank stock (GOM/GBK) and record low abundance and recruitment in the Southern New England stock (SNE) in recent years.

The assessment found that abundance estimates for the GOM/GBK stock show an increasing trend beginning in the late 1980s. After 2008, the rate of increase accelerated to a record high abundance level in 2018, the terminal year of the assessment. The GOM/GBK stock shifted from a low abundance regime during the early 1980s through 1995 to a moderate abundance regime during 1996-2008, and shifted once again to a high abundance regime during 2009-2018 (Figure 2). Current spawning stock abundance and recruitment and are near record highs. Exploitation (commercial landings relative to stock abundance) declined in the late 1980s and has remained relatively stable since.

The GOM/GBK stock is in favorable condition based on the new recommended reference points adopted by the Board (Table 2). The average abundance from 2016-2018 was 256 million lobster, which is greater than the fishery/industry target of 212 million lobster. The average exploitation from 2016-2018 was 0.459, below the exploitation target of 0.461. Therefore the GOM/GBK lobster stock is not depleted and overfishing is not occurring.

In contrast to GOM/GBK, model results for SNE show a completely different picture of stock health. Abundance estimates in SNE have declined since the late 1990s to record low levels. Model estimates of recruitment and spawning stock biomass have also declined to record low levels. Analysis of these estimates indicates a declining trend in stock productivity, indicating reproductive rates are insufficient to sustain a stable population at current exploitation rates. Exploitation of the SNE stock was high and stable through 2002, declined sharply in 2003, and has remained lower and stable since.

Based on the new abundance threshold reference point, the SNE stock is significantly depleted. The average abundance from 2016-2018 was 7 million lobster, well below the threshold of 20 million lobster (Table 2, Figure 3). However, according to the exploitation reference points the SNE stock is not experiencing overfishing. The average exploitation from 2016-2018 was 0.274, falling between the exploitation threshold of 0.290 and the exploitation target of 0.257.

The assessment and peer review panel recommended significant management action be taken to provide the best chance of stabilizing or improving abundance and reproductive capacity of the SNE stock.

4.0 Status of Management Measures

4.1 Implemented Regulations

Amendment 3 established regulations which require coastwide and area specific measures applicable to commercial fishing (Table 3). The coastwide requirements from Amendment 3 are summarized below; additional requirements were established through subsequent Addenda.

Coastwide Requirements and Prohibited Actions

- Prohibition on possession of berried or scrubbed lobsters
- Prohibition on possession of lobster meats, detached tails, claws, or other parts of lobsters by fishermen
- Prohibition on spearing lobsters
- Prohibition on possession of v-notched female lobsters
- Requirement for biodegradable “ghost” panel for traps
- Minimum gauge size of 3-1/4”
- Limits on landings by fishermen using gear or methods other than traps to 100 lobsters per day or 500 lobsters per trip for trips 5 days or longer
- Requirements for permits and licensing
- All lobster traps must contain at least one escape vent with a minimum size of 1-15/16” by 5-3/4”
- Maximum trap size of 22,950 cubic inches in all areas except area 3, where traps may not exceed a volume of 30,100 cubic inches.

Amendment 3 to the Interstate Fishery Management Plan for American Lobster (December 1997)

American lobster is managed under Amendment 3 to the Interstate FMP for American Lobster. Amendment 3 establishes seven lobster management areas. These areas include the: Inshore Gulf of Maine (LCMA 1), Inshore Southern New England (LCMA 2), Offshore Waters (LCMA 3), Inshore Northern Mid-Atlantic (LCMA 4), Inshore Southern Mid-Atlantic (LCMA 5), New York and Connecticut State Waters (LCMA 6), and Outer Cape Cod (OCC). Lobster Conservation Management Teams (LCMTs) comprised of industry representatives were formed for each management area. The LCMTs are charged with advising the Lobster Board and recommending changes to the management plan within their areas.

Amendment 3 also provides the flexibility to respond to current conditions of the resource and fishery by making changes to the management program through addenda. The commercial fishery is primarily controlled through minimum/maximum size limits, trap limits, and v-notching of egg-bearing females.

Addendum I (August 1999)

Establishes trap limits in the seven LCMAs.

Addendum II (February 2001)

Establishes regulations for increasing egg production through a variety of LCMT proposed management measures including, but not limited to, increased minimum gauge sizes in LCMAs 2, 3, 4, 5, and the Outer Cape.

Addendum III (February 2002)

Revises management measures for all seven LCMAs in order to meet the revised egg-rebuilding schedule.

Technical Addendum 1 (August 2002)

Eradicates the vessel upgrade provision for LCMA 5.

Addendum IV (January 2004)

Changes vent size requirements; applies the most restrictive rule on an area trap cap basis without regard to the individual's allocation; establishes LCMA 3 sliding scale trap reduction plan and transferable trap program to increase active trap reductions by 10%; and establishes an effort control program and gauge increases for LCMA 2; and a desire to change the interpretation of the most restrictive rule.

Addendum V (March 2004)

Amends Addendum IV transferability program for LCMA 3. It establishes a trap cap of 2200 with a conservation tax of 50% when the purchaser owns 1800 to 2200 traps and 10% for all others.

Addendum VI (February 2005)

Replaces two effort control measures for LCMA 2 – permits an eligibility period.

Addendum VII (November 2005)
Revises LCMA 2 effort control plan to include capping traps fished at recent levels and maintaining 3 3/8" minimum size limit.

Addendum VIII (May 2006)
Establishes new biological reference points to determine the stock status of the American lobster resource (fishing mortality and abundance targets and thresholds for the three stock assessment areas) and enhances data collection requirements.

Addendum IX (October 2006)
Establishes a 10% conservation tax under the LCMA 2 trap transfer program.

Addendum X (February 2007)
Establishes a coastwide reporting and data collection program that includes dealer and harvester reporting, at-sea sampling, port sampling, and fishery-independent data collection replacing the requirements in Addendum VIII.

Addendum XI (May 2007)
Establishes measures to rebuild the SNE stock, including a 15-year rebuilding timeline (ending in 2022) with a provision to end overfishing immediately. The Addendum also establishes measures to discourage delayed implementation of required management measures.

Addendum XII (February 2009)
Addresses issues which arise when fishing privileges are transferred, either when whole businesses are transferred, when dual state/federal permits are split, or when individual trap allocations are transferred as part of a trap transferability program. In order to ensure the various LCMA-specific effort control plans remain cohesive and viable, this addendum does three things. First, it clarifies certain foundational principles present in the Commission's overall history-based trap allocation effort control plan. Second, it redefines the most restrictive rule. Third, it establishes management measures to ensure history-based trap allocation effort control plans in the various LCMAs are implemented without undermining resource conservation efforts of neighboring jurisdictions or LCMAs.

Addendum XIII (May 2008)
Solidifies the transfer program for OCC and stops the current trap reductions.

Addendum XIV (May 2009)
Alters two aspects of the LCMA 3 trap transfer program. It lowers the maximum trap cap to 2000 for an individual that transfers traps. It changes the conservation tax on full business sales to 10% and for partial trap transfers to 20%.

Addendum XV (November 2009)
Establishes a limited entry program and criteria for Federal waters of LCMA 1.

Addendum XVI: Reference Points (May 2010)
Establishes new biological reference points to determine the stock status of the American lobster resource (fishing mortality and abundance targets and thresholds for the three stock assessment areas). The addendum also modifies the procedures for adopting reference points to allow the Board to take action on advice following a peer reviewed assessment.

Addendum XVII (February 2012)
Institutes a 10% reduction in exploitation for LCMAs within Southern New England (2, 3, 4, 5, and 6). Regulations are LCMA specific but include v-notch programs, closed seasons, and size limit changes.

Addendum XVIII (August 2012)
Reduces traps allocations by 50% for LCMA 2 and 25% for LCMA 3.

Addendum XIX (February 2013)
Modifies the conservation tax for LCMA 3 to a single transfer tax of 10% for full or partial business sales.

Addendum XX (May 2013)
Prohibits lobstermen from setting or storing lobster traps in Closed Area II from November 1 to June 15 annually. Any gear set in this area during this time will be considered derelict gear. This addendum represents an agreement between the lobster industry and the groundfish sector.

Addendum XXI (August 2013)
Addresses changes in the transferability program for LCMAs 2 and 3. Specific measures include the transfer of multi-LCMA trap allocations and trap caps.

Addendum XXII (November 2013)
Implements Single Ownership and Aggregate Ownership caps in LCMA 3. Specifically, it allows LCMA 3 permit holders to purchase lobster traps above the cap of 2000 traps; however, these traps cannot be fished until approved by the permit holder's regulating agency or once trap reductions commence. The Aggregate Ownership Cap limits LCMA fishermen or companies from owning more traps than five times the Single Ownership Cap.

Addendum XXIII (August 2014)
Updates Amendment 3's habitat section to include information on the habitat requirements and tolerances of American lobster by life stage.

Addendum XXIV (May 2015)
Aligns state and federal measure for trap transfer in LCMA's 2, 3, and the Outer Cape Cod regarding the conservation tax when whole businesses are transferred, trap transfer increments, and restrictions on trap transfers among dual permit holders.

Addendum XXVI (February 2018)
Advances the collection of harvester and biological data in the lobster fishery by improving the spatial resolution of data collection, requiring harvesters to report additional data elements, and establishing a deadline that within five years, states are required to implement 100% harvester reporting. The Addendum also improves the biological sampling requirements by establishing a baseline of ten sampling trips per year, and encourages states with more than 10% of coastwide landings to conduct additional sampling trips. Required reporting of additional data elements went into effect on January 1, 2019. The Addendum XXVI requirement for commercial harvesters to report their fishing location by 10 minute longitudinal/latitudinal square was implemented in 2021.

4.2 On-Going Management Actions

In response to signs of reduced settlement in the GOM/GBK, the Board initiated Draft Addendum XXVII in August 2017 to increase resiliency through considering the standardization of management measures in the GOM/GBK stock. Due to the prioritization of actions in response to the Atlantic Large Whale Take Reduction Team recommendations, development of this addendum stalled. Following its review of the 2020 Benchmark Stock Assessment and Peer Review Report, the Board reinitiated development of Draft Addendum XXVII. The Board revised the objective of the addendum given persistent low settlement indices and recent decreases in recruit indices in recent years. The Board specified that the addendum should consider a trigger mechanism such that, upon reaching the trigger, measures would be automatically implemented to increase the overall protection of spawning stock biomass of the GOM/GBK stock.

In August 2021, the Board initiated Draft Addendum XXIX to Amendment 3 to the FMP. The Draft Addendum considers implementing electronic tracking requirements for federally-permitted vessels in the American lobster and Jonah crab fisheries, with the goal of collecting high resolution spatial and temporal effort data. Through this action, the Board seeks to significantly improve the stock assessment, identify areas where lobster fishing effort might present a risk to endangered North Atlantic right whales, and document the footprint of the fishery to help reduce spatial conflicts with other ocean uses like wind energy development and aquaculture, and improve the efficiency of offshore enforcement efforts.

5.0 Ongoing Trap Reductions

Addendum XVIII established a series of trap reductions in LCMAs 2 and 3, with the intent of scaling the size of the SNE fishery to the size of the resource. Specifically, a 25% reduction in year 1 followed by a series of 5% reductions for five years was established in LCMA 2; a series of 5% reductions over five years was established in LCMA 3. The fifth year of reductions took place at the end of the 2019 fishing year and affect trap allocations in the 2020 fishery, completing the required LCMA 3 trap reductions. The sixth year of reductions for LCMA 2 took place at the end of the 2020 fishing year and affect trap allocations in the 2021 fishery. Per Addendum XVIII, states with fishermen in LCMAs 2 and 3 are required to report on the degree of consolidation that has taken place. Trap reductions by jurisdiction ahead of the 2020 fishing year can be found in Table 4. It is important to note that trap reductions also occur as the result of trap

transfers as, per Addendum XIX, there is a 10% conservation tax on trap allocation transfers between owners.

6.0 Fishery Dependent Monitoring

The following provisions of Addendum XXVI went into effect January 1, 2019:

- Required reporting of additional data elements;
- Requirement to implement 100% harvester reporting within five years;
- Baseline biological sampling requirement of ten sea and/or port sampling trips per year.

The Addendum XXVI requirement for commercial harvesters to report their fishing location by 10 minute longitudinal/latitudinal square will not be implemented until 2021. Table 5 describes the level of reporting and monitoring programs by each state. *De minimis* states are not required to conduct biological sampling of their lobster fishery.

In 2020, all states except Rhode Island, New Jersey and Connecticut completed the required ten fishery dependent monitoring through sea and/or port sampling trips. Rhode Island completed nine port sampling trips and no sea sampling trips. Due to the COVID-19 pandemic, at sea observer trips were suspended in New Jersey for 2020. New Jersey continues to monitor the situation and has started to develop protocol for a safe return to normal field operations. No fishery dependent sampling has been conducted by Connecticut since 2014 due to reductions in funding and staffing levels.

7.0 Status of Fishery Independent Monitoring

Addendum XXVI also requires fishery independent data collection by requiring statistical areas be sampled through one of the following methods: annual trawl survey, ventless trap survey, or young-of-year survey. In 2020 a number of surveys could not be completed due to the COVID-19 pandemic, as noted below.

7.1 Trawl Surveys

Maine and New Hampshire: The Maine-New Hampshire Inshore Trawl survey began in 2000 and covers approximately two-thirds of the inshore portion of Gulf of Maine. The spring survey was canceled due to the COVID-19 pandemic. The fall survey began September 21, 2020 in Portsmouth, NH and ended on October 23, 2020 off of Lubec, Maine. Ninety-one out of 120 scheduled tows were completed, resulting in a 76% completion rate. A total of 13,250 lobsters were caught and sampled, with 6,570 females and 6,680 males caught and measured. The total weight of lobsters caught was 3,106.3 kg (Figure 4).

Massachusetts: Since 1978, the Division of Marine Fisheries has conducted spring and autumn bottom trawl surveys in the territorial waters of Massachusetts. For the first time since 1978, neither the spring nor fall bottom trawl surveys were conducted in 2020 due to the COVID-19 pandemic. Survey data are provided through 2019 (Figure 5).

Rhode Island: The Rhode Island DFW Trawl Survey program conducted seasonal surveys in the spring and fall, as well as a monthly survey. In 2020, 44 trawls were conducted in both the

spring and fall. 156 trawls were performed as part of the monthly program. Spring 2020 mean catch per unit effort (CPUE) was 0.02 and 0.52 for legal and sub legal lobsters (respectively); fall 2020 CPUE was 0.07 for legal lobsters and 0.68 for sublegal lobsters. The 2020 mean monthly trawl CPUE was 0.16 and 1.08 per-tow for legal and sublegal lobsters, respectively (Figure 6).

Connecticut and New York: Juvenile and adult abundance are monitored through the Long Island Sound Trawl Survey during the spring (April, May, June) and the fall (September, October) cruises. Due to the COVID-19 pandemic, the spring and fall 2020 Long Island Sound Trawl Surveys were not conducted. The spring 2019 lobster abundance index (geometric mean = 0.1 lobsters/tow) was the third lowest in the time series and is similar to the 2017-2018 indices. Spring abundance in the last nine years has been less than 1.0. All indices from 2004-2019 are below the time series median (3.16). The fall 2019 survey marked the first time since the survey began in 1984 that no lobsters were caught in September and October. The fall time series median (3.54) has not been exceeded since 2004 (Figure 7). Both legal and sublegal size lobster abundance has declined with a similar trajectory.

New York: In 2018, New York initiated a stratified random trawl survey in the near shore ocean waters off the south shore of Long Island from the Rockaways to Montauk Point and the New York waters of Block Island Sound. Prior to 2020 sampling was conducted five times a year during the winter (February), spring (May, June), summer (August), and fall (December). Only two sampling cruises were conducted in 2020 due to the COVID-19 pandemic. These cruises took place during the winter (February) and fall (September into October). The spring and summer trips were canceled due to the pandemic. Thirty and 16 stations were sampled respectively. Only one lobster was caught during the 2020 survey during the February trip. It was a female with a 101 mm carapace length (CL).

New Jersey: An independent Ocean Trawl Survey is conducted from Sandy Hook, NJ to Cape May, NJ each year. The survey stratifies sampling in three depth gradients, inshore (18'-30'), mid-shore (30'-60'), offshore (60'-90'). The mean CPUE, which is calculated as the sum of the mean number of lobsters per size class collected in each sampling area weighted by the stratum area, increased from 2017 to 2018 for all size classes grouped and legal sizes, but decreased for sublegal sizes (Figure 8). No April 2019 Survey was conducted due to Research vessel mechanical issues. Due to the COVID-19 pandemic, 2020 CPUE and indices were not obtained.

Maryland: Maryland conducted a 16-foot otter trawl survey in the coastal bays and has not encountered an American lobster in this survey (1989 - 2020).

7.2 Young of Year Index

Several states conduct young-of-year (YOY) surveys to detect trends in abundance of newly-settled and juvenile lobster populations. These surveys attempt to provide an accurate picture of the spatial pattern of lobster settlement. States hope to track juvenile populations and generate predictive models of future landings.

Maine: There are currently 40 fixed stations along the Maine coast. Of these 40 stations 38 have been sampled consistently since 2001 with two additional sites added to Zone D, off midcoast Maine, in 2005. In recent years, these sites are sampled October to December. YOY survey indices in 2019 increased from 2018 in all statistical areas. The 2020 indices in statistical areas 511, 512, and 513 east are near the time series averages, while the indices for 513 west remain below the series averages (Figure 9).

New Hampshire: New Hampshire Fish and Game conducted a portion of the coastwide American Lobster Settlement Index (ALSI). In 2020, a total of 19 juvenile lobsters were sampled from three sites; 13 older juveniles, 1 YOY lobster, and 5 one-year-old (Y+). Figure 10 depicts the CPUE of lobsters for all NH sites combined, from 2008 through 2020. For each of these four indices, CPUE shows a general upward trend to a time series high in 2011, with sustained moderate to low levels from 2012 through 2020.

Massachusetts: Annual sampling for early benthic phase/juvenile (EBP) lobsters was conducted during August and September, 2020. Sampling was completed at 21 sites spanning 7 regions in Massachusetts coastal waters prior to 2019 when changes to the survey were made discontinuing four locations in SNE (two in Buzzards Bay and both Vineyard Sound sites) and five sites in GOM (two South Shore locations and all three Cape Cod Bay locations). Data for all sites were used to generate annual density estimates of EBP lobster and other decapod crustaceans. In 2020 densities of YOY lobsters remained low compared to the time series average in Boston Harbor and Salem Sound, but densities in 2020 were slightly higher than the preceding two years in all GOM locations (Figure 11). In SNE there were no YOY lobsters found in the Buzzards Bay sampling locations.

Rhode Island: For 2020, the YOY Settlement Survey was conducted using suction sampling at a total of six fixed stations with twelve randomly selected 0.5 m^2 quadrats sampled at each survey station. Average site abundance of lobster at sampling sites has generally declined since the mid-1990's (Figure 12). The 2020 YOY Settlement Survey index was 0.14 lobsters/m^2, and with all lobsters was 0.22/m^2.

Connecticut: The CT DEEP Larval Lobster Survey in western Long Island Sound was discontinued after 2012. Alternative monitoring data are available for the eastern Sound from the Millstone Power Station entrainment estimates of all stages of lobster larvae. Both programs show a protracted decline in recruitment following the 1999 die-off (correlation between programs: R=0.35, p=0.066) (Figure 13).

7.3 Ventless Trap Survey

To address a need for a reliable index of lobster recruitment, a cooperative random stratified ventless trap survey was designed to generate accurate estimates of the spatial distribution of lobster length frequency and relative abundance while attempting to limit the biases identified in conventional fishery dependent surveys.

Maine: The Maine Ventless Trap Survey changed strategies in 2015 to cover more area by

eliminating the vented traps at each site. This change allowed the survey to double the number of sites with ventless traps and increase the sampling coverage spatially to 276 sites. Traps were set during the months of June, July, and August. The stratified mean was calculated for each area using depth and statistical area for ventless traps only. Compared to the previous years, in 2020 there were increases in the number of sublegal (<83 mm CL) and legal sized (≥ 83 mm CL) lobsters caught in the NH-Friendship (513) and Friendship-Schoodic (512) areas. However, sublegal lobster catch in Schoodic Pt-Cutler (511) saw a decrease and legal sized lobster catch did not change significantly in this area (Figure 14).

New Hampshire: Since 2009, NHF&G has been conducting the coastwide Random Stratified Ventless Trap Survey in state waters (statistical area 513). A total of six sites were surveyed twice a month from June through September in 2020. Catch per unit effort (stratified mean catch per trap haul) from 2009 through 2020 is presented in Figure 15. The highest catch value (for ventless traps only) of the time series was recorded in 2019.

Massachusetts: The coast-wide ventless trap survey was initiated in 2006 and expanded in 2007 with the intention of establishing a standardized fishery-independent survey designed specifically to monitor lobster relative abundance and distribution. The survey was not conducted in 2013 due to a lack of funding; however, starting in 2014 the survey has been funded with lobster license revenues and will continue as a long-term survey.

Relative abundance of sub-legal (< 83 mm CL) and legal-sized (≥ 83 mm CL) lobsters for statistical area 514 (part of LCMA 1) is shown in Figure 16 as the stratified mean CPUE, including both vented and ventless traps. The average catch of sublegal lobsters is much higher than the catch of legal-sized lobsters, and generally increased from 2006 through 2016 but has been declining since, with the 2019 and 2020 values below the time series average of 4.73 lobsters/trap. The stratified mean catch per trap of legal-sized lobsters in 2020 was 0.60 (± 0.01), and was above the time series average of 0.57.

Figure 17 shows the time series of relative abundance (stratified mean CPUE) for sub-legal (<86 mm CL) and legal-sized (≥ 86 mm CL) lobsters in the southern MA region (Area 538; part of LCMA 2). The mean sublegal CPUE in 2020 was 0.79 (± 0.06), below the time series average of 1.25 lobsters/trap haul. The CPUE of legal-sized lobsters in 2020 was 0.30 (±0.03), above the time series average of 0.22 lobsters/trap haul. These values are calculated using both vented and ventless traps.

Rhode Island: In 2020, the Ventless Trap Survey was conducted during the months of June-August over 24 sampling sites. A total of 2,387 lobsters were collected from 826 traps over 18 trips. The stratified abundance index of sublegal lobsters in the 2020 survey, 3.62 lobsters per ventless trap, remains below the time series mean of 6.05 lobsters per ventless trap. The abundance index for legal-sized lobsters, at 0.62, was above the time series mean of 0.36 lobsters per ventless trap (Figure 18).

Delaware: A pilot study was initiated in 2018 to assess the population structure of structure-

oriented fish in the lower Delaware Bay and nearshore Atlantic Ocean. Sampling was conducted with commercial sized ventless fish pots, from January to December. In 2020, Delaware encountered 8 American lobsters in lower Delaware Bay and 794 American lobsters in the nearshore Atlantic Ocean with a ratio of 56% males, 34% female and 10% egg laden. The survey ran from April to December. The sampled lobsters ranged in length from 44 mm to 134 mm.

8.0 State Compliance

States are currently in compliance with all required biological management measures under Amendment 3 and Addendum I-XXIV; however, the Plan Review Team (PRT) notes that Rhode Island, New Jersey and Connecticut did not conduct the required amount of sea/port sampling in 2020, as specified in Addendum XXVI. Due to the COVID-19 pandemic, some states had to cancel or limit the amount of surveys conducted. The states' reasons for not meeting the requirement are provided in Section 6.0.

9.0 De Minimis Requests

The states of Virginia, Maryland, and Delaware have requested *de minimis* status. According to Addendum I, states may qualify for *de minimis* status if their commercial landings in the two most recent years for which data are available do not exceed an average of 40,000 pounds. Delaware, Maryland, and Virginia meet the *de minimis* requirement.

10.0 Regulatory Changes

Maine:

- In November 2019, the Department of Marine Resources (DMR) amended the gear marking regulations for persons fishing lobster gear and trap/pot gear in all Maine coastal waters. Effective September 1, 2020, gear marking requirements were changed from red to purple marks. Inside the Exemption Area, fishermen are required to have three purple marks: a 36-inch mark in the top two fathom of their endline, and a 12-inch mark in the middle and at the bottom of their endline. Outside the Exemption Area, fishermen are required to have 4 purple marks: a 36-inch mark in the top two fathom of endline, and 3 12-inch marks at the top, middle, and bottom of their endline. Finally, all lobster gear and trap/pot gear fished outside the Exemption Area is required to have an additional green mark of a minimum of 6-inches in the top two fathom of buoy line. Lobster gear fished inside the Exemption Area is prohibited from having a green mark. In April 2020, DMR amended the gear marking regulation to create a new exception to the previously adopted requirements. Buoy lines of 100 feet or less in length are required to have only two purple marks, one of 36 inches in the top two fathom of the line, and one of 12 inches at the bottom of the line.
- A Resolve passed during the spring of 2020 required DMR to provide the joint standing committee of the Legislature having jurisdiction over marine resources matters with a report that evaluates the limited-entry zone system by February 15, 2021. It required DMR to examine the long waiting period for entry to fish in a limited-entry zone and in examining the waiting list, to consider several factors, including, but not limited to, the current biological status of the fishery, current exit-to-entry ratios in each limited-entry zone, latency of licenses and trap tags and the current policy for student lobster and

crab fishing licenses. It required the department to revisit the recommendations made in the report prepared for the department by the Gulf of Maine Research Institute pursuant to Resolve 2011, chapter 62. It required the department to make recommendations regarding the long waiting period for entry into a limited-entry zone. It also required the department to account for possible new federal regulations to address protections for endangered right whales when making any recommendations. The Resolve authorized the joint standing committee of the Legislature having jurisdiction over marine resources matters to report out legislation to the First Regular Session of the 130th Legislature

- A bill passed in 2020 allowed a qualified resident disabled veteran to obtain upon application, at no cost, a noncommercial lobster and crab fishing license.
- A bill passed in 2020 allowed a person who holds a lobster and crab fishing license to raise or haul any lobster trap during any time of the day from September 1st to October 31st in the "gray zone" if that person is authorized to fish in that area.

New Hampshire

- Regulation changes were made to lobster gear marking in 2020, providing an option of red or yellow rope marking until January, 1, 2022 when all fishers will be required to have yellow.

Massachusetts

- 5/1/20 – DMF adjusted coastal lobster permit transfer regulations. The regulations now allow for trap allocations for LCMAs 2 and OCC to be transferred in increments of 10 traps or more (rather than 50 traps or more) and eliminated the requirement that the individual trap allocations for LCMAs 2 and OCC be retired if they fall below 50-traps.

Virginia

- In February 2020, the Virginia Marine Resources Commission passed regulatory language to establish minimum size of escape vents in lobster traps to comply with Addenda II and IV to the Interstate Fishery Management Plan for American Lobster.

11.0 Enforcement Concerns

Maine

- Maine Marine Patrol Officers documented violations for illegal lobsters, gear violations, and license violations in 2020. One fisherman was charged for exceeding the boat trap limit, multiple individuals were charged with molesting lobster gear, one fisherman was charged with fishing improperly tagged gear in a secondary zone and multiple fisherman were charged with possessing a large quantity of undersized lobsters; all are facing lengthy license suspensions. Patrol officers spent thousands of hours conducting complaint investigations, educational outreach; as well as, routine and targeted enforcement patrols both near and offshore. Marine Patrol placed a strong emphasis on proactive enforcement through high visibility patrols on shore and at sea. The Bureau of Marine Patrol continues to consider the Maine lobster fishery as one that operates with

a high degree of regulatory compliance which is supported by evaluating the number of harvesters inspected versus the number of violations documented.

Massachusetts

- The outcome of one potential scrubbed egger case from the fall of 2019 is still pending (the case is progressing the criminal court system), another scrubbed egger case resulted in a three month permit suspension. There are no other enforcement cases that we are aware of for 2020.

New York

- No major enforcement issues in New York during 2020. There were a few gear tagging issues. Due to COVID protocols, limited lobster gear was hauled for inspection.

New Jersey

- During the 2019 calendar year, seven summonses were issued within New Jersey state waters. Of those seven, two were issued due to possession of illegal sized lobster, one for possession of egg bearing female lobsters, and four for permitting violations.

12.0 Research Recommendations

The full list of research recommendations can be found in the 2020 Stock Assessment Report. Below is a summarized list of the high priority research recommendations from the 2020 Stock Assessment that were compiled by the Lobster Technical Committee (TC) and Stock Assessment Subcommittee (SAS).

Port and Sea Sampling - The quality of landings data has not been consistent spatially or temporally. Limited funding, and in some cases, elimination of sea sampling and port sampling programs will negatively affect the ability to characterize catch and conservation discards, limiting the ability of the model to accurately describe landings and stock conditions. It is imperative that funding for critical monitoring programs continues, particularly for offshore areas from which a large portion of current landings originate in SNE. Sea sampling should be increased in Long Island Sound (statistical area 611), and in the statistical areas in federal waters, particularly those fished by the LCMA 3 fleet, via a NMFS-implemented lobster-targeted sea sampling program.

Commercial Data Reporting – Finer resolution spatial data are paramount in understanding how landings align between statistical area and LCMAs. Vessel tracking is recommended for federal vessels. Once in place, the new spatial data should be analyzed for comparison to current spatial understanding of harvest. The growing Jonah crab fishery in SNE continues to complicate the differentiation of directed lobster versus Jonah crab effort. More sea sampling and landings data must be collected to better differentiate the two fisheries' activities.
Ventless Trap Survey - Calibration work to determine how catch in the ventless trap surveys relates to catch in the bottom trawl surveys remains an important and unaddressed topic of research. Ventless traps may be limited in their ability to differentiate between moderately high and extremely high abundance, and calibration with bottom trawl surveys may help to clarify how q might change with changes in lobster density.

NEAMAP Trawl Survey Protocols - The SAS recommends that the NEAMAP Trawl Survey sampling protocol be modified for all lobsters caught to be sorted by sex. If a subsample is necessary, subsamples be taken by sex for additional biological data (size, egg presence and stage, vnotch, etc.) This modification would align the biological sampling methodology with other trawl surveys used in the assessment, and perhaps allow the survey to not be collapsed by sex into survey slots.

Time Varying Growth - Growth of American lobster has been found to change through time (McMahan et al. 2016), yet the ability to incorporate this dynamic in the assessment model currently is unavailable. Accounting for interannual changes in the growth matrix, including those in increment, probability, and seasonality, is imperative for model convergence. Modification to the assessment model is needed to allow for time varying growth matrices to be used to reflect changing growth in the stocks.

Expansion of Growth Matrices - Exploration of expanding the model size structure to smaller sizes could allow the SAS to better capture changes in recruitment for the population by incorporating < 53mm lobster abundances from the surveys currently used, as well as incorporating additional surveys that currently are not model inputs for the assessment, such as those from the young of year settlement surveys. Due to decreased recruitment in SNE and some areas in GOMGBK, available survey data should be evaluated to determine whether current data sources for small sizes are sufficient for expanding the size structure and growth matrices.

Temperature-Molt Dynamics - Understanding how the timing for molting, molt increments, and probability by size vary with temperature for all stocks would allow for more accurate and realistic depictions of growth via updated annual growth matrices. The work of Groner et al. (2018) should be expanded by using the Millstone data to specifically analyze how molt frequency and increment has changed seasonally and interannually.

Larval Ecology - Spatial expansion of larval surveys and further testing is warranted, particularly in areas like the eastern GOM and GBK that lack any studies of this nature. Studies that explore greater spatial coverage of larval sampling and examine lobster larval diets, in situ development time in current conditions, larval interactions with well-mixed versus stratified water columns, and varying growth and mortality with temperature would allow for greater context on these variables' influence on recruitment.

Deepwater Settlement - There is a need to determine settlement success in habitat not currently sampled and its contribution to overall stock productivity. Research needs to explore the levels of detectability, impact of stratification, and interannual temperature effects on the indices. Additionally, it will be important to understand whether there are differences in growth and survival in these deeper habitats, particularly relative to the desire to expand the growth matrix into smaller size ranges for modeling purposes.

SNE Recruitment Failure - The direct cause of the precipitous declines in recruitment under less

variable spawning stock biomass is largely unknown. Research designed to understand the causes driving recruitment failure is vital for any efforts toward rebuilding the SNE stock. In addition, being able to predict similar conditions in GOMGBK could allow management the opportunity to respond differently.

Stock Structure Working Group - The SAS recommends that a workshop on stock boundaries be convened prior to the initiation of the next assessment to review results of any new research and re-evaluate appropriate stock boundaries. Inclusion of Canadian researchers at this workshop would be beneficial to share data and knowledge on this shared resource.

Spatial Analyses of Fisheries-Independent Data – Northeast Fisheries Science Center (NEFSC) trawl survey data remains one of the richest data sources to understand abundance and distribution patterns through time for lobsters by size and sex. Formal analyses of NEFSC trawl survey and the ME/NH trawl survey and should be performed. The Ecosystem Monitoring (EcoMon) Program's larval lobster information should also be considered.

Reevaluate Baseline Natural Mortality Rate - Intensive hypothesis-driven sensitivity analyses should be conducted to evaluate the base mortality rate for both stocks by season and year. Canadian tagging data should be examined to determine how natural mortality rates derived from these data compare to the assumptions used currently in the model and sensitivity analyses. Exploration of additional time series representing natural mortality hypotheses (e.g. sea temperature, shell disease prevalence, predators) should be continued to either inform time-varying natural mortality or correlate to rates produced in sensitivity analyses.

Predation Studies - It is suspected that a given predator's role in lobster natural mortality has changed through time. Predation laboratory studies and gut content analyses would provide greater guidance on individual species' roles in lobster natural mortality. With this information, predation-indices as a function of predator annual abundances and their contribution to stock-specific lobster mortality would be immensely valuable, particularly in SNE.

Management Strategy Evaluation - Developing a true management strategy evaluation tool that can iteratively project and refit the operating model would best inform future management discussions on rebuilding the SNE stock or providing resiliency for the GOM stock and fishery.

Economic Reference Points - Economic analyses considering landings, ex-vessel value, costs, associated economic multipliers, number of active participants, and other factors are imperative to truly discern how declines in the population would impact the GOMGBK industry. The SAS strongly recommends a thorough economics analysis be conducted by a panel of experts to more properly inform economic-based reference points, and ultimately provide resiliency to both the GOMGBK stock and fishery.

13.0 Plan Review Team Recommendations

During their review of the state compliance reports, the PRT noted the following issues:

- Massachusetts and Connecticut were unable to provide compliance reports by the August 1 deadline. This has been a recurring issue over the last few years due to delays in data availability and limited staff resources.
- In 2020, Rhode Island, New Jersey, and Connecticut did not meet the Addendum XXVI minimum requirement of ten sea/port sampling trips, completing nine, zero, and zero trips, respectively. The compliance reports for Rhode Island and New Jersey explain that sampling was impeded by the COVID-19 pandemic. For Connecticut, no fishery dependent sampling has been conducted by since 2014. Reductions in funding and staffing levels have hindered our ability to resume these activities

The PRT Recommends the Board approve the *de minimis* requests of DE, MD, and VA. Other than the issues noted above, all states appear to be in compliance with the requirements of the FMP.

The following are general recommendations the PRT would like to raise to the Board:

- The PRT recommends the Board consider reviewing the monitoring requirements in SNE given the status of the stock and the difficulty obtaining sea sampling trips in a fishery with reduced effort. The TC has discussed the need for additional sampling trips in federal waters as the fishery has shifted offshore.
- The PRT recommends the TC discuss the best way to present state index information in the annual compliance reports to provide more detailed resolution of adult and juvenile abundance and size composition of the stock.
- The PRT recommends the Board engage with the Committee on Economic and Social Sciences (CESS) to consider available socioeconomic data to develop metrics that could be used to characterize changes in the fishery.

14.0 Tables

Table 1. Landings (in pounds) of American Lobster by the states of Maine through Virginia. Source: ACCSP Data Warehouse for 1981-2019 landings; state compliance reports for 2020 landings. *C= confidential data.*

	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	Total
1981	22,631,614	793,400	11,420,638	1,871,067	807,911	890,218	593,801	55,700	63,108	2,173	**39,129,630**
1982	22,730,253	807,400	11,265,840	3,173,650	880,636	1,121,644	846,215	90,700	64,788	4,713	**40,985,839**
1983	21,976,555	1,310,560	12,867,378	5,114,486	1,654,163	1,207,442	769,913	56,700	76,192	20,619	**45,054,008**
1984	19,545,682	1,570,724	12,446,198	5,259,821	1,796,794	1,308,023	927,474	103,800	98,876	37,479	**43,094,871**
1985	20,125,177	1,193,881	13,702,702	5,140,131	1,381,029	1,240,928	1,079,723	118,500	82,295	42,881	**44,107,247**
1986	19,704,317	941,100	12,496,125	5,667,940	1,253,687	1,416,929	1,123,008	109,000	57,593	93,105	**42,862,804**
1987	19,747,766	1,256,170	12,856,301	5,317,302	1,571,811	1,146,613	1,397,138	84,100	49,820	60,241	**43,487,262**
1988	21,739,067	1,118,900	12,977,313	4,758,990	1,923,283	1,779,908	1,557,222	66,200	22,966	53,696	**45,997,545**
1989	23,368,719	1,430,347	15,645,964	5,786,810	2,076,851	2,344,932	2,059,800	76,500	17,502	45,107	**52,852,532**
1990	28,068,238	1,658,200	16,572,172	7,258,175	2,645,951	3,431,111	2,198,867	68,300	24,941	58,260	**61,984,215**
1991	30,788,646	1,802,035	15,998,463	7,445,172	2,673,674	3,128,246	1,673,031	54,700	26,445	7,914	**63,598,326**
1992	26,830,448	1,529,292	14,969,350	6,763,087	2,534,161	2,651,067	1,213,255	21,000	27,279	753	**56,539,692**
1993	29,926,464	1,693,347	14,350,595	6,228,470	2,177,022	2,667,107	906,498	24,000	46,650	2,940	**58,023,093**
1994	38,948,867	1,650,751	16,176,551	6,474,399	2,146,339	3,954,634	581,396	8,400	7,992	460	**69,949,789**
1995	37,208,324	1,834,794	15,903,241	5,362,084	2,541,140	6,653,780	606,011	25,100	26,955	5,210	**70,166,639**
1996	36,083,443	1,632,829	15,312,826	5,295,797	2,888,683	9,408,519	640,198	20,496	28,726	C	**71,311,517**
1997	47,023,271	1,414,133	15,010,532	5,798,529	3,468,051	8,878,395	858,426	C	34,208	2,240	**82,487,785**
1998	47,036,836	1,194,653	13,167,803	5,617,873	3,715,310	7,896,803	721,811	1,359	19,266	1,306	**79,373,020**
1999	53,494,418	1,380,360	15,875,031	8,155,947	2,595,764	6,452,472	931,064	C	41,954	6,916	**88,933,926**
2000	57,215,406	1,709,746	14,988,031	6,907,504	1,393,565	2,883,468	891,183	C	62,416	C	**86,051,319**
2001	48,617,693	2,027,725	11,976,487	4,452,358	1,329,707	2,052,741	579,753	C	31,114	C	**71,067,578**
2002	63,625,745	2,029,887	13,437,109	3,835,050	1,067,121	1,440,483	264,425	C	20,489	C	**85,720,309**
2003	54,970,948	1,958,817	11,321,324	3,561,391	C	946,449	209,956	C	22,778	C	**72,991,663**
2004	71,574,344	2,851,262	11,675,852	3,059,319	646,994	996,109	370,536	13,322	14,931	27,039	**91,229,708**
2005	68,729,623	C	11,291,145	3,174,852	713,901	1,154,470	369,003	C	39,173	21,988	**85,494,155**
2006	75,419,802	2,612,389	12,090,423	3,949,299	806,135	1,252,146	470,878	3,706	26,349	28,160	**96,659,287**
2007	63,987,073	2,468,811	10,046,120	2,299,744	568,696	911,761	334,097	C	26,804	C	**80,643,106**
2008	69,910,434	2,568,088	10,606,534	2,782,000	427,168	712,075	304,479	C	32,932	C	**87,343,709**
2009	81,124,201	2,986,981	11,789,536	2,842,088	412,468	731,811	C	6,064	30,988	21,472	**99,945,609**
2010	96,244,299	3,648,004	12,772,159	2,928,688	441,622	813,513	692,869	C	29,989	16,345	**117,587,488**
2011	104,957,224	3,919,195	13,385,393	2,754,067	198,928	344,232	697,883	8,879	41,077	12,879	**126,319,757**
2012	127,464,332	4,229,227	14,486,344	2,706,384	247,857	550,441	919,351	C	65,813	10,823	**150,680,572**
2013	128,015,530	3,817,707	15,158,509	2,155,762	127,420	496,535	660,367	C	62,522	9,061	**150,503,413**
2014	124,941,217	4,374,656	15,312,852	2,412,875	127,409	222,843	526,368	26,330	57,414	11,099	**148,013,063**
2015	122,685,803	4,721,826	16,450,414	2,315,708	205,099	147,414	445,060	22,894	29,284	9,474	**147,032,976**
2016	132,750,484	5,782,056	17,784,921	2,260,335	254,346	218,846	349,880	C	29,254	2,854	**159,432,975**
2017	112,170,139	5,513,999	16,493,125	2,031,143	130,015	150,317	409,062	32,364	29,136	1,630	**136,960,928**
2018	121,227,261	6,082,881	17,697,083	1,905,689	110,580	112,685	344,547	C	24,893	2,727	**147,508,347**
2019	101,939,979	6,093,615	17,029,462	1,795,212	111,573	112,107	291,072	C	C	1,840	**127,374,858**
2020	97,843,707	5,013,854	16,753,623	1,701,291	125,421	122,655	316,011	C	10,035	C	**121,886,597**

Table 2. Above: Current (2016-2018) reference abundance estimates (millions), current target and threshold abundance (millions), and new recommended abundance reference points for both stocks. Below: Current (2016-2018) exploitation, current target and threshold exploitation, and new recommended target and threshold exploitation for both stocks.

Quantity	GOMGBK	SNE
Current (2016-2018 average)	256	7
Current Target	119	32
Current Threshold	58	25
Fishery/Industry Target	212	NA
Abundance Limit	125	NA
Abundance Threshold	89	20

Quantity	GOMGBK	SNE
Current (2016-2018 average)	0.459	0.274
Current Target	0.457	0.379
Current Threshold	0.510	0.437
Recommended Target	0.461	0.257
Recommended Threshold	0.475	0.290

Table 3. 2020 LCMA specific management measures

Management Measure	LCMA 1	LCMA 2	LCMA 3	LCMA 4	LCMA 5	LCMA 6	OCC
Min Gauge Size	3 1/4"	3 3/8"	3 17/32"	3 3/8"	3 3/8"	3 3/8"	3 3/8"
Vent Rect.	1 15/16 x 5 3/4"	2 x 5 3/4"	2 1/16 x 5 3/4"	2 x 5 3/4"	2 x 5 3/4"	2 x 5 3/4"	2 x 5 3/4"
Vent Cir.	2 7/16"	2 5/8"	2 11/16"	2 5/8"	2 5/8"	2 5/8"	2 5/8"
V-notch requirement	Mandatory for all eggers	Mandatory for all legal size eggers	Mandatory for all eggers above 42°30'	Mandatory for all eggers in federal waters. No v-notching in state waters.	Mandatory for all eggers	None	None
V-Notch Definition[1] (possession)	Zero Tolerance	1/8" with or w/out setal hairs[1]	1/8" with or w/out setal hairs[1]	1/8" with or w/out setal hairs[1]	1/8" with or w/out setal hairs[1]	1/8" with or w/out setal hairs[1]	State Permitted fisherman in state waters 1/4" without setal hairs Federal Permit holders 1/8" with or w/out setal hairs[1]
Max. Gauge (male & female)	5"	5 ¼"	6 3/4"	5 ¼"	5 ¼"	5 ¼"	State Waters none Federal Waters 6 3/4"
Season Closure				April 30-May 31[2]	February 1-March 31[3]	Sept 8-Nov 28[4]	February 1-April 30

[1] A v-notched lobster is defined as any female lobster that bears a notch or indentation in the base of the flipper that is at least as deep as 1/8", with or without setal hairs. It also means any female which is mutilated in a manner that could hide, obscure, or obliterate such a mark.

[2] Pots must be removed from the water by April 30 and un-baited lobster traps may be set one week prior to the season reopening.

[3] During the February 1 – March 31 closure, trap fishermen will have a two week period to remove lobster traps from the water and may set lobster traps one week prior to the end of the closed season.

[4] Two week gear removal and a 2 week grace period for gear removal at beginning of closure. No lobster traps may be baited more than 1 week prior to season reopening.

Table 4: Trap allocation reductions as required by Addendum XVIII for LCMA 2 and 3 fishermen. This table only represents trap allocation reductions reported ahead of the 2020 fishing year and does not represent aggregate trap reductions over multiple years. Traps can also be retired due to the 10% conservation tax on trap transfers. Sources of the trap allocations come from state compliance reports and GARFO 2020 trap allocations published for the trap transfer program.

	Jurisdiction	# of Trap Allocated (For 2021 Fishing Year)	# of Traps Retired (from 2020 to 2021 Fishing Year)	Comments on Trap Transfers
LCMA 2	MA	29,244	1,635	368 traps transferred
	RI	60,385	2,226	4,946 traps transferred
	CT	1,815	93	
	NOAA (ME, NH, NY, NJ)	62,480	132	1,320 traps transferred out
LCMA 3	NOAA	103,206	406243	2,430 traps transferred out

Table 5. 2020 sampling requirements and state implementation. All states have 100% active harvester reporting except for Maine which has 10% harvester reporting. Sufficient sea sampling can replace port sampling. *De minimis* states (denoted by *) are not required to conduct biological sampling of their lobster fishery.

State	100% Dealer Reporting	10% Harvester Reporting	Sea Sampling	Port Sampling	Ventless Trap Survey	Settlement Survey	Trawl Survey
ME	✓	✓ (10%)	✓		✓	✓	✓
NH	✓	✓	✓	✓	✓	✓	✓
MA	✓	✓	✓		✓	✓	[a]
RI	✓	✓	[a]	✓	✓	✓	✓
CT	✓	✓	[b]	[b]		[c]	✓
NY	✓	✓	✓	✓			✓
NJ	✓	✓	[a]				[a]
DE*	✓	✓			✓		✓
MD*	✓	✓					✓
VA*	✓	✓					

[a] Sampling hindered or not completed due to the COVID-19 pandemic

[b] No fishery dependent sampling has been conducted by CT since 2014 due to reductions in funding and staffing levels.

[c] Larval data are available for the eastern Sound (ELIS) from the Millstone Power Station entrainment estimates of all stages of lobster larvae (Dominion Nuclear CT, Annual Report 2016).

Table 6. 2020 sea and port sampling trips and samples by state. *De minimis* states (denoted by *) are not required to conduct biological sampling of their lobster fishery.

State	Sea Sampling			Port Sampling		Market Sampling		Totals	
	Trips	Samples	Traps	Trips	Samples	Trips	Samples	Trips	Samples
ME	111	137,378	25,574	0	0	0	0	111	137,378
NH	19	10,579	0	12	1,000	0	0	31	11,579
MA	52	28,036	10,752	0	0	0	0	52	28,036
RI	0	0	0	9	242	0	0	9	242
CT	0	0	0	0	0	0	0	0	0
NY	1	5	No Data	23	1,857	0	0	24	1,862
NJ	0	0	0	0	0	0	0	0	0
DE*	0	0	0	0	0	0	0	0	0
MD*	0	0	0	0	0	0	0	0	0
VA*	0	0	0	0	0	0	0	0	0
Total	183	175,998	36,326	44	3,099	0	0	227	179,097

15.0 Figures

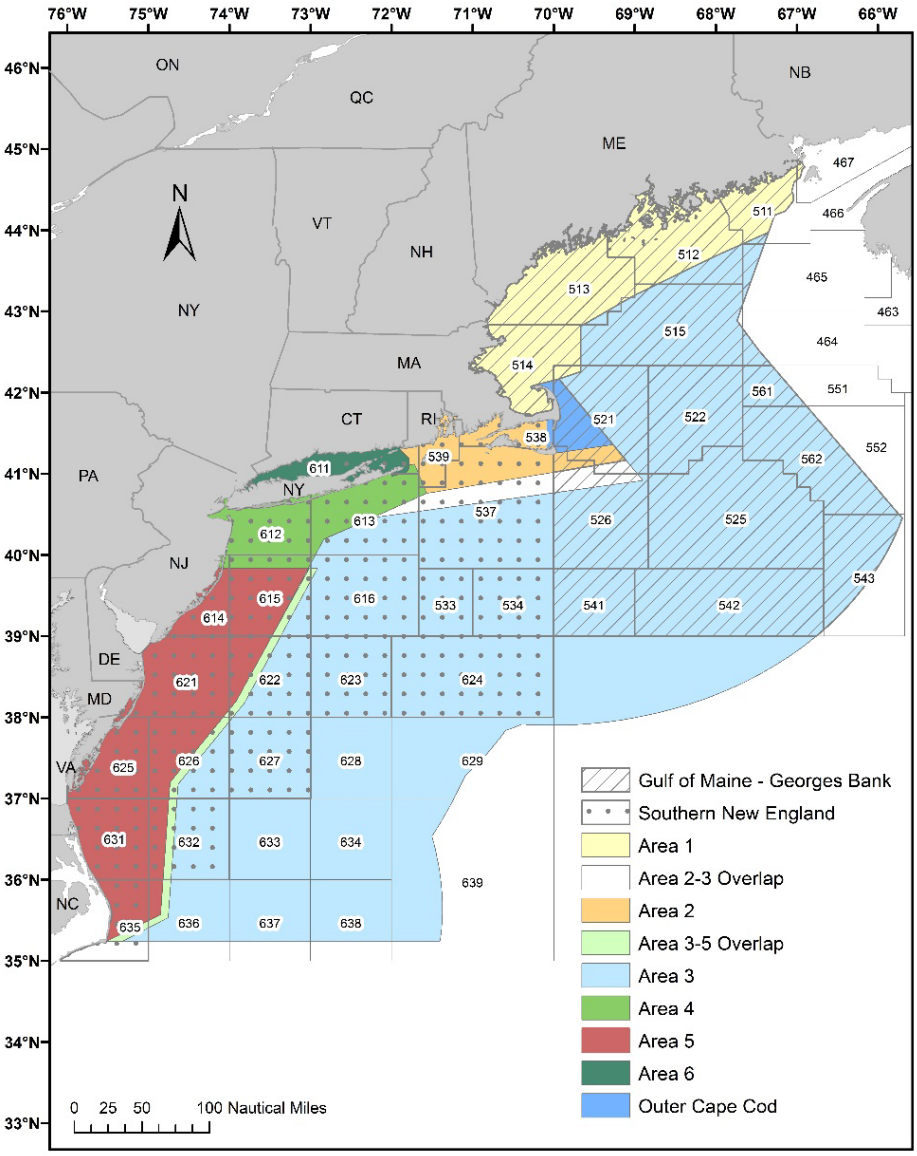


Figure 1. Lobster Conservation Management Areas (LCMAs) and stock boundaries for American lobster.

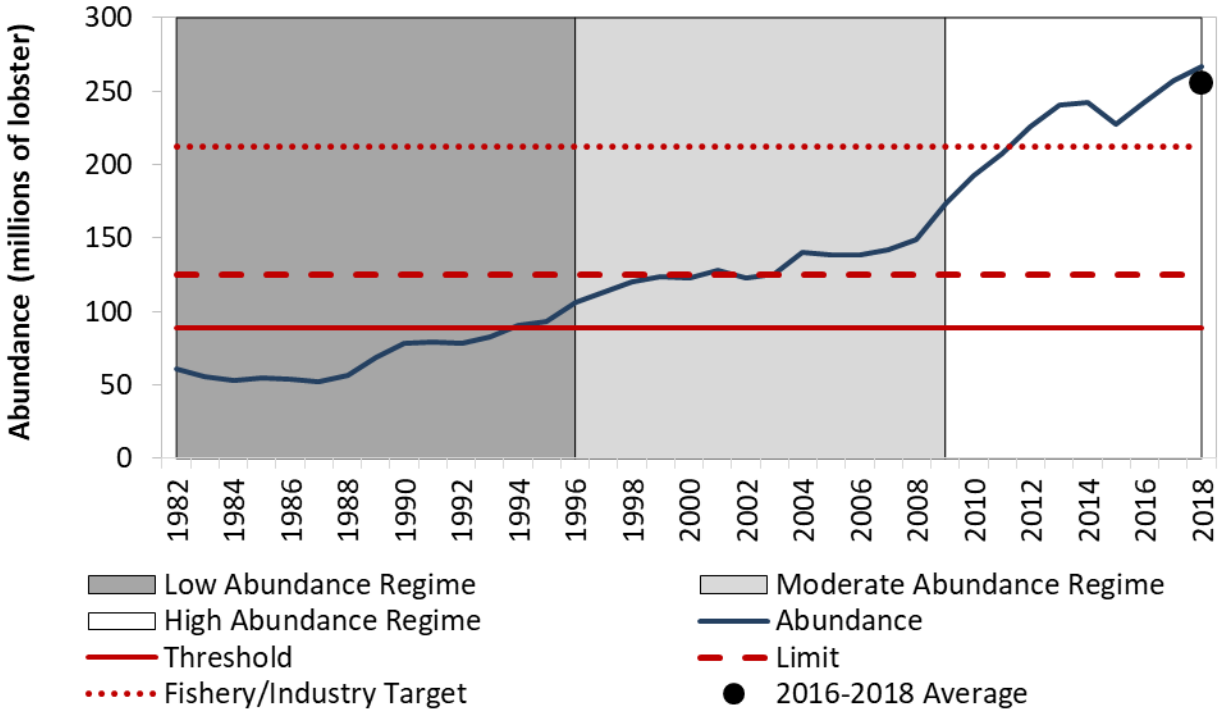


Figure 2. Abundance for GOM/GBK Relative to Reference Points. Source: 2020 Benchmark Stock Assessment for American Lobster.

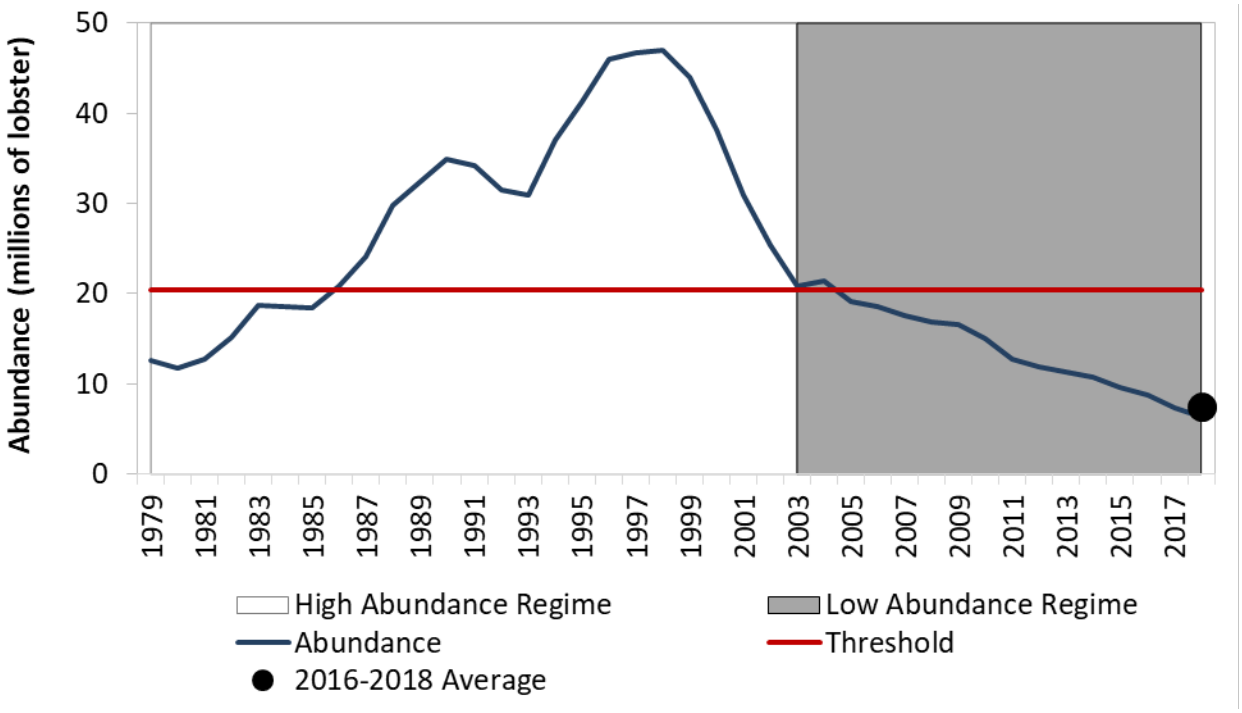


Figure 3. Abundance for SNE Relative to Reference Points. Source: 2020 Benchmark Stock Assessment for American Lobster.

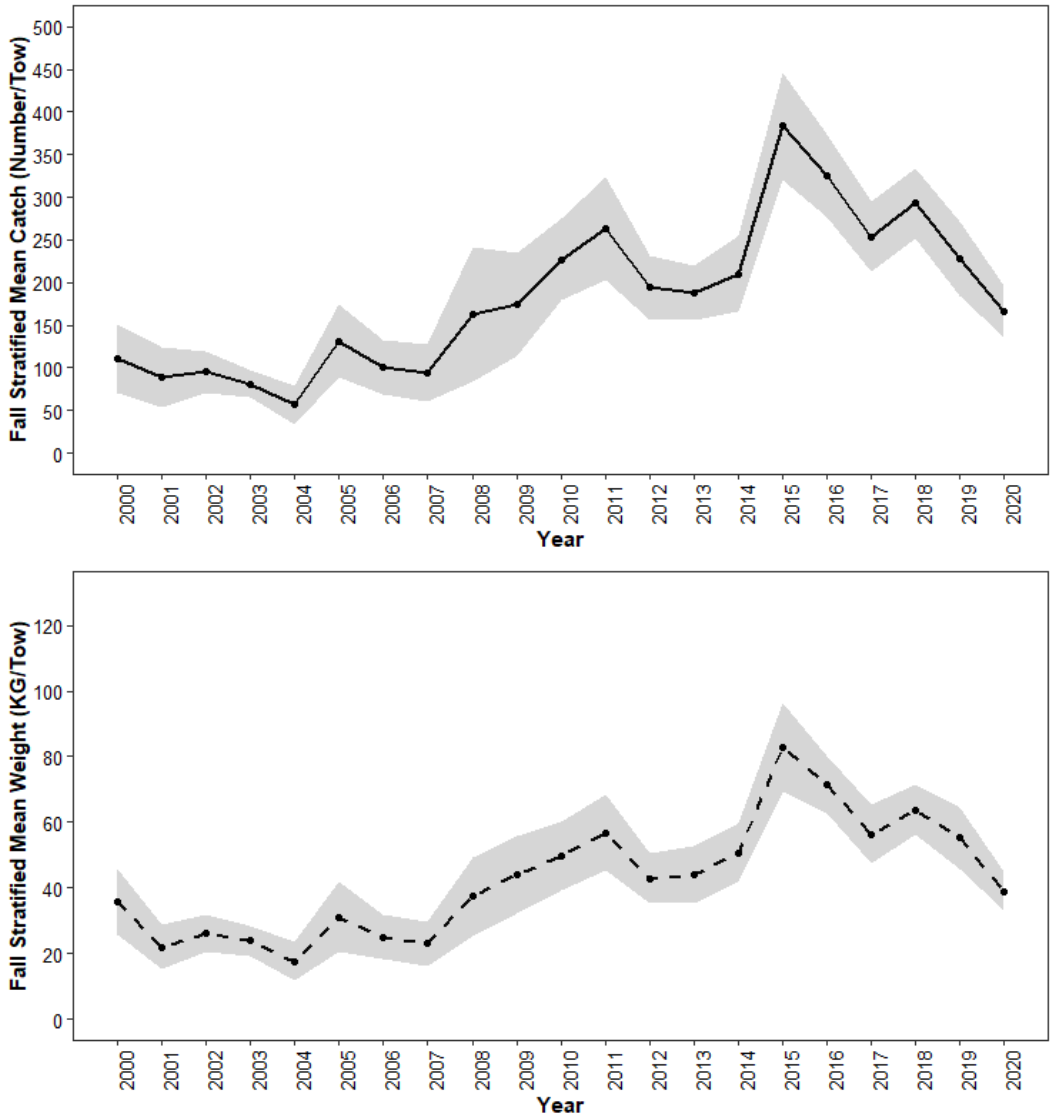


Figure 4. Stratified mean catch and weight indices for American lobster on the fall ME/NH Inshore Trawl Survey (2000-2020).

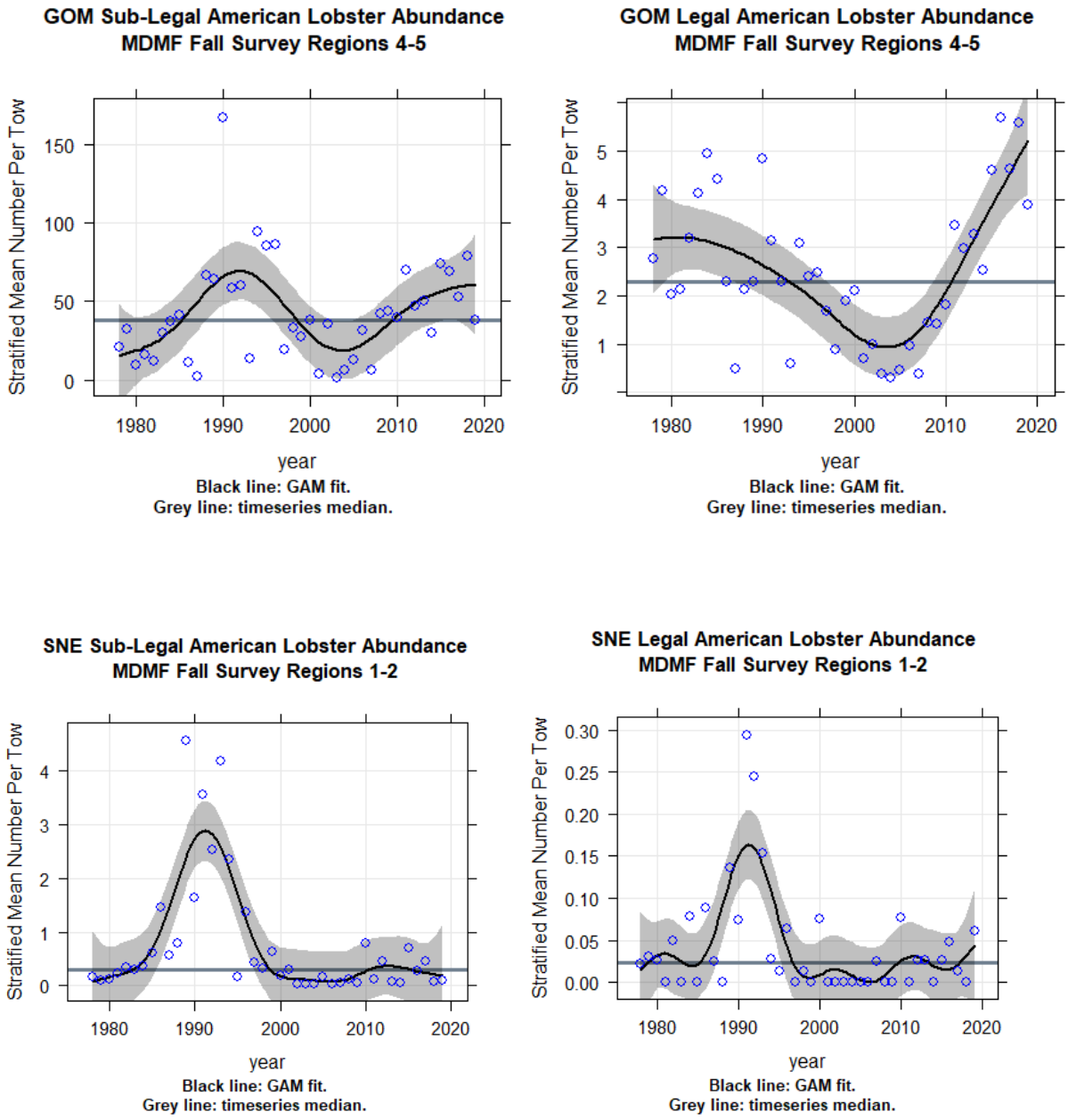


Figure 5. MADMF Fall Trawl Survey sublegal (left) and legal (right) indices from 1978-2019 sexes combined. The top charts are from Gulf of Maine and the bottom charts are from Southern New England.

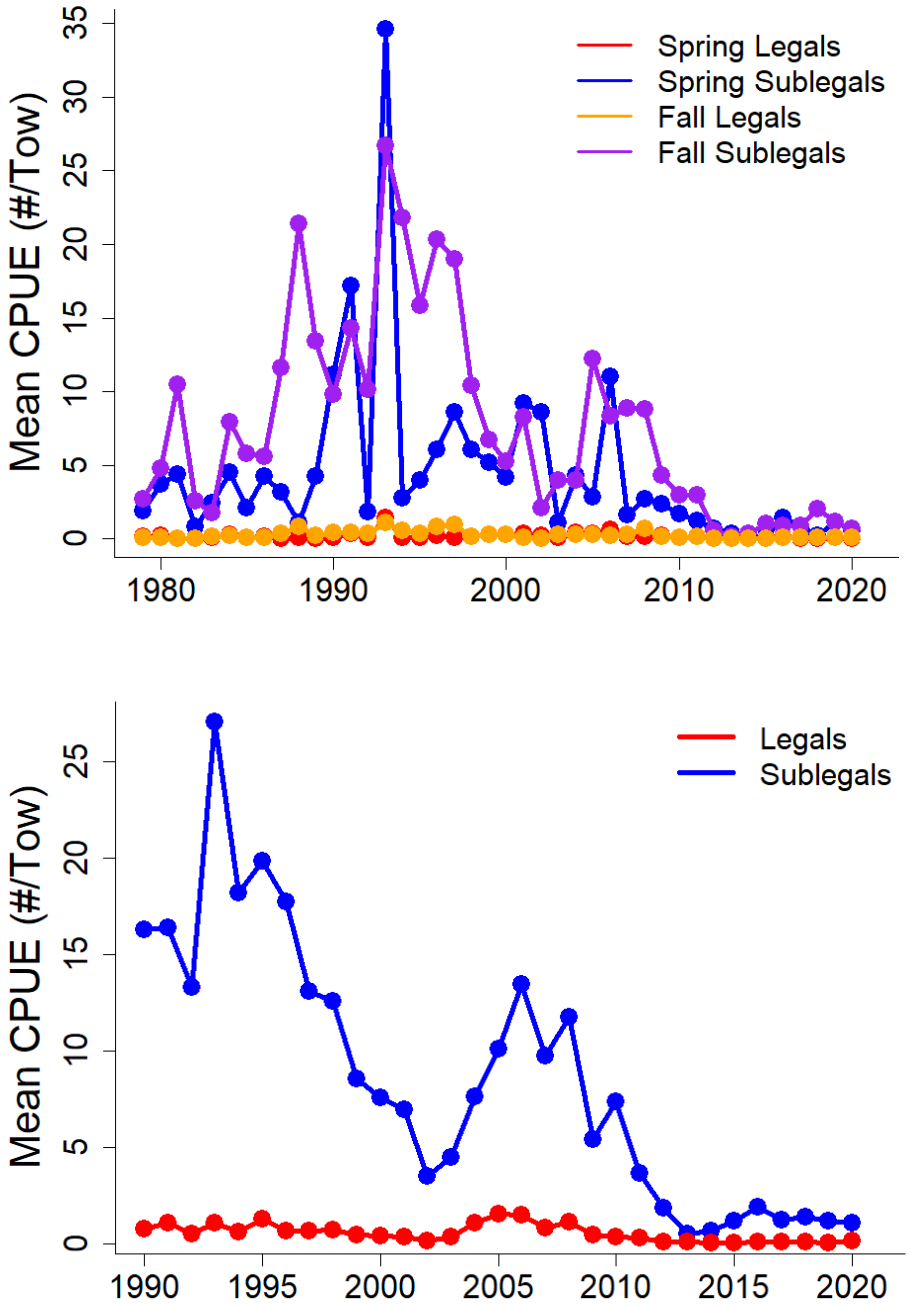


Figure 6. RIDFW Seasonal (spring and fall) Trawl lobster abundances (top) and Monthly Trawl lobster abundances (bottom). CPUE is expressed as the annual mean number per tow for sub-legal (<85.725mm CL) and legal sized (>=85.725mm CL) lobsters.

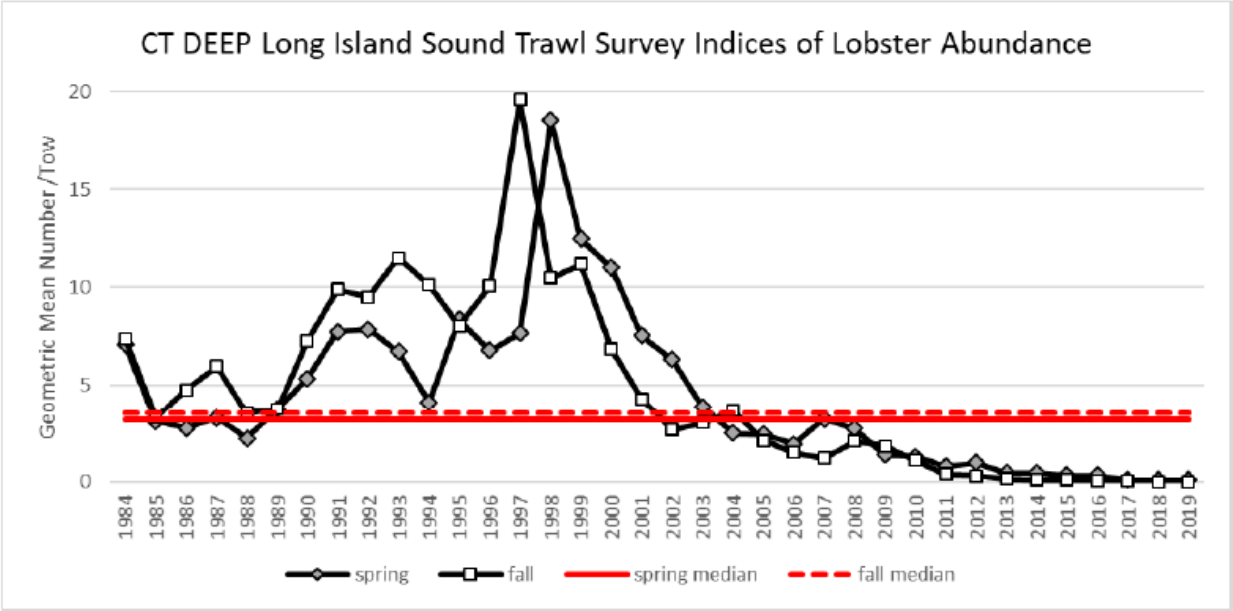


Figure 7. Results of the Long Island Sound Trawl Survey during spring (April-June) and fall (September-October) within NMFS statistical area 611.

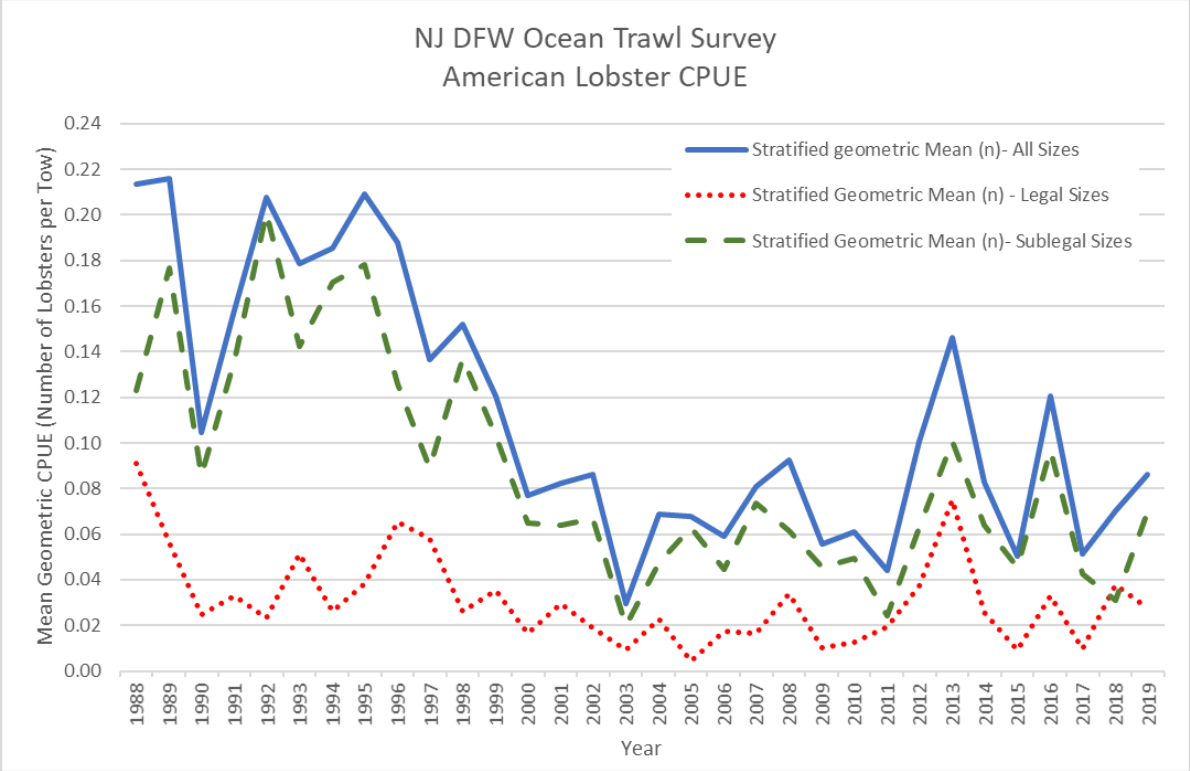


Figure 8. Stratified mean CPUE of all lobsters collected aboard the NJDFW Ocean Trawl Survey. The mean CPUE was calculated as the sum of the mean number of lobsters per size class collected in each sampling area weighted by the stratum area. *NOTE: No April 2019 Survey was conducted due to Research vessel mechanical issues. Due to the COVID-19 pandemic, 2020 CPUE and indices were not obtained.

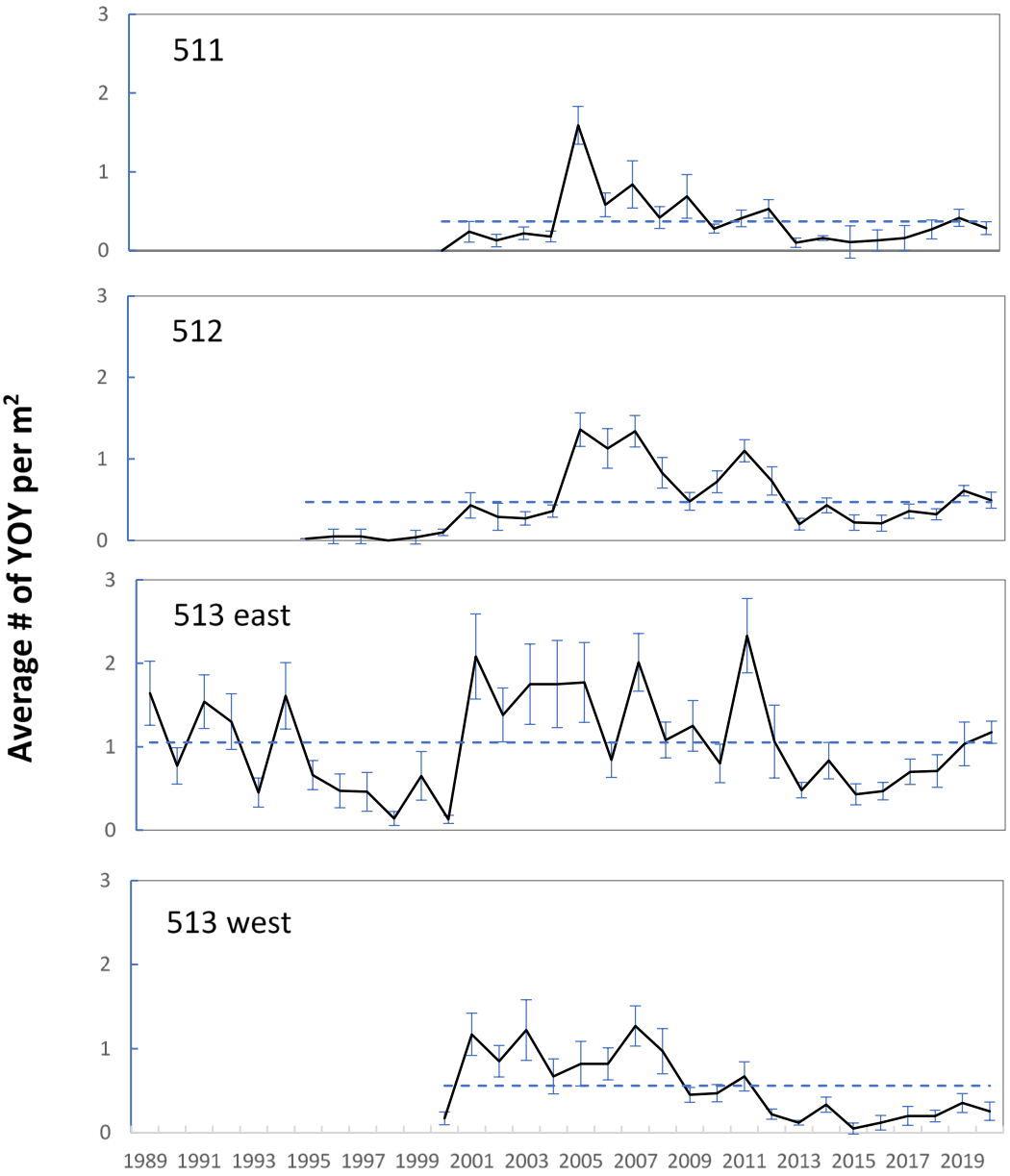


Figure 9. Maine Settlement Survey index 1989-2020 for each statistical area with series average (black line) for each region (blue dashed line) with standard error bars.

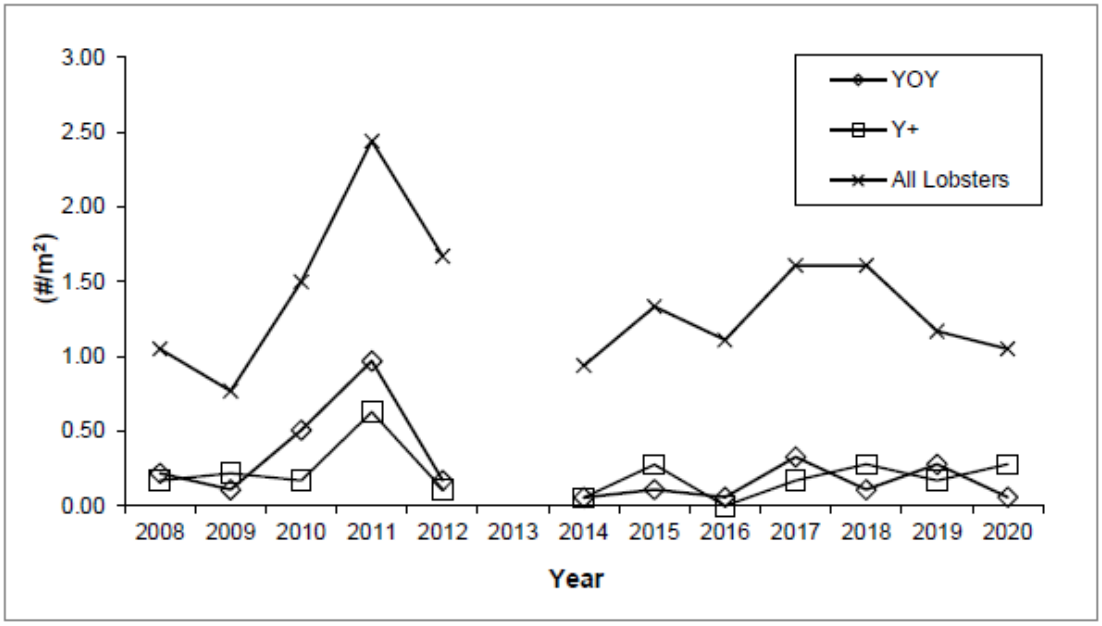


Figure 10. Catch per unit effort (#/m2) of young-of-year (YOY), one-year-olds (Y+), YOY and Y+ combined, and all lobsters during the American Lobster Settlement Index, by location, in New Hampshire, from 2008 through 2020. There were no settlement survey samples collected in NH in 2013.

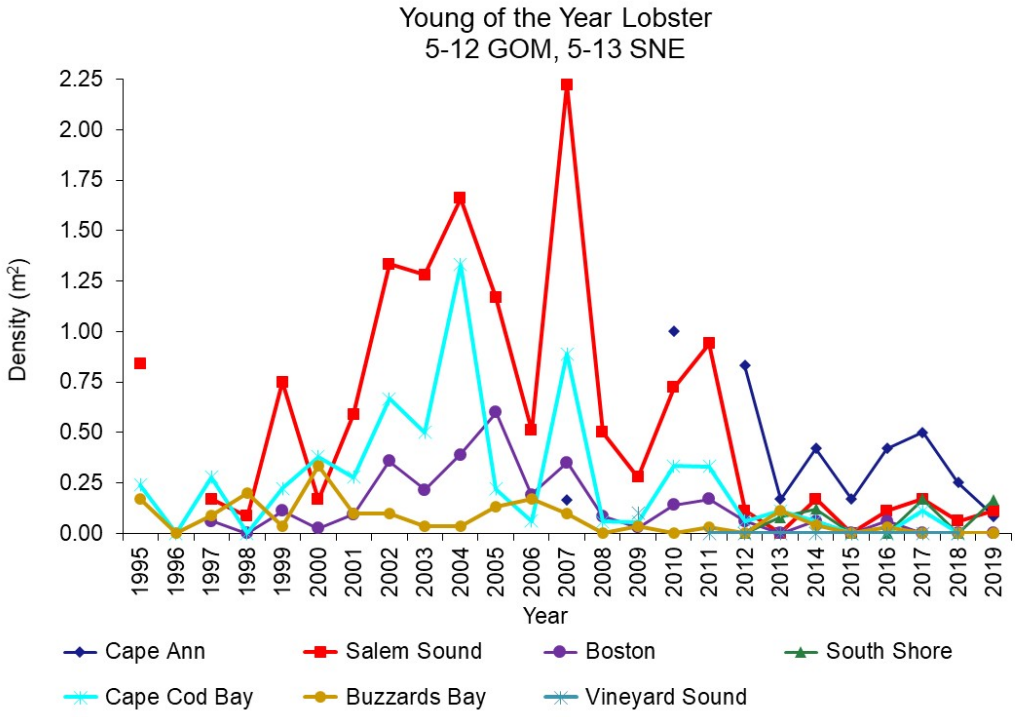


Figure 11. Young-of-year lobster density in seven Massachusetts regions; LCMA 1 – Cape Ann, Salem Sound, Boston, South Shore, Cape Cod Bay, LCMA 2 - Buzzards Bay, Vineyard Sound.

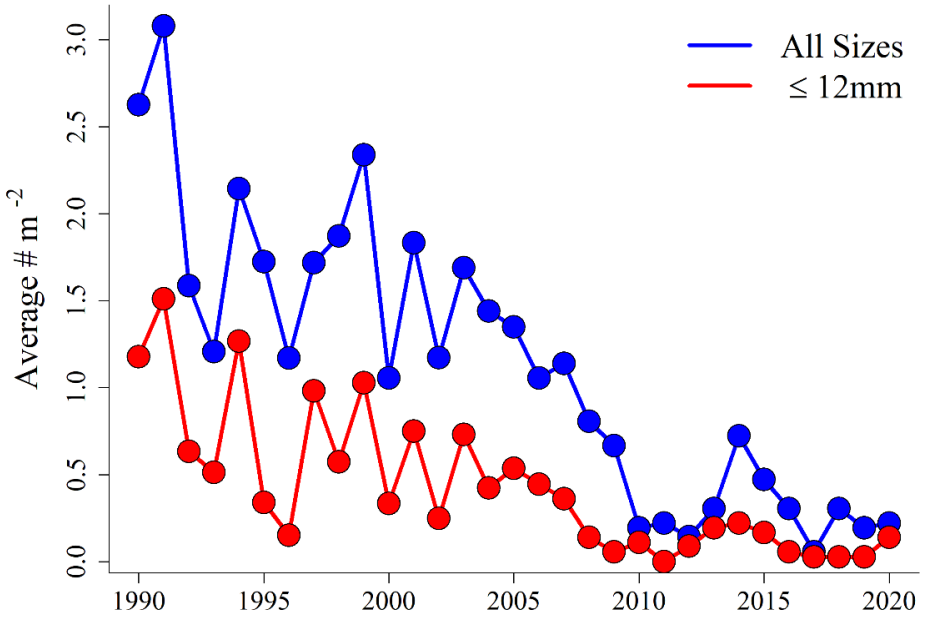


Figure 12. Average abundance of American lobster in Rhode Island suction sampling sites. Abundances are presented for lobsters 12mm and smaller (red line) and all sizes (blue line).

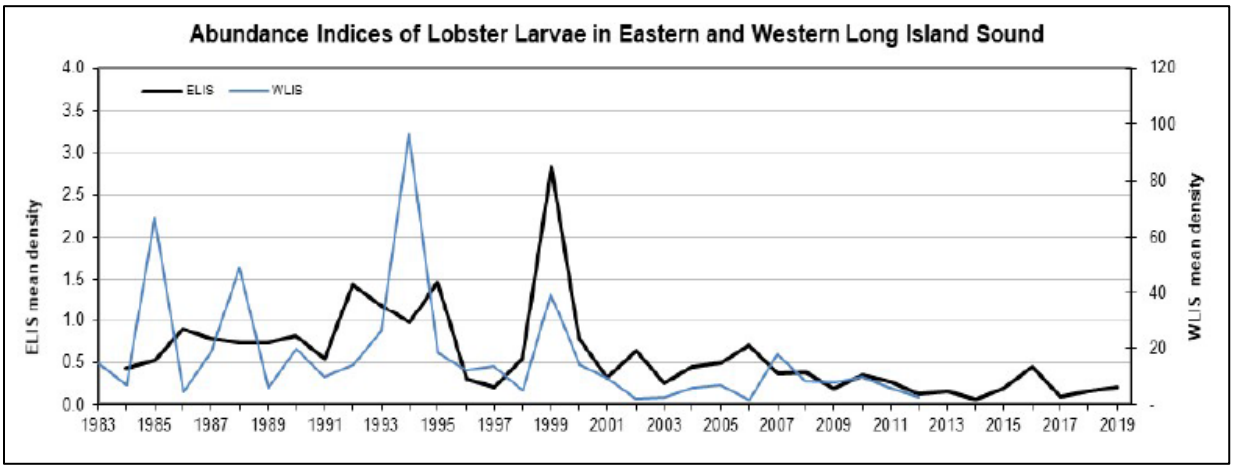


Figure 13. Abundance indices of lobster larvae from the Connecticut DEEP Larval Lobster Survey in western Long Island Sound and from the Millstone Power Station entrainment estimates in eastern Long Island Sound. The Connecticut DEEP survey was discontinued in 2013.

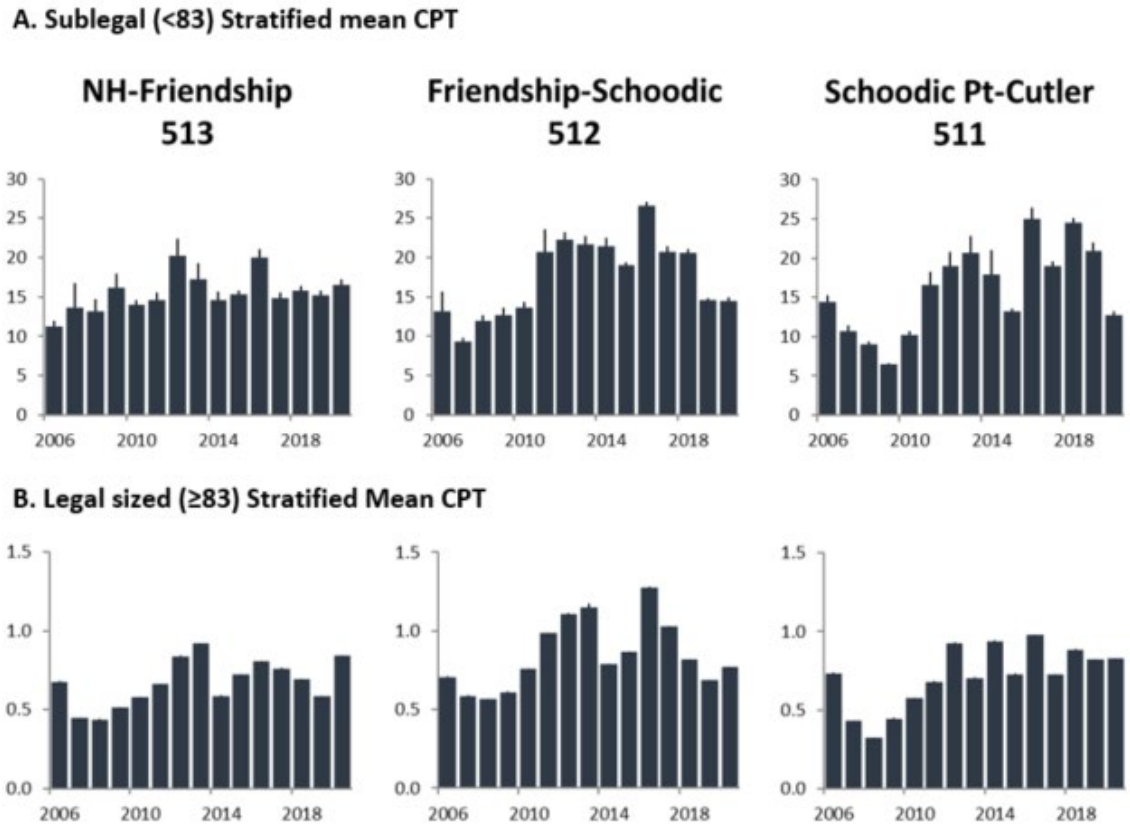


Figure 14. Stratified mean catch per trap for sublegal (A) and legal (B) sized lobsters from Maine's Ventless Trap Survey 2006-2020 by statistical area. Only ventless were traps included in the analysis.

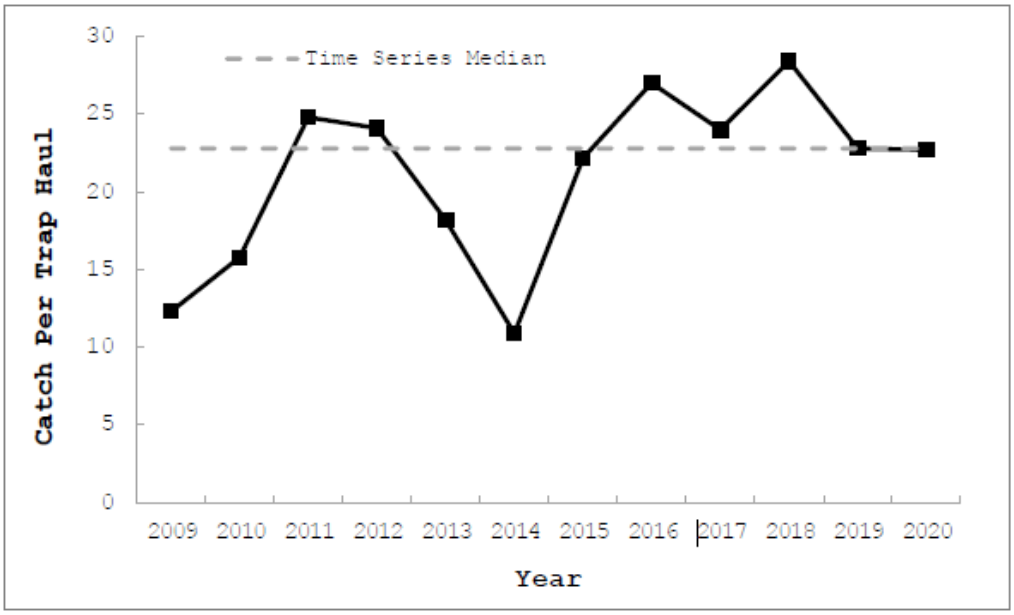


Figure 15. Stratified mean catch per trap haul (ventless traps only) for all lobsters captured during the coast-wide random stratified Ventless Trap Survey in New Hampshire state waters from 2009 through 2020.

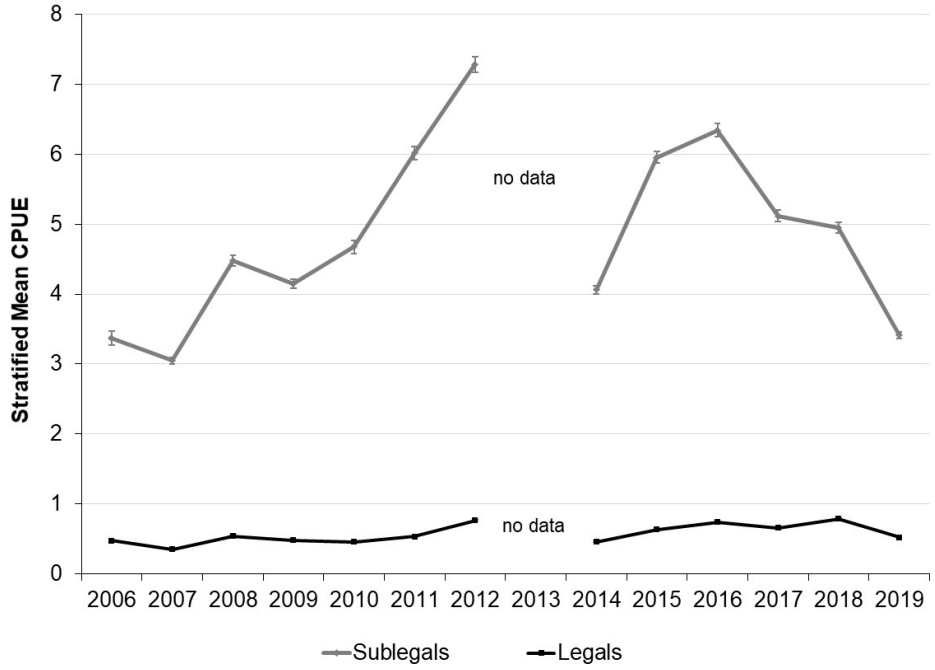


Figure 16. Stratified mean catch per trap haul (±S.E.) of sublegal (< 83 mm, grey line) and legal (≥ 83 mm, black line) lobsters in NMFS Area 514 from MADMF ventless trap survey from 2006-2019. Calculations include both vented and ventless traps.

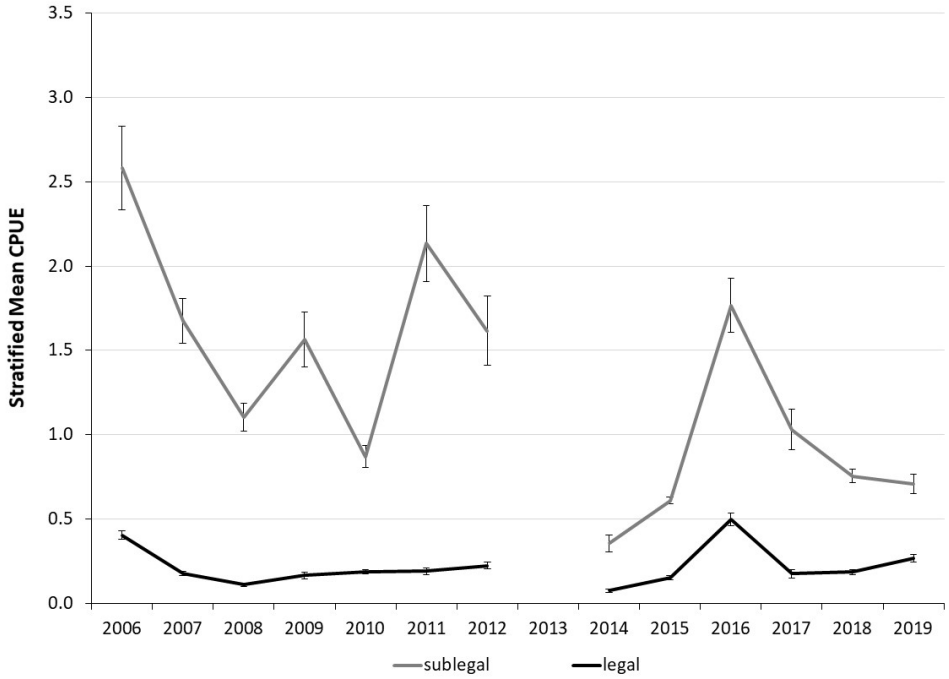


Figure 17. Stratified mean catch per trap haul (±S.E.) of sublegal (< 86 mm, grey line) and legal (≥ 86 mm, black line) lobsters in the original MA SNE survey area (within state waters), Area 538.

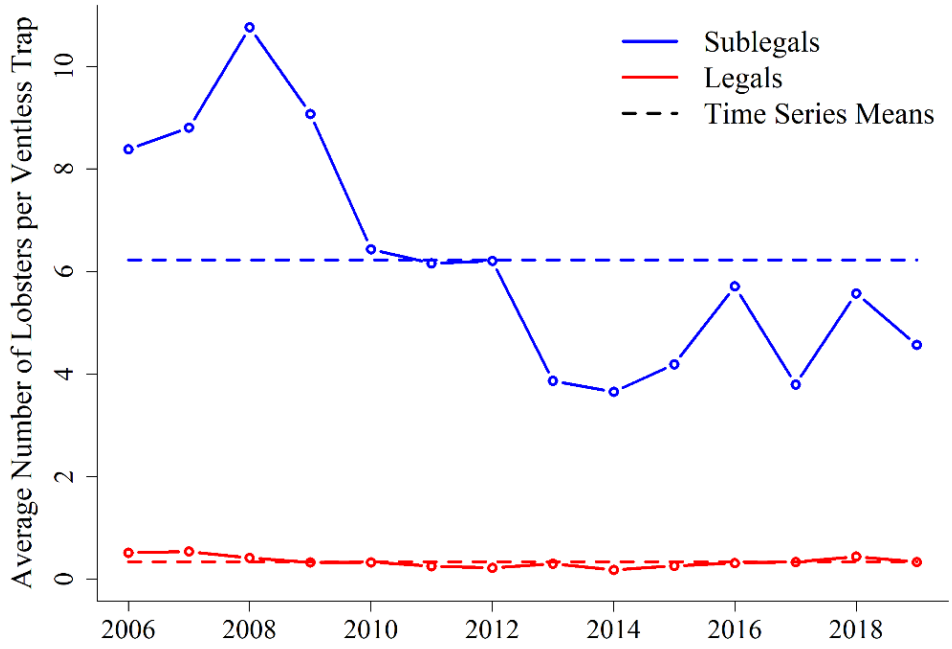


Figure 18. Stratified mean catch (#) per ventless trap for sublegal (<85.725 mm CL) and legal-sized (>=85.725mm CL) lobsters from RIDEM ventless trap survey. The dashed lines indicate time series means for the two indices.

Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

MEMORANDUM

January 4, 2022

To: **American Lobster Management Board**

From: **Tina Berger, Director of Communications**

RE: **Advisory Panel Nominations**

Please find attached two new nominations to the American Lobster Advisory Panel – Eben Wilson and Jeff Putnam, both commercial trap fishermen from Maine. Please review these nominations for action at the next Board meeting.

If you have any questions, please feel free to contact me at (703) 842-0749 or tberger@asmfc.org.

Enc.

cc: Caitlin Starks

AMERICAN LOBSTER ADVISORY PANEL

Bolded names await approval by the American Lobster Management Board
Bolded and italicized name denotes Advisory Panel Chair January 4, 2022

Maine (4)

Jon Carter (comm/pot)
333 Main Street
Bar Harbor, ME 04609
Phone: (207)288-4528
CARTERLOB@GMAIL.COM
Appt. Confirmed: 5/30/96
Appt. Reconfirmed 7/26/00
Appt. Reconfirmed 1/2/06
Appt Reconfirmed 5/10
Confirmed Interest: 10/21

David Cousens (comm/pot)
Box 460
Waterman's Beach Road
South Thomaston, ME 04858
Phone: (207)594-7518
LPC6850@aol.com
Appt. Confirmed 8/28/03
Appt. Confirmed 8/07

Eben Wilson (commercial inshore/offshore trap)
5 Lincoln Street
PO Bix 87
East Boothbay, ME 04544
207.380.6897
ebensail@gmail.com

Jeff Putnam (commercial inshore - out to 20 miles - trap)
107 Littlefield Road
Chebeague Island, ME 04017
207.650.3327
Putnamjeff543@gmail.com

New Hampshire (2)

Robert Nudd (comm/inshore pot)
531 Exeter Road
P.O. Box 219
Hampton, NH 03842
Phone (eve): (603)926-7573
LOBSTAMAN@MYFAIRPOINT.NET
Appt. Confirmed: 10/30/95
Appt. Reconfirmed 9/15/99
Appt. Reconfirmed 1/2/06
Appt Reconfirmed 5/10
Confirmed Interest: 9/21

James A. Willwerth (comm./trap)
10 Mill
Hampton Falls, NH 03844
Phone (day): (603) 765-5008
Phone (eve): (603) 926-3139
JAW080257@comcast.net
Appt Confirmed 10/22/12

Massachusetts (4)

Arthur Sawyer Jr. (comm pots)
368 Concord Street
Gloucester, MA 01930
Phone: (978)281-4736
FAX: (978)281-4736
sooky55@aol.com
Appt. Confirmed: 1/29/01
Appt. Reconfirmed 1/2/06; 5/10; 9/15; 8/18
Confirmed Interest: 9/21

John Carver
PO Box 36
Green Harbor, MA 02041
Phone: 339.793.3785
FAX: (781)837-1707
fvnlights@gmail.com
Appt. Confirmed: 5/9/05
Appt. Reconfirmed 5/10; 9/15; 8/18
Confirmed Interest: 9/21

Grant Moore (comm/offshore pot)
4 Gooseberry Farms Lane
Westport, MA 02790
Phone (day): 508.971.2190
Phone (eve): 508.636.6248
FAX: 508.636.5789
grantmoore55@gmail.com
Appt. Confirmed 11/2/15
Appt. Reconfirmed 8/18
Confirmed Interest: 9/21

Vacancy – recreational diver

Rhode Island (2)
Lanny Dellinger (comm./pot)
160 Snuffmill Road
Saunderstown, RI 02874
Phone (day): (401)932-5826
Phone (eve): (401)294-7352
lad0626@aol.com
Appt Confirmed 2/21/06
Appt Reconfirmed 5/10

Vacancy (comm/offshore pot)

Connecticut (2)
John Whittaker (comm./pot)
37 Spring Street
Groton, CT 06340
Phone (day): (860)287-4384
Phone (eve): (860)536-7668
FAX: (860)536-7668
whittboat@comcast.net
Appt Confirmed 2/21/06
Appt Reconfirmed 5/10
Confirmed Interest: 9/21

Vacancy (comm pot)

New York (2)
George Doll (comm/inshore pot)
70 Seaview Avenue
Northport, New York 11768
Phone: (631)261-1407
FAX: (631)261-1407
Appt. Confirmed: 11/29/00
Appt. Reconfirmed 1/23/06
Appt Reconfirmed 5/10

James Fox (comm/pot)
152 Highland Drive
Kings Park, NY 11754
Phone: (631)361-7995
jcfox22@verizon.net
Appt. Confirmed: 10/16/01
Appt. Reconfirmed 1/23/06
Appt Reconfirmed 5/10

New Jersey (2)
Jack Fullmer (rec)
443 Chesterfield-Arneytown Road
Allentown, NJ 08501
Phone: (609) 298 – 3182
JF2983182@MSN.COM
Appt Confirmed 2/21/06
Appt Reconfirmed 5/17/10
Confirmed Interest: 9/21

John Godwin (processor)
1 Saint Louis Avenue
Point Pleasant Beach, NJ 08742
Phone: 732.245.0148
FAX: 732.892.3928
JOHN@POINTLOBSTER.COM
Appt Confirmed 11/2/15

Maryland
Earl Gwin
10448 Azalea Road
Berlin, MD 21811
Phone: (401) 251-3709
Email: sonnygwin@verizon.net
Appt confirmed 11/1/15
Confirmed Interest: 9/21

ATLANTIC STATES MARINE FISHERIES COMMISSION

Advisory Panel Nomination Form

This form is designed to help nominate Advisors to the Commission's Species Advisory Panels. The information on the returned form will be provided to the Commission's relevant species management board or section. Please answer the questions in the categories (All Nominees, Commercial Fisherman, Charter/Headboat Captain, Recreational Fisherman, Dealer/Processor, or Other Interested Parties) that pertain to the nominee's experience. If the nominee fits into more than one category, answer the questions for all categories that fit the situation. **Also, please fill in the sections which pertain to All Nominees (pages 1 and 2). In addition, nominee signatures are required to verify the provided information (page 4), and Commissioner signatures are requested to verify Commissioner consensus (page 4). Please print and use a black pen.**

Form submitted by: Pat Keliher (your name) State: Maine

Name of Nominee: Eben Wilson

Address: 5 Lincoln St, PO Box 87

City, State, Zip: East Boothbay, ME 04544

Please provide the appropriate numbers where the nominee can be reached:

Phone (day): 207.380.6897 Phone (evening): _____

FAX: _____ Email: ebensail@gmail.com

. . . . . .

FOR ALL NOMINEES:

1. Please list, in order of preference, the Advisory Panel for which you are nominating the above person.
   1. Lobster Advisory Panel
   2. _____
   3. _____
   4. _____
2. Has the nominee been found in violation of criminal or civil federal fishery law or regulation or convicted of any felony or crime over the last three years?

   yes _____ no X
3. Is the nominee a member of any fishermen's organizations or clubs?

   yes _____ no X

   If "yes," please list them below by name.

4. What kinds (species) of fish and/or shellfish has the nominee fished for during the past year?

Lobster

5. What kinds (species) of fish and/or shellfish has the nominee fished for in the past?

FOR COMMERCIAL FISHERMEN:

1. How many years has the nominee been the commercial fishing business? 34 years
2. Is the nominee employed only in commercial fishing? yes _____ no X
3. What is the predominant gear type used by the nominee? Lobster pot
4. What is the predominant geographic area fished by the nominee (i.e., inshore, offshore)? Both inshore and offshore to 35-40 miles

FOR CHARTER/HEADBOAT CAPTAINS:

1. How long has the nominee been employed in the charter/headboat business? 34 years
2. Is the nominee employed only in the charter/headboat industry? yes _____ no X

   If "no," please list other type(s)of business(es) and/occupation(s):_____

3. How many years has the nominee lived in the home port community? 34 years

   If less than five years, please indicate the nominee's previous home port community.

FOR RECREATIONAL FISHERMEN:

1. How long has the nominee engaged in recreational fishing? 34 years

2. Is the nominee working, or has the nominee ever worked in any area related to the fishing industry? yes _____ no X

   If "yes," please explain.

_____

_____

_____

FOR SEAFOOD PROCESSORS & DEALERS:

1. How long has the nominee been employed in the business of seafood processing/dealing? 34 years

2. Is the nominee employed only in the business of seafood processing/dealing?

   yes _____ no X If "no," please list other type(s) of business(es) and/or occupation(s):

_____

_____

_____

3. How many years has the nominee lived in the home port community? 34 years

   If less than five years, please indicate the nominee's previous home port community.

_____

FOR OTHER INTERESTED PARTIES:

1. How long has the nominee been interested in fishing and/or fisheries management? 34 years

2. Is the nominee employed in the fishing business or the field of fisheries management?
   yes _____ no _____

   If "no," please list other type(s) of business(es) and/or occupation(s):

_____

_____

_____

FOR ALL NOMINEES:

In the space provided below, please provide the Commission with any additional information which you feel would assist us in making choosing new Advisors. You may use as many pages as needed.

To the ASMFC commission, Thank you for considering me for this position. Lobstering has been my primary source of income since i was 8 years old. I don't come from a "traditional" fishing family, My mother is an archeologist and later a contractor, My father is a sailmaker. These varying experiences have been both helpful and challenging in the lobster industry. The Lobster industry has so much to be proud of in the face of many other fisheries around the world. I am excited to have the opportunity to be part of the regulatory process.

Nominee Signature: _____ Date: 12/3/21

Name: Eben Wilson
(please print)

COMMISSIONERS SIGN-OFF (not required for non-traditional stakeholders)

_____
State Director

_____
State Legislator

_____
Governor's Appointee

ATLANTIC STATES MARINE FISHERIES COMMISSION

Advisory Panel Nomination Form

This form is designed to help nominate Advisors to the Commission's Species Advisory Panels. The information on the returned form will be provided to the Commission's relevant species management board or section. Please answer the questions in the categories (All Nominees, Commercial Fisherman, Charter/Headboat Captain, Recreational Fisherman, Dealer/Processor, or Other Interested Parties) that pertain to the nominee's experience. If the nominee fits into more than one category, answer the questions for all categories that fit the situation. **Also, please fill in the sections which pertain to All Nominees (pages 1 and 2). In addition, nominee signatures are required to verify the provided information (page 4), and Commissioner signatures are requested to verify Commissioner consensus (page 4). Please print and use a black pen.**

Form submitted by: Pat Keliher (your name) State: Maine

Name of Nominee: Jeff Putnam

Address: 107 Littlefield rd

City, State, Zip: Chebeague Island, ME, 04017

Please provide the appropriate numbers where the nominee can be reached:

Phone (day): 207-650-3327 Phone (evening): _____

FAX: _____ Email: putnamjeff543@gmail.com

FOR ALL NOMINEES:

1. Please list, in order of preference, the Advisory Panel for which you are nominating the above person.
   1. Lobster Advisory Panel
   2. _____
   3. _____
   4. _____

2. Has the nominee been found in violation of criminal or civil federal fishery law or regulation or convicted of any felony or crime over the last three years?

   yes _____ no X

3. Is the nominee a member of any fishermen's organizations or clubs?

   yes X no _____

   If "yes," please list them below by name.

Maine Lobstermans Assn

4. What kinds (species) of fish and/or shellfish has the nominee fished for during the past year?

Lobster

oyster aquaculture

scallop

menhaden

5. What kinds (species) of fish and/or shellfish has the nominee fished for in the past?

FOR COMMERCIAL FISHERMEN:

1. How many years has the nominee been the commercial fishing business? 25 years
2. Is the nominee employed only in commercial fishing? yes X no
3. What is the predominant gear type used by the nominee? lobster traps
4. What is the predominant geographic area fished by the nominee (i.e., inshore, offshore)? inshore out to 20 miles

FOR CHARTER/HEADBOAT CAPTAINS:

1. How long has the nominee been employed in the charter/headboat business? _____ years
2. Is the nominee employed only in the charter/headboat industry? yes _____ no_____

   If "no," please list other type(s)of business(es) and/occupation(s):_____

3. How many years has the nominee lived in the home port community? _____ years

   If less than five years, please indicate the nominee's previous home port community.

FOR RECREATIONAL FISHERMEN:

1. How long has the nominee engaged in recreational fishing? _____ years

2. Is the nominee working, or has the nominee ever worked in any area related to the fishing industry? yes _____ no _____

   If "yes," please explain.

_____

_____

_____

FOR SEAFOOD PROCESSORS & DEALERS:

1. How long has the nominee been employed in the business of seafood processing/dealing? _____years

2. Is the nominee employed only in the business of seafood processing/dealing?

   yes _____ no _____ If "no," please list other type(s) of business(es) and/or occupation(s):

_____

_____

_____

3. How many years has the nominee lived in the home port community? _____ years

   If less than five years, please indicate the nominee's previous home port community.

_____

FOR OTHER INTERESTED PARTIES:

1. How long has the nominee been interested in fishing and/or fisheries management? _____ years

2. Is the nominee employed in the fishing business or the field of fisheries management? yes _____ no _____

   If "no," please list other type(s) of business(es) and/or occupation(s):

_____

_____

_____

FOR ALL NOMINEES:

In the space provided below, please provide the Commission with any additional information which you feel would assist us in making choosing new Advisors. You may use as many pages as needed.

Nominee Signature: _____ Date: 12/13/21

Jeff Putnam

Name: _____
(please print)

COMMISSIONERS SIGN-OFF (not required for non-traditional stakeholders)

_____
State Director

_____
State Legislator

_____
Governor's Appointee