



Atlantic States Marine Fisheries Commission

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Daniel McKiernan (MD), Chair

Doug Haymans (GA), Vice-Chair

Robert E. Beal, Executive Director

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

MEMORANDUM

July 23, 2026

TO: Commissioners; Proxies; American Lobster Management Board; Atlantic Herring Management Board; Atlantic Menhaden Management Board; Atlantic Striped Bass Management Board; Coastal Pelagics Management Board; Committee of Economics and Social Sciences, Executive Committee; ISFMP Policy Board; Spiny Dogfish Management Board; Tautog Management Board; and Winter Flounder Management Board

FROM: Robert E. Beal *REB*
Executive Director

RE: ASMFC Summer Meeting: August 4 – 6, 2026 (TA 26-028)

The Atlantic States Marine Fisheries Commission's Summer Meeting will be **August 4 – 6, 2026 at The Westin Crystal City**. This will be a hybrid meeting (both in-person and remote) to allow for participation by Commissioners and interested stakeholders. The room block is now closed; if you need assistance reserving a room, please contact Lisa Carty at lcarty@asmfc.org.

The final agenda and meeting materials for the Summer Meeting are now available at <https://asmfc.org/events/2026-summer-meeting/>; click on the relevant Board/Committee name to access the documents for that Board/Committee. For ease of access, materials for all boards have been combined into one document – XXX. Supplemental materials will be posted to the website on **Wednesday, July 29**.

The following pages contain the final agenda and public comment guidelines. The agenda is subject to change. The agenda reflects the current estimate of time required for scheduled Board meetings. The Commission may adjust this agenda in accordance with the actual duration of Board meetings. Interested parties should anticipate Boards starting earlier or later than indicated herein. **At these meetings, action may be taken on any agenda item, including, but not limited to, reports from staff, technical committees, stock assessment committees, peer reviews, Law Enforcement Committee, advisory panels, plan review teams, and plan development teams.**

Also of note, the Commission will be considering changes to its Rules and Regulations regarding guidelines on states declared interest on species management boards, as well as changing the name of the Legislative and Governor Appointees *Sections* to Legislative and Governor Appointees *Committees*.

Webinar Information

Meeting proceedings will be broadcast daily via webinar beginning Tuesday, August 4 at 10 AM and continuing daily until the conclusion of the meeting (expected to be 12:15 PM) on Thursday, August 6. The webinar will allow registrants to listen to board deliberations and view presentations and motions as they occur. To register for the webinar, please go to:

<https://attendee.gotowebinar.com/register/7353853081544591455> (Webinar ID: 898-319-835). If you are joining the webinar but will not be using VoIP, you can also call +1 (415) 930-5321, access code 464-559-262. A PIN will be provided to you after joining the webinar. For those who will not be joining the webinar but would like to listen in to the audio portion only, press the # key when asked for a PIN.

Please note: The GoToWebinar platform has significantly changed, so please carefully review the [webinar instructions](#) to guide you through joining and participating in the webinar.

Each day, the webinar will begin 15 minutes prior to the start of the first meeting so that people can troubleshoot any connectivity or audio issues they may encounter. If you are having issues with the webinar (connecting to or audio related issues), please contact Chris Jacobs at 703.842.0790.

Meeting Process

Board chairs will ask both in-person and virtual board members if they wish to speak. In-person members can simply raise their hands at the meeting without logging on to the webinar, while virtual members will raise their hands on the webinar. The chair will work with staff to balance the flow of questions/comments between in-person and virtual attendees. The same process will be used for public comment. Depending upon the number of commenters, the board chair will decide how to allocate the available time on the agenda (typically 10 minutes) to the number of people who want to speak.

We look forward to seeing you at the Summer Meeting. If the staff or I can provide any further assistance to you, please call us at 703.842.0740.

Enclosed: Public Comment Guidelines and Final Agenda

Summer Meeting

August 4 – 6, 2026

The Westin Crystal City

Arlington, Virginia

Public Comment Guidelines

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

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

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

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

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

1. Comments received three weeks prior to the start of a meeting week (**July 13**) will be included in the briefing materials.
2. Comments received by **5 PM on Tuesday, July 28** will be included in supplemental materials.
3. Comments received by **10 AM on Friday, July 31** will be distributed electronically to Commissioners/Board members prior to the meeting.

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

Final Agenda

The agenda is subject to change. The agenda reflects the current estimate of time required for scheduled Board meetings. The Commission may adjust this agenda in accordance with the actual duration of Board meetings. Interested parties should anticipate Boards starting earlier or later than indicated herein. **At these meetings, action may be taken on any agenda item, including, but not limited to, reports from staff, technical committees, stock assessment committees, peer reviews, Law Enforcement Committee, advisory panels, plan review teams, and plan development teams.** Also of note, the Commission will be considering changes to its Rules and Regulations regarding guidelines on states declared interest on species management boards, as well as changing the name of the Legislative and Governor Appointees *Sections* to Legislative and Governor Appointees *Committees*.

Tuesday, August 4

10 – 11 a.m.

Atlantic Herring Management Board

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

Other Members: NEFMC, NMFS

Other Participants: Brown, Deroba

Chair: Grout

Staff: Franke

1. Welcome/Call to Order (*D. Grout*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from October 2025
3. Public Comment
4. Consider 2025 Research Track and 2026 Management Track Stock Assessments **Action**
 - Presentation of Stock Assessment Reports (*J. Deroba*)
 - Presentation of Peer Review Panel Reports (*J. Deroba*)
 - Consider Acceptance of Northeast Fisheries Science Research Track Stock Assessment and Peer Review Report for Management Use
5. Update from New England Fishery Management Council on Atlantic Herring Activity (*NEFMC Staff*)
6. Other Business/Adjourn

11:15 a.m. – 12:15 p.m.

American Lobster Management Board

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

Other Members: NEFMC, NMFS

Other Participants: Beal, Pugh

Chair: Zobel

Staff: Starks

1. Welcome/Call to Order (*R. Zobel*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2026
3. Public Comment
4. Update on Management Objectives Process Steering Committee Progress (*C. Starks*)
5. Consider Lobster Conservation Management Team 5 Proposal to Modify Season Closure (*J. Clark*)
- Action**
6. Reports from Gulf of Maine States on Industry Surveys and Meetings (*C. Wilson, R. Zobel, R. Glenn*)
7. Update on Request for Information for Alternative Gear Marking Framework (*A. Murphy*)
8. Other Business/Adjourn

12:15 – 1:30 p.m.

Lunch Break

1 – 4 p.m.

Committee on Economics and Social Sciences (CESS)

Members: Birkenbach, Carroll, Ebbin, Frimpong, Guilfoos, Hadley, Holzer, Lovell, Montanez, Murphy, Russel, Scheld, Scott, Sethi, Shivilani, Stoll, Walsh

Other Participants: DePiper, Steinbeck

Chair: Lovell

Staff: Patel

Webinar Link: <https://attendee.gotowebinar.com/rt/2881178318303736157>

1. Welcome and Introductions (*S. Lovell*)
2. Update on the Atlantic Striped Bass Recreation Demand Model (*S. Steinbeck*)
3. CESS Tasks Update
 - Menhaden (*A. Scheld*)
 - Spiny Dogfish (*T. Scott*)
 - Tautog (*S. Lovell*)
4. Break
5. Data Access Update (*J. Patel*)
6. Species Assignments (*J. Patel*)
7. Public Comment
8. Recess, will reconvene August 5 at 8:30 a.m.

1:30 – 2:30 p.m.

Winter Flounder Management Board

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

Other Members: NMFS

Other Participants: Balouskus, Frede

Chair: Lengyel Costa

Staff: Bauer

1. Welcome/Call to Order (*N. Lengyel Costa*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from February 2026
3. Public Comment
4. Update on Board Request for Information on Environmental Impacts to Winter Flounder Population Dynamics (*R. Balouskus*)
5. Review New England Fishery Management Council's Groundfish Specification Process (*R. Frede, T. Bauer*)
6. Technical Committee Report (*R. Balouskus*) **Possible Action**
 - Potential Impacts of Increasing Bag Limit in Southern New England/Mid-Atlantic
7. Other Business/Adjourn

2:45 – 4:45 p.m.

Tautog Management Board

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

Other Members: NMFS

Other Participants: Dumais, Scott

Chair: Gates

Staff: Boyle

1. Welcome/Call to Order (*M. Gates*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2026
3. Public Comment
4. Consider Approval of Draft Addendum I for Public Comment: Measures to Address Changes in Stock Status for New Jersey-New York Bight and Delaware-Maryland-Virginia Stock Units (*J. Boyle*) **Action**
5. Review Risk and Uncertainty Decision Tool Scores (*K. Drew*) **Possible Action**
6. Other Business/Adjourn

Wednesday, August 5

8 – 9:30 a.m.

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

Executive Committee

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

Members: Burgess, Cimino, Clark, Dyar, Gary, Grist, Haymans, Hyatt, Kuhn, Luisi, McKiernan, McNamee, Miller, Rawls, Reid, Wilson, Zobel

Chair: McKiernan

Staff: Leach

1. Welcome/Call to Order (*D. McKiernan*)
2. Board Consent
 - Approval of Agenda
 - Approval of Meeting Summary from May 6, 2026
3. Public Comment
4. Legislative Update (*A. Law*)
5. CARES Update (*R. Beal*)
6. Future Annual Meetings Update (*L. Leach*)
 - November 8 – 12, 2026 – Newport, Rhode Island
 - 2027 – South Carolina
 - 2028 – Massachusetts
 - 2029 – Pennsylvania
7. Other Business
8. Adjourn

8:30 a.m. – 4 p.m.

Committee on Economics and Social Sciences (continued)

Webinar Link: <https://attendee.gotowebinar.com/rt/2881178318303736157>

1. Process on Handling Commission Requests (*A. Scheld*)
2. Economist Discussion (*J. Patel*)
3. Break
4. Risk and Uncertainty Discussion (*J. Holzer*)
5. Knudsen AI tool Presentation
6. Lunch
7. Human Mobility Presentation (*G. DePiper*)
8. Break
9. Upcoming Tasks and Management Changes (*J. Patel*)
10. Other Business
11. Public Comment
12. Adjourn

9:45 – 11 a.m.

Spiny Dogfish Management Board

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

Other Members: NMFS

Other Participants: Chapin, Scott

Chair: Cimino

Staff: Boyle

1. Welcome/Call to Order (*J. Cimino*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from February 2026
3. Public Comment
4. Consider Northern Region Conservation Equivalency Proposal **Final Action**
 - Proposed Weekly Trip Limit (*J. Boyle*)
5. Review Committee on Economics and Social Sciences Report on Commercial Fishery (*T. Scott*)
6. Other Business/Adjourn

11:15 a.m. – 12:15 p.m.

Coastal Pelagics Management Board

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

Other Members: NMFS, PRFC, SAFMC

Other Participants: Giuliano, Pearce, Curtis

Chair: Burgess (R. Beal will be chairing in Burgess' stead)

Staff: Tuohy, Franke

1. Welcome/Call to Order (*R. Beal*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from February 2026
3. Public Comment
4. Consider 2027 Total Harvest Quota and Recreational Measures for Atlantic Cobia (*C. Tuohy, A. Giuliano*) **Final Action**
5. Update on 2027 Stock Assessment for Atlantic Cobia (*A. Giuliano*)
6. Consider Approval of Atlantic Cobia Fishery Management Plan Review and State Compliance for the 2025 Fishing Year (*E. Franke*) **Action**
7. Update from South Atlantic Fishery Management Council on Spanish Mackerel Activity (*C. Curtis*)
8. Elect Vice-Chair **Action**
9. Other Business/Adjourn

12:15 – 1:45 p.m. Luncheon for Legislative and Governor Appointee Commissioners

12:15 – 1:45 p.m. Lunch Provided for Commissioners & Proxies

1:45 – 5:30 p.m. Atlantic Menhaden Management Board

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

Other Members: NMFS, PRFC, USFWS

Other Participants: Bailey, Craig, Scheld, Scott

Chair: Cimino

Staff: Boyle

1. Welcome/Call to Order (*J. Cimino*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2026
3. Public Comment
4. Consider Approval of Draft Addendum II on Chesapeake Bay Reduction Fishery Cap for Public Comment (*J. Boyle*) **Action**
5. Review Committee on Economics and Social Sciences Report on Board Task
 - Economic Impacts to Bait Fishery from Changes in Total Allowable Catch (*A. Scheld, T. Scott*)
6. Consider Guidance to Technical Committee on 2027-2029 Specifications (*K. Drew*)
7. Other Business/Adjourn

5:45 – 6:45 PM ASMFC Public Outreach (Westin Lobby)

- Informational Exchange among Commission Members, Staff, and Meeting Attendees; All are Welcome; Light Snacks Provided

Thursday, August 6

8:30 – 9:30 a.m. Atlantic Striped Bass Management Board

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

Other Members: DC, NMFS, PRFC, USFWS

Other Participants: Grabowski, Mercer

Chair: Batsavage

Staff: Franke

1. Welcome/Call to Order (*C. Batsavage*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2026

3. Public Comment
4. Consider Comments to NOAA Fisheries on its Document: *Charting a Course for Striped Bass: Science and Regulatory Innovation for Offshore Aquaculture* (E. Franke) **Action**
5. Consider Approval of Fishery Management Plan Review and State Compliance for the 2025 Fishing Year (E. Franke) **Action**
6. Update on 2027 Benchmark Stock Assessment (K. Drew)
7. Review and Populate Advisory Panel Membership (T. Berger) **Action**
8. Other Business/Adjourn

9:45 – 11:45 a.m.

Interstate Fisheries Management Program Policy Board

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

Other Members: DC, NMFS, PRFC, USFWS

Other Participants: Boelke

Chair: McKiernan

Staff: Kerns

1. Welcome/Call to Order (D. McKiernan)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2026
3. Public Comment
4. Executive Committee Report (D. McKiernan)
5. Discuss *De Minimis* Policy Guidance (T. Kerns)
6. Discuss Sector Separation Amendment Timeline and Stakeholder Workshop Process **Possible Action** (T. Kerns)
7. Committee Reports
 - Committee on Economics and Social Sciences (J. Patel)
 - Assessment Science Committee (J. Patel) **Action**
8. Fisheries Compensation Fund for Atlantic Coast Offshore Wind Program Overview and Recent Work (D. Boelke)
9. Update on Recreational Angler Partnership Improvement Directive (A. DiJohnson)
10. Stock Assessment Updates (K. Drew)
11. Review Noncompliance, If Necessary **Action**
12. Other Business/Adjourn

11:45 a.m. – 12:15 p.m.

Commission Business Session

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

Chair: McKiernan

Staff: Beal

1. Welcome/Call to Order (*D. McKiernan*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2026
3. Public Comment
4. Consider Changes to the Commission Rules and Regulations (*R. Beal*) **Final Action**
5. Consider Noncompliance Recommendations, If Necessary **Final Action**
6. Other Business/Adjourn

Atlantic States Marine Fisheries Commission

Atlantic Herring Management Board

*August 4, 2026
10:00 – 11:00 a.m.*

Draft Agenda

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

1. Welcome/Call to Order (<i>D. Grout</i>)	10:00 a.m.
2. Board Consent	10:00 a.m.
• Approval of Agenda	
• Approval of Proceedings from October 2025	
3. Public Comment	10:05 a.m.
4. Consider 2025 Research Track and 2026 Management Track Stock Assessments Action	10:15 a.m.
• Presentation of Stock Assessment Reports (<i>J. Deroba</i>)	
• Presentation of Peer Review Panel Reports (<i>J. Deroba</i>)	
• Consider Acceptance of Northeast Fisheries Science Research Track Stock Assessment and Peer Review Report for Management Use	
5. Update from New England Fishery Management Council on Atlantic Herring Activity (<i>NEFMC Staff</i>)	10:55 a.m.
6. Other Business/Adjourn	11:00 a.m.

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details.

MEETING OVERVIEW

Atlantic Herring Management Board

August 4, 2026

10:00 – 11:00 a.m.

Chair: Doug Grout Assumed Chairmanship: 09/24	Technical Committee Chair: Vacant	Law Enforcement Committee Representative: Delayne Brown (NH)
Vice Chair: Eric Reid	Advisory Panel Chair: Vacant	Previous Board Meeting: October 27, 2025
Voting Members: ME, NH, MA, RI, CT, NY, NJ, NMFS, NEFMC (9 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from October 2025

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. 2025 Research Track and 2026 Management Track Stock Assessments (10:15-10:55 a.m.) Action

Background

- The 2025 Research Track Stock Assessment was conducted by the Northeast Fisheries Science Center (NEFSC) and completed in February 2025 (**Briefing Materials**).
- A peer review of the 2025 assessment was held in March 2025 (**Briefing Materials**).
- The 2026 Management Track Stock Assessment was conducted by the NEFSC and completed in June 2026 (**Briefing Materials**).
- A peer review of the 2026 assessment was held in June 2026 (**Briefing Materials**).

Presentations

- Assessment overviews by J. Deroba
- Peer review summaries by J. Deroba

Board action for consideration at this meeting

- Accept the 2025 Research Track Stock Assessment Report and Peer Review Report for management use.

5. New England Fishery Management Council Update (10:55-11:00 a.m.)

Background

- In June 2026, the New England Fishery Management Council (NEFMC) voted to separate Atlantic herring specifications for fishing years 2027-2031 into a standalone action distinct from ongoing work to modify river herring and shad management measures (**Briefing Materials**).
- The NEFMC plans to take final action on 2027-2031 specifications at its September 2026 meeting.
- In a separate action, the NEFMC directed its Atlantic Herring Plan Development Team to continue working on time-area closures for river herring and shad, an updated specifications process, and carryover provision modifications, with final action targeted for April 2027.

Presentations

- NEFMC update by NEFMC staff

6. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
ATLANTIC HERRING MANAGEMENT BOARD

Hyatt Place Dewey Beach
Dewey Beach, Delaware
Hybrid Meeting

October 27, 2025

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

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Elect Vice-Chair	6
Adjournment	6

INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of May 2025** by consent (Page 1).
3. **Move to implement seasonal distribution of quota for the 2026 Area 1A sub-ACL with 72.8% available from June through September and 27.2% allocated from October through December, with no landings prior to June 1. Underages will be rolled over into the next quota period. The fishery will close when 92% of the seasonal period's quota is projected to be caught** (Page 2). Motion by Megan Ward; second by Renee Zobel. Motion approved by unanimous consent (Page 3).
4. **Move to approve the Atlantic Herring FMP Review for the 2024 fishing year, state compliance reports, and *de minimis* request for New York** (Page 6). Motion by Jeff Kaelin; second by Matt Gates. Motion approved by unanimous consent (Page 6).
5. **Move to elect Eric Reid as Vice-Chair** (Page 6). Motion by Megan Ware; second by Ray Kane. Motion passes by unanimous consent (Page 6).
6. **Move to adjourn** by consent (Page 6).

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

ATTENDANCE

Board Members

Megan Ware, ME, proxy for C. Wilson (AA)	Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Steve Train, ME (GA)	Matt Gates, CT (AA)
Rep. Allison Hepler, ME (LA)	Bill Hyatt, CT (GA)
Renee Zobel, NH (AA)	Robert LaFrance, CT, proxy for Rep. Gresko (LA)
Doug Grout, NH (GA)	John Maniscalco, NY, proxy for M. Gary (AA)
Melanie Griffin, MA, proxy for D. McKiernan (AA)	Scott Curatolo-Wagemann, NY, proxy for E.
Raymond Kane, MA (GA)	Hasbrouck (GA)
Rep. Sarah Peake, MA, proxy for Rep. Armini (LA)	Heather Corbett, NJ, proxy for J. Cimino (AA)
Nicole Lengyel Costa, RI, proxy for J. McNamee (AA)	Jeff Kaelin, NJ (GA)

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

Ex-Officio Members

Delayne Brown, Law Enforcement Committee Rep.

Staff

Bob Beal	Caitlin Starks	Emilie Franke
Toni Kerns	Tracey Bauer	Katie Drew
Tina Berger	Chelsea Tuohy	Jeff Kipp
Madeline Musante	James Boyle	Samara Nehemiah

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

The Atlantic Herring Management Board of the Atlantic States Marine Fisheries Commission convened in the Ballroom East/West via hybrid meeting, in-person and webinar; Monday, October 27, 2025, and was called to order at 11:15 a.m. by Chair Douglas E. Grout.

CALL TO ORDER

CHAIR DOUGLAS E. GROUT: Okay, folks, welcome to Delaware and welcome to a meeting of the Atlantic Herring Management Board. We have three tasks at hand today, one, set the quota period for the 2026 Area 1A Fishery. We are also going to Consider Approval of the FMP Review and State Compliance for the 2024 Fishing Year, and we're going to elect a Vice-Chair. My name is Doug Grout; I'm Chair for the moment, and before we go on Toni needs to make an announcement.

MS. TONI KERNS: Just to let everybody know that Scott Curatolo-Wagemann is online, John Maniscalco and Melanie Griffin for Commissioners.

APPROVAL OF AGENDA

CHAIR GROUT: We have in our documents an agenda. Are there any changes that people would like to make to the agenda? Seeing none; is there any objection to the agenda? Seeing none; it is approved by unanimous consent.

APPROVAL OF PROCEEDINGS

CHAIR GROUT: We also have the proceedings from the May 2025 meeting. Are there any comments, edits? Are there any objections to approving the minutes? Seeing none; that is approved by unanimous consent too. We're now down to setting our quota period for, oh one more thing I forgot.

PUBLIC COMMENT

CHAIR GROUT: This is an opportunity we have right now for public comment on Atlantic herring for items that are not on the agenda? Is

there anybody in the audience that would like to speak to something that is not on the Atlantic herring agenda? Is there anybody online? Okay.

SET QUOTA PERIOD FOR THE 2026 AREA 1A FISHERY

CHAIR GROUT: Now we'll move on to Setting the Quota Period for 2026 Area 1A Fishery. Emilie is going to give a brief presentation on this.

MS. EMILIE FRANKE: Great, thank you, Mr. Chair. Just on the next slide I'll just go over first the potential quota for Area 1A for 2026. There are two different possibilities for next year. Then I will review the FMP details on the quota periods for Area 1A, and the Board action for consideration today is to set the quota periods for the 2026 Area 1A Fishery.

As far as the quota for next year, just a little bit of background. This Board did approve a set of revised specifications for Atlantic herring for all of the areas back in May, and these were substitutions as recommended by the New England Fishery Management Council.

The Board approved those specifications contingent on a Final Rule being published by NOAA Fisheries. In June, NOAA did issue a proposed rule for those specifications. However, the Final Rule has not yet been implemented and the timeline is TBD. We do not know when those specifications will be implemented, so far these specifications for 2026 are not in place. If NOAA Fisheries does publish that Final Rule in time for next year's season, then the sub-ACL for Area 1A would be 2,640 metric tons.

However, if the Final Rule is not implemented in time for next year's fishery, then the current year's specification, so it would be 2025 specifications would roll over to be the 2026 specifications, that is per the Federal FMP. In that case, the sub-ACL would be 783 metric tons. There are two quota scenarios. Again, we don't have any details on the timeline for implementation of those specifications.

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

Then as far as how the quota period worked for Area 1A, just as a reminder, per Amendment 3 to the Interstate FMP, these quota periods shall be determined annually by the Board for Area 1A. The Board can distribute the Area 1A sub-ACL to meet the needs of a fishery across the year using, there are a couple options for different types of quota periods.

There is the bi-monthly, the trimester or the seasonal quota periods. The Board can also decide whether any quota from January 1st to May 31st should instead be allocated to June 1st or later. The Board would also specify whether any underages from one period would be rolled into the next period.

Up on the screen, I know it's a lot of tables, but Amendment 3 outlines all of the options for these quota periods. It's important to note that these percentages are fixed. The only way we can change these percentages would be through an Addendum. At the top of the screen that is the bi-monthly option, where the quota is allocated to two-month periods throughout the year.

There are also separate options if you would like no landings prior to June 1st. The first option if you want to include the first part of the year, and then the second two options are no landings before June 1st. Then at the bottom on the left is the trimester option, where you have three quota periods throughout the year.

Then at the bottom on the right are the seasonal quota periods. Again, you have an option for landings before June and then options for no landings before June. What is happening in the last few years. Back in 2019 the Board decided to go with bi-monthly quota periods for Area 1A with no landings prior to June 1st. The underages were rolled into the next period.

Then for the last six years the Board has opted to go with the seasonal quota period approach,

with no landings prior to June 1st, and underages rolled into the next period. That is all I have in terms of background. Happy to answer any questions.

CHAIR GROUT: Questions for Emilie. Seeing no questions; we do need to set a season. Megan Ware:

MS. MEGAN WARE: Yes, I have sent staff a motion to set the season. Obviously a really frustrating situation on the herring specs. I hope that resolves itself soon. I think regardless, I would support continuing to use the same season split we've used recently. **Move to implement seasonal distribution of quota for the 2026 Area 1A sub-ACL with 72.8% available from June through September and 27.2% allocated from October through December, with no landings prior to June 1. Underages will be rolled over into the next quota period. The fishery will close when 92% of the seasonal period's quota is projected to be caught.**

CHAIR GROUT: Renee Zobel seconding it. Megan, would you like to provide rationale?

MS. WARE: Just obviously still working under very low quotas. There is not a lot of room to move here, so I think keeping what we've been doing works as best as we can.

CHAIR GROUT: Renee as seconder do you have? Ray Kane.

MR. RAYMOND W. KANE: Megan, do you think we should include in this motion something about the rollover from Canada, with the weir fishery up there? It doesn't happen until what, the middle of October, but should something be in this motion? Should it be mentioned?

CHAIR GROUT: Megan.

MS. WARE: My understanding is that that is a Federal Process, unfortunately. For us right now with the Federal Government shut down, so I don't think that is something the Commission has control of or going through that now.

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CHAIR GROUT: Rob LaFrance.

MR. ROB LaFRANCE: Just a quick question, Megan. Is the 92%, is that current practice? Thank you.

CHAIR GROUT: Any other questions? Jeff Kaelin.

MR. JEFF KAE LIN: I just wanted to speak in support of the motion, Mr. Chairman. No questions.

CHAIR GROUT: Okay, thank you, is there any other comments from the Board? Seeing none; I'm going to try this the easy way first. **Is there any objection to this motion? Seeing no objection it is approved by unanimous consent.** Thank you very much.

This will also give us time, since there is not going to be any landings before June, that if we come up with a situation where we have to adjust what we approved back in May for a quota, that we can make that adjustment at the spring meeting, or even the winter meeting if we find that out.

**CONSIDER APPROVAL OF FMP REVIEW AND
STATE COMPLIANCE FOR THE 2024 FISHING
YEAR**

CHAIR GROUT: Next item is Approval of the FMP Review and state Compliance.

MS. FRANKE: On the next slide I'll just briefly go over the main points of our FMP Review, including a couple of recommendations from the Plan Review Team. Again, the Board is considering approving the FMP Review, Compliance Reports and one de minimis request for 2024. Just a reminder, as far as the FMP. We have complementary management plans between the Commission and the New England Fishery Management Council. As far as the Interstate FMP we are operating under Amendment 3, as well as its addenda. Addendum I, which further specifies the Days

Out Program for Area 1A and Addendum II, which further specifies the Gulf of Maine spawning closures. On the next slide, as far as the status of the stock, we are currently under a rebuilding plan that's at the Federal level.

As far as stock assessments, the last stock assessment to provide an update on stock status, that was the 2024 management track assessment, conducted by the Northeast Fishery Science Center. They found the stock was overfished but not experiencing overfishing. One of the things it noted, as well as previous assessments has noted is the poor recruitment for the stock for the past several years, and the difficulty of identifying a particular mechanism that is really driving that low recruitment.

There was a research track assessment earlier this year, it was peer reviewed in March 2025. Notably that transitioned the stock to the WAM model. I think we'll have a presentation to the Board on that benchmark at one of the upcoming meetings. Then as you may recall, the research track assessments through NOAA do not provide stock status, so the next assessment that will provide stock status relative to the reference points will be a management track assessment that is scheduled for this coming year in 2026.

On the next slide this is Atlantic herring landings, U.S. landings are in orange and Canadian landings are in that kind of darker red. Over time you can see as was mentioned during the last agenda item, you know we are really in a low quota situation here for the past several years. Landings have really dropped off as those quotas have decreased quite a bit in the recent years.

On the next slide, these are preliminary 2024 landings from NOAA Fisheries quota monitoring. You can see the landings are listed by area. That first column you see the sub-ACL for each area, the landings and then the last column is the approximate percent of that sub-ACL that has been caught. At the bottom you can see overall last year across all areas, about 51% of the sub-ACL was

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harvested, primarily from Areas 1A and Area 3. That is about 22 million “ish” pounds.

As far as sort of comparing to recent year’s landings in 2023 and 2024 were more than double ’21 and ’22. We’re now at about 22 million pounds as compared to about 10 or 11 million pounds in ’21 and ’22. We’re still in this very low quota situation. Maine and Massachusetts do typically account for more than 90% of landings, and it is important to note that some vessels do land herring outside of their home port state.

On the next slide the PRT typically discusses every year, we also get updates from the fixed gear fishery. Obviously, most of the landings are coming from the mobile gear. But we do get updates from Maine, where there is a small portion of landings from fixed gear and fixed gear does get a 30 metric ton set aside in Area 1A.

Maine noted that last year in 2024 there was low fixed-gear harvest. But this was due to some overlap with other species on the shores, particularly menhaden arrived a little bit early last year and that sort of impeded the transit of Atlantic herring into those fixed gears, those stop seines. However, despite those low landings the past few years, these fixed gear harvesters in Maine waters have consistently reported adult herring returning to Maine waters in early spring. As far as comments, the PRT finds that all states have regulations in place that meet the requirements of the FMP. New York is requesting de minimis and they do meet that requirement. The average of the last three years of commercial landings is less than 1% of the coastwide total for that period. New York has had de minimis status for quite a while.

Then on the next slide the PRT had a couple of recommendations for the Board to consider. First, a short-term recommendation is for the Board to discuss long term funding solutions for the Maine DMR portside sampling program. I’ll

let Maine speak to this after the presentation in detail. But essentially, funding is needed to collect biological samples out of state.

These are really important to inform the spawning closures to Area 1A and overall, for the entire coast for the stock assessment. A medium-term recommendation from the PRT is for the TC to at some point review the Area 1A spawning closure protocol to determine if there are any concerns with the prolonged period we’ve had of insufficient samples and using the default closure date.

Essentially, in recent years there haven’t been enough samples to forecast a closure date, so we’ve been using the default closure dates in the FMP. The PRT recommends the TC discuss this. The Board has noted this should not be a short-term priority, because we’re working with such low quotas. But at some point, the PRT recommends the TC discuss this.

Finally, the last recommendation is, the next time the Board does a management action, for the Board to also look at the definition of fixed gear in the FMP. Right now, fixed gear is only defined as stop seines and fish weirs only. But there are other gears being used like pound nets and gill nets.

Just sort of for context I mentioned there was the low fixed gear harvest in Maine last year. However, this year the Maine fixed gear harvest was quite a bit higher, and they actually used the entire fixed-gear set aside by summertime, so just something we’ll need to continue to monitor closely so we’ll take a look at this definition in the future. But that’s it, happy to take any question.

CHAIR GROUT: Questions for Megan, I mean Emilie, sorry. Yes, Ray.

MR. KANE: Emilie, you spoke about the Maine DMR. What about an observer program in Massachusetts, because those vessels fish in Area 4 would be Georges Bank, and they fish it in the spring primarily and they catch their quota. What is the coverage there? I would like to know that

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we've got coverage defining Atlantic Sea herring and river herring.

MS. FRANKE: As far as observer coverage I can't really speak to the specifics. I know NOAA Fisheries has noted in the past, especially during COVID there were some challenges with observer coverage. But that would be a question for Federal Staff once they return, on sort of what the specifics are for Area 3 observer coverage.

CHAIR GROUT: Follow up, Ray.

MR. KANE: Yes, please, thank you. We're looking for funding for Maine DMR for a dockside program, how about Massachusetts?

MS. FRANKE: I think, and I'll let Megan speak to this, but I think typically Maine DMR has been able to collect and process the samples from multiple states. Massachusetts DMF staff definitely assist with that sample collection in coordination, but I think a lot of the program for samples is run by Maine DMR.

MR. KANE: Thank you.

CHAIR GROUT: Megan.

MS. WARE: Yes, maybe just a little bit about that. Yes, Maine has been doing the herring samples basically coastwide for all the states. It was originally an ACCSP Grant, we graduated from that and have been trying to hang on with some funds. But at this point the funds are out.

We in November of 2024, amended our Herring Disaster Spend Plan to include some funds for this. That was almost two years ago and we still have not gotten approval of that Herring Spend Plan. A really frustrating situation there. In the absence of that we don't have any funds, so we can carry on for just the Maine portion of the herring sampling, but we don't have funds to send staff up and down the coast right now.

I think what would be a good step is maybe I can ask Emilie to coordinate a call of the administrative commissioners or if any other commissioners that want to join, to start talking about other options. I know at one point we talked about states collecting their own samples, sending them to Maine for processing. I think that is an option. Otherwise, it's states kind of taking that on themselves. But definitely something we need to figure out, because we are out of ACCSP funds at this point.

CHAIR GROUT: Emilie.

MS. FRANKE: I believe the amount is about \$25,000.00 per year.

MS. WARE: Yes, it's a really low amount. I think in our herring amended spend plan we have tried to ask for two or three years of funding. That's obviously not that much. Just a little background on that. We had a provision in our original Herring Disaster Spend Plan that said if someone is undergoing litigation regarding that herring harvest, we would basically hold their portion of the disaster funds until that litigation was complete.

We had that happen. The result of the litigation basically said that person was no longer eligible based on our criteria for their portion of the funds, so we have an individual's funds that we are trying to reallocate, and we were going to use some of that for herring port sampling and then distribute the rest to the herring harvesters, but we have not been able to get that approved.

CHAIR GROUT: Nicole.

MS. NICOLE LENGYEL COSTA: Megan, is the majority of the portion for that funding just due to stopped traveling to the other states? If the other states were able to continue the sampling and send the samples to Maine, would you still be able to do the processing and aging without funding?

MS. WARE: Yes, that is correct, it's mostly travel cost at this point. We can do the processing if folks are sending us stuff.

CHAIR GROUT: Further questions about this?
Okay, we need a motion to approve the FMP Review and a de minimis request from New York. Go ahead, Jeff Kaelin.

MR. KAE LIN: **I move to improve the Atlantic Herring FMP Review for the 2024 fishing year, state compliance reports and de minimis request for New York.**

CHAIR GROUT: The second is Matt Gates.
Would you like to provide any rationale for this?

MR. KAE LIN: The end of the meeting and let's get it over with, no it speaks for itself, Mr. Chairman, I think.

CHAIR GROUT: Does anybody have any comments on this? **Is there any objection to this motion? Okay, motion is approved by unanimous consent.** Thank you very much.

ELECT VICE-CHAIR

CHAIR GROUT: Next agenda item is to elect a Vice-Chair. Megan Ware.

MS. WARE: **I would like to nominate Eric Reid as Vice-Chair.**

CHAIR GROUT: Ray Kane will second that nomination. Do you have any objection to that, Eric Reid? **Are there any objections to having Eric Reid as your next Vice-Chair? Seeing none; it is approved by unanimous consent.** Thank you very much, Eric. We'll start calling you Mr. Chairman again soon.

ADJOURNMENT

CHAIR GROUT: Okay, only other thing is Other Business. Any other business that people would like to bring up? Seeing none; I'll take a motion to adjourn. So, moved. Thank you very much for an efficient meeting.

(Whereupon the meeting adjourned at 11:37 a.m. on Monday, October 27, 2025)

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Northeast Fisheries Science Center Technical Memorandum 335

Atlantic Herring Research Track Assessment Report

March 2025



Northeast Fisheries Science Center Technical Memorandum 335

Atlantic Herring Research Track Assessment Report

by the Northeast Fisheries Science Center

*NOAA Fisheries, Northeast Fisheries Science Center, 166 Water
Street, Woods Hole, MA 02543*

US DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts

March 2025

Northeast Fisheries Science Center (NEFSC)

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PEER REVIEW PANEL SUMMARY REPORT

Report prepared by Peer Review Panel members:

- Dr. Conor McManus (Chair), New England Fisheries Management Council Science and Statistical Committee
- Dr. Henrik Sparholt, independent contractor with the Center for Independent Experts
- Dr. Florian Berg, independent contractor with the Center for Independent Experts
- Dr. Gary Melvin, independent contractor with the Center for Independent Experts

The Northeast Region Coordinating Council (NRCC)¹ has developed an enhanced stock assessment process to improve the quality of assessments. The process involves two tracks of assessment work: 1) a Management Track (MT) that includes routine updates of previously approved assessment methods to support regular management actions (e.g., annual catch limits), and 2) a Research Track (RT) that allows comprehensive research and development of improved assessments on a stock-by-stock or topical basis. The RT assessment process allows for a more thorough review of information available and for the evaluation of different assessment approaches than would be possible in a standard stock assessment process where the results are immediately needed for management advice. RT assessments are followed by MT assessments; occasionally, scientists can improve an RT assessment before or during a subsequent MT assessment. This Peer Review Panel (hereafter Panel) reviewed the RT Assessment for the Atlantic herring stock in United States waters.

Scientists first assessed Atlantic herring using Virtual Population Analysis (VPA) in the 1960s-70s. Since 2009, the Northeast Fisheries Science Center has assessed the stock using the Age Structured Assessment Program (ASAP), which it developed. Scientists conducted the last benchmark stock assessment in 2018, have provided updates every other year since, and most recently completed an MT assessment in 2024 using ASAP. The RT assessment for Atlantic herring aimed to develop an age-structured state space assessment model to estimate process and observation error and to consider environmental covariates within the model.

The Atlantic Herring RT Working Group (WG) used the Woods Hole Assessment Model (WHAM) platform to develop a state space model to be used in future MT assessments of the stock. Matt Cieri (MEDMR) chaired the WG that included staff from NEFMC, GARFO, Massachusetts Division of Marine Fisheries (MADMF), University of Massachusetts – Dartmouth School for Marine Science and Technology (SMAST), and Rutgers University. Terms of Reference (TORs) for the WG are provided in Appendix 1.

The Atlantic Herring RT assessment peer review took place in Woods Hole, MA, during March 10-14, 2025 using a hybrid meeting platform. The Panel included three independent scientists selected by the Center for Independent Experts (CIE): Henrik Sparholt, Florian Berg, and Gary

¹Atlantic States Marine Fisheries Commission (ASFMC), Greater Atlantic Regional Fisheries Office (GARFO), Mid-Atlantic Fishery Management Council (MAFMC), New England Fishery Management Council (NEFMC), and Northeast Fisheries Science Center (NEFSC).

Melvin. Conor McManus (Member of the NEFMC Scientific and Statistical Committee) chaired the Panel. The agenda is located in Appendix 2 and attendees in Appendix 3.

The RT WG submitted the Assessment Report and supporting working papers to the Panel via the NEFSC data portal (<https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php>) on February 21, 2025. The RT WG provided additional information requested by panelists during the peer review and uploaded it to the data portal. Listed items are in Appendix 4. Before the meeting, on March 6, 2025, members of the Panel met with Brian Hooper (NEFSC's Stock Assessment Process Lead) and Kristan Blackhart (Chief, NEFSC Population Dynamics Branch) to review and discuss the meeting agenda, reporting requirements, meeting logistics, and the overall process.

In addition to the report and working papers, WG members and Chair-invited participants made presentations available on the data portal during the RT Review. WG members attended the meeting to answer questions from the Panel, and NEFSC staff acted as rapporteurs to capture conversations between the Panel and WG, Panel consensus on various topics, and Panel recommendations. Panelists led drafting individual portions of this report, but the entire Panel edited and reviewed the report to ensure it represents the consensus views of the Panel. The Panel Chair compiled and edited this Summary Report with assistance from all panelists before submission of a draft report to the WG Chair and WG Lead Analyst. CIE Panelists will submit separate individual reviewer reports to the CIE.

The Panel agreed that all eight TORs were adequately addressed. With specific regard to the transition from ASAP to WHAM, the WG presented a series of WHAM runs testing the sensitivity of the model to various configurations and life history assumptions. The final candidate model recommended by the WG included many of the same data inputs as the previous 2024 MT ASAP configuration except for select elements outlined in the main WG report; however, the model now includes random effects being applied in the model, most notably on the numbers-at-age (NAA) transitions. After reviewing the various model variants the WG provided, and further investigation of the diagnostics and outputs from the models, the Panel agrees that WHAM is an appropriate tool for the Atlantic herring assessment and offers a scientific improvement over ASAP. Before the next MT assessment for Atlantic herring, the Panel provided several recommendations for consideration that strive for model diagnostic improvements, improved biological plausibility, and a deeper understanding of WHAM given its relatively nascent nature. In its recommendations, the Panel emphasized the importance of better understanding the impacts of the NAA random effects, including the stability of NAA estimates with additional years of data added through peel analyses, and their influence or utility in projections. While WHAM reduces retrospective patterns compared with the ASAP for this stock, the uncertainties around the projection methods need further investigation, particularly as they relate to projections beyond the bridge year and subsequent year. The Panel commended the WG for the substantial amount of work made in moving to the state space WHAM platform for the Atlantic herring stock and for the collegial nature of the review.

The Panel's evaluation of the WG's responses to the eight TORs is provided below.

Term of Reference (TOR) #1: Identify relevant ecosystem and climate influences on the stock. Characterize the uncertainty in the relevant sources of data and their link to stock dynamics. Consider findings, as appropriate, in addressing other TORs. Report how the findings were considered under impacted TORs.

The Panel concluded that this TOR was adequately addressed.

Significant progress has been made in the identification of ecosystem drivers that can influence Atlantic herring abundance and distribution. The findings in TOR 1 were addressed and further considered in TOR 4 and TOR 7. Uncertainty was documented through the analyses, both within TOR 1 via analyses and a literature review, and through evaluation of TOR 1 elements in TOR 4 (i.e., WHAM sensitivity runs).

The WG provided a thorough review of Atlantic herring life history and ecosystem drivers on the species (as documented in the literature) through an updated Ecosystem and Socioeconomic Profile (ESP). The ESP leveraged essential fish habitat and life history information previously collated and gathered new, more contemporary research. The processes that influence population dynamics and could be evaluated as environmentally explicit relationships in WHAM were better understood through the use of ESP. These endeavors led to a conceptual life history model that outlined the various ecosystem influences on the species in this region, with hypotheses for the impact of specific conditions on each life stage (Figure 1). This conceptual model was then used to identify possible environmental datasets for further exploration.

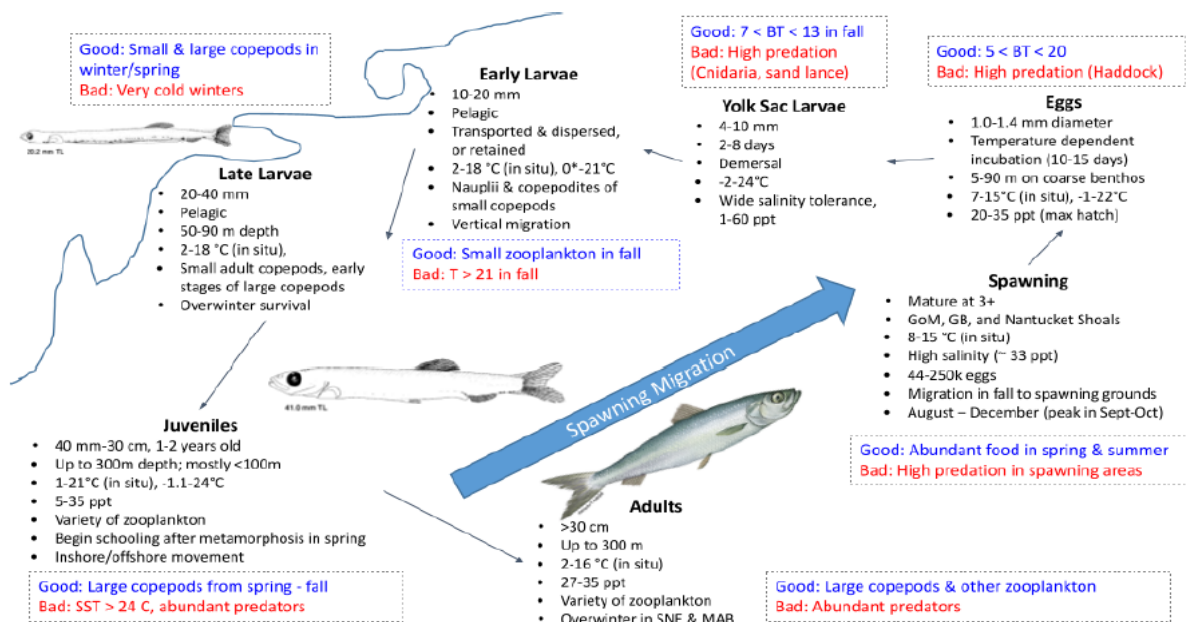


Figure 1. Life history diagram and ecosystem influence hypotheses for Atlantic herring as presented by the WG and in the assessment report.

The WG used boosted regression trees (BRTs) to understand which environmental factors influence Atlantic herring, and their relative importance compared with each other. Several covariates were explored (e.g., copepods, haddock, temperature indices) to understand influences on Atlantic herring (e.g., starvation/food availability, predation pressure, thermal mortality). The response variable for the BRTs was Atlantic herring recruitment estimated from the previous ASAP run to help guide how these covariates could be used in conjunction with recruitment estimates in WHAM.

The Panel commended the WG for its efforts within the ESP, as well as using both hypotheses for impacts on herring recruitment to guide model prioritization runs and ensure biological plausibility. In addition, the use of a tool (e.g., BRTs) was appreciated to determine which variables were most sensible for testing within WHAM.

The Panel recommended several future advancements for this work, including modifications to copepod and haddock predation indices to refine the indices and better capture the interactions between these factors and herring. In addition, the Panel suggested considering competition metrics (e.g., other forage fish abundance) in the future given the abundance and spatiotemporal changes in certain species that have been captured in the literature and reflected in the stakeholders' comments collected via this assessment. The environmental covariates constructed might also be used to understand other processes within the assessment model (e.g., catchability and selectivity, natural mortality, growth) as deemed appropriate in the future.

The Panel provided two substantive comments of caution for the BRTs going forward. The first concern was with regard to the BRT method. The Panel was unclear on whether the BRT was the best tool for this prioritization exercise compared with other methods (e.g., principal component analysis, dynamic factor analysis, other regression approaches). Testing WHAM and ASAP recruitment data for the BRTs suggested that variable importance conclusions may be subject to input data with the BRTs (Figure 2), and testing its robustness against other methods would be beneficial in the future. The second concern involved using assessment model output (i.e., Age-1 Atlantic herring estimates) for these analyses. Caution is raised when conducting post-hoc analyses using data output as the uncertainty in the assessment products themselves is often overlooked (Brooks and Deroba, 2015; Dickey-Collas et al., 2015). The differences in BRT results from using WHAM and ASAP-predicted recruitment also suggest this concern, in addition to the rather circular nature of these analyses (i.e., use WHAM-estimated recruitment to pick an environmental

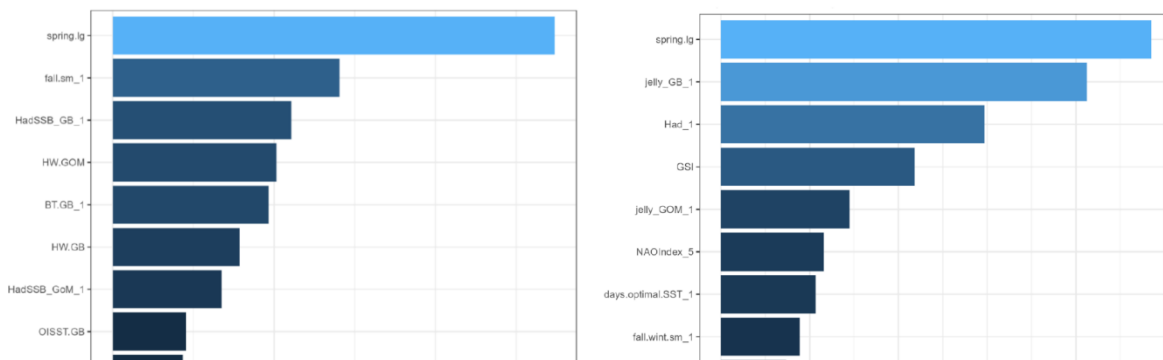


Figure 2. Boosted regression tree results for environmental variables explaining Atlantic herring recruitment estimates produced from ASAP (left) and WHAM (right). Figures were presented during the peer review.

covariate to include in modeling for revised WHAM-predicted recruitment). Efforts should be made to analyze Age-1 abundance indices from other sources (e.g., state surveys, seabird diet data) to avoid this circularity.

TOR #2: Estimate catch from all sources, including landings and discards. Describe the spatial and temporal distribution of landings, discards, and fishing effort. Characterize the uncertainty in these sources of data.

The Panel concluded that this TOR was adequately addressed.

The information presented by the WG provided a good and general summary of the landings over time, by region, and gear type given the historical extent of the fishery and the magnitude of catches. They identified potential uncertainty associated with the different reporting mechanisms and how estimates of discards were integrated into the estimates of landings over time. Over the years, the authorities responsible for the data collection used several approaches to account for fishing mortality (catch and discards) from all sources. The implementation of CAMS in 2020 represents an improved methodology in this process and reflects the sequential approach in the enhancement of the catch monitoring/reporting system. While the WG met the TOR regarding fishing effort in the macro-sense, limited information was provided on the spatial and temporal changes or variability of the fishery (fleet activity), which occurred within a broad geographical area. Showing how and where fishing effort has spatially decoupled over time in relation to the available surveys and their coverage would have been informative. The Panel agreed with the decision to use CAMS to estimate catches and discards given its reasonable comparability with past approaches; however, a few inconsistencies were identified in the reporting with slight differences for the CAMS between the report and the presentation. These differences need resolution and correction in the reporting. The Panel strongly recommends comparative analyses presented from 2020 onward be conducted as far back as possible (e.g., 1996). This will allow for determining whether differences between previous methods and CAMS align with smaller differences observed from 2021 to 2023 or larger differences as observed in 2020 (i.e., up to a 25% difference).

The number of biological samples (50 fish/sample) from commercial catches has dramatically declined and the temporal coverage has contracted since 2019 due to the reduction in allowed catch and management restrictions. Although the total number of samples is the lowest in the time series (1964-present), the WG concluded that the level of sampling was adequate to describe the characteristics of the mobile fleet. Information on the fixed gear fishery (i.e., weir/shutoff) was provided by the Canadian Department of Fisheries and Oceans and resulted in some slight modifications, but inconsequential relative to the assessment. The weight at age for the commercial fishery, which showed a steep decline between 1980 and 1990 for most adult ages (i.e., representing a potential loss in productivity), appears to have leveled off and may even be increasing slightly for some age groups in recent years. This is consistent with observations for adjacent and ocean-wide herring stocks as well as many other fish species.

Spring spawning fish were mentioned on several occasions during the meeting. While traditionally, the stock has been dominated by fall spawners and remains so, the continued

presence of spring spawners in catches and survey sampling may be a forerunner of things to come. Unfortunately, their presence appears more anecdotal with no quantification of their presence. The proportion of spring spawners in the resource and the fishery is not expected to be large or have an impact on the assessment at the current time but is worth considering in the future.

TOR #3: *Present the survey data used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, application of catchability and calibration studies, etc.) and provide a rationale for which data are used. Describe the spatial and temporal distribution of the data. Characterize the uncertainty in these sources of data.*

The Panel concluded that this TOR was adequately addressed.

The WG provided an overview of the fishery-independent surveys available and used in the Atlantic herring stock assessment. The four surveys currently used in the assessment model included the NEFSC Spring (1968-present) and Fall (1963-present) Bottom Trawl (BT) surveys, the Summer (Shrimp) survey (1980s-2023) and the Acoustic survey (1998-present) conducted as part of the Fall BT survey. The former three surveys focus on the near-bottom distribution and abundance of herring (Figure 3), while the latter quantifies fish throughout the water column. The Panel suggested that additional explorations of the Acoustic/BT survey data be undertaken to evaluate the catchability of the gear and potentially combining the Fall BT and Acoustic survey data into an age-based acoustic index given they are from the same ship and time.

All surveys have broad geographical coverage and incorporate the general extent of herring distribution at the time of the surveys. The NEFSC BT surveys time series have been split multiple times to account for gear and vessel changes. These surveys have been the subject of several evaluations in past assessments and the current configuration has been consistently applied since the 2018 framework review. The WG concluded that no new information warranted reevaluating the previously accepted characteristics of these surveys and calibration between the vessels or door changes.

One noted omission in the assessment was the larval survey series that extends back to the 1970s (Richardson et al. 2010). This extensive survey, which has a broad coverage, should be explored further as it may provide additional information on the early life history of herring. In addition, the survey has the potential to be used as an index of abundance to complement the limited data in the assessment surrounding recruitment (Age-1 herring) or herring in their first year of life. The Summer (Shrimp) survey was paused in 2024 and uncertainty about its future was expressed. The Panel suggested that the WG evaluate the impact of permanently losing a survey on the assessment beyond the traditional leave-one-out approach and hope for an ability to prioritize its continuation.

For many fish stocks, limited data exists to quantify recruitment and juvenile fish distribution/abundance (i.e., lack of an index of abundance). The WG explored five additional long-term surveys not included in the model: The MENH Spring and Fall BTS, the MADMF Spring and Fall surveys, and the seabird diet composition survey. Particular emphasis was placed on the seabird diet as a potential index of abundance for Age-1 fish. Combined, these surveys

cover most nearshore (potentially broader) juvenile habitat and contain quantitative information on the abundance and distribution of juvenile fish. Although these surveys were dismissed from inclusion in the current assessment for various reasons, most of these surveys followed trends in abundance consistent with this assessment. The Panel highly recommended exploration of these surveys as indices of abundance and better leveraging the Age-1 composition data from the state surveys and the seabird diet. In addition, comparing the state surveys and the seabird diet might allow for confirming the accuracy of the diet data tracking inshore recruitment dynamics. Further, the Panel suggested that a more quantitative model-based approach (e.g., VAST, sdmTMB) might be useful to integrate surveys with spatial footprints smaller than the stock area into a single index for the assessment.

A limiting factor in the abundance indices currently used in the herring assessment is absence or poor representation of small fish (Age-1), although the sampling gear, in theory, is capable of capturing size fish of this size, when present. Selectivity for each survey clearly shows how the various ages are treated in the model and the limits imposed on the younger ages. Notably, acoustic technology will detect and quantify all age groups of herring if they are present. A knife-edge full selection for ages 3-8 may not be appropriate. Better understanding and quantification of the recruitment dynamics for this species is needed. Enhanced age composition data collection in recent years (i.e., 25 years) have improved the reliability of all indices.

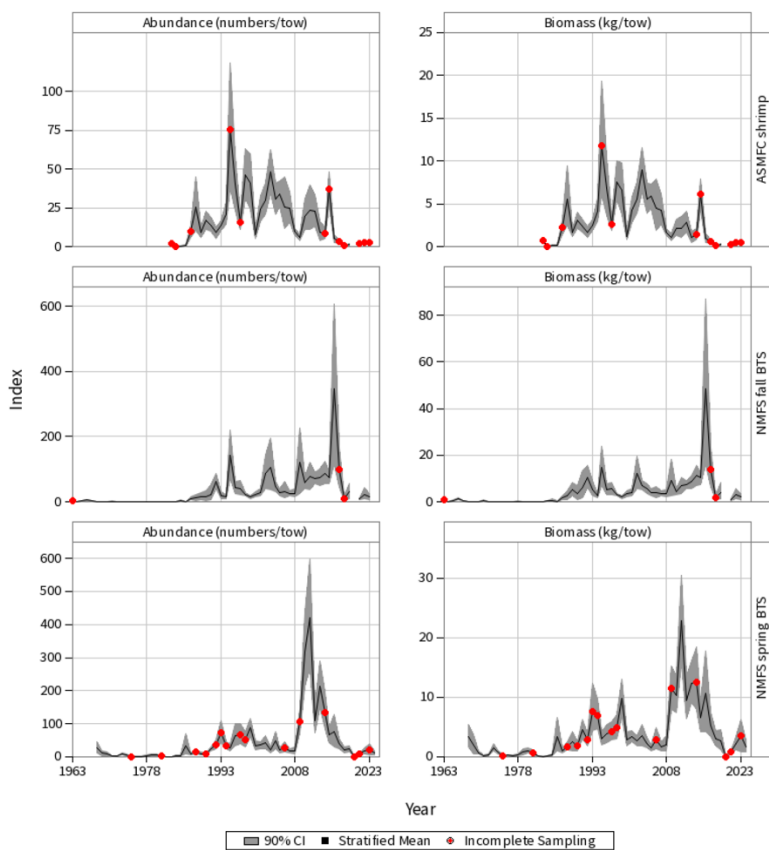


Figure 3. Stratified mean indices from NMFS trawl surveys (number per tow) as provided in the assessment report.

TOR #4: Use appropriate assessment approach to estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) for the time series, and estimate their uncertainty. Compare the time series of these estimates with those from the previously accepted assessment(s). Evaluate a suite of model fit diagnostics (e.g., residual patterns, sensitivity analyses, retrospective patterns), and (a) comment on likely causes of problematic issues, and (b), if possible and appropriate, account for those issues when providing scientific advice and evaluate the consequences of any correction(s) applied.

The Panel concluded that this TOR was adequately addressed.

An underlying goal of the Atlantic herring RT assessment involved moving from ASAP used in previous Atlantic herring assessments to the WHAM platform. Although the WHAM platform was designed to utilize state space model formulations, the model offers many options for simplification, allowing the use of fixed effects similar to those in ASAP.

The basic data used in the assessment have gone unchanged since the 2018 benchmark stock assessment (NEFSC 2018), containing two fishing fleets: a mobile fleet and fixed fleet. The mobile fleet selectivity is age-based with selectivity fixed at 1.0 for ages 7 and 8 but estimated for all other ages. The fixed fleet selectivity is age-based with selectivity fixed at 1.0 for Age-2 but estimated for all other ages (see TOR 2 for more details). The surveys included in the assessment model are the NEFSC surveys: Spring Bottom Trawl, Fall Bottom Trawl, Summer, and Acoustic (see TOR 3 for more details).

A bridging analysis was constructed to define a WHAM model that mimics the most recent ASAP-based assessment (Figure 4). Run0 is “WHAM as ASAP” (i.e., no random effects, annual recruitments are fixed effects), and although the model did not converge, it replicated ASAP well.



Figure 4. Spawning stock biomass (left) and recruitment (right) using ASAP (ASAP 2022) and WHAM with no random effects used (Run0). Figures are from the assessment report.

After bridging to WHAM, the WG explored several model configurations using eight model evaluation criteria, including convergence, residuals, retrospective patterns, AIC, and self-test. Firstly, the WG tried to solve the convergence issue, which was achieved by making recruitment an $ar1\_y$ random effect process, but the model still had some selectivity parameters on bounds and patterned one-step-ahead (OSA) residuals. None of the proposed model configurations resulted in a model without convergence issues or patterned OSA residuals. Next, the WG tried beginning the model in 1987 when age composition observations first became available from the bottom trawl survey (only age composition data from the fishery is available before 1987). This truncation resolved most issues of unidentifiable parameters, convergence, and residual patterns. However, this truncation raised concern about the model's ability to possibly estimate a stock-recruit curve, although the WG further highlights those previous attempts to estimate a stock-recruit curve failed. Consequently, the WG agreed to begin the model in 1987. The Panel agrees with the conclusion of the WG but recommends the WG investigate any possibilities to include data before 1987 in the future, especially when estimating reference points.

The WG continued with the WHAM model development using the truncated time series. First, the likelihood used to fit the age composition data was reevaluated using dirichlet-multinomial, dirichlet-pool0, logistic-normal-miss0, logistic-normal-ar1-miss0, or logistic-normal-pool0. The WG agreed that the logistic-normal-ar1-miss0 option provided the best residual diagnostics, and used this in all subsequent model configurations. The Panel supported this conclusion. Next, a more thorough evaluation of including various combinations of process uncertainty and correlation structures was conducted, e.g., testing iid, $ar1\_a$, $ar1\_y$, 2dar1 structures of abundance transitions (i.e., NAA), fishery selectivity, natural mortality (M), or recruitment. More than 200 model configurations were tested by the WG, and it used a suite of diagnostics to evaluate the different configurations. The WG investigated potential causes for model configurations that failed the diagnostics and provided solutions to account for those issues. The final model configurations used (1) the time- and age-invariant $M=0.35$, (2) decoupled NAA and recruitment processes, (3) iid distribution for the recruitment process, (4) $ar1\_a$ NAA random effects, and (5) estimated initial numbers-at-age (results compared to previous MT ASAP run in Figure 5). The Panel supported the final selected model configuration. However, the Panel suggested the WG evaluate the possibility to estimate recruitment at Age-2, as the current recruitment estimates are solely based on computational estimations (Age-1) without any observations. Further, the effects of the NAA random effects need exploration, especially during the projections. In addition, the Panel recommends investigating more biologically plausible configurations (e.g., implementing an age-based natural mortality). The WG presented one model configuration with scaled age-dependent mortality rates, but from a modeling point of view, the estimates did not change and the less complex model was selected at this time. The Panel suggests the MT allow for some flexibility for age-dependent natural mortality investigations.

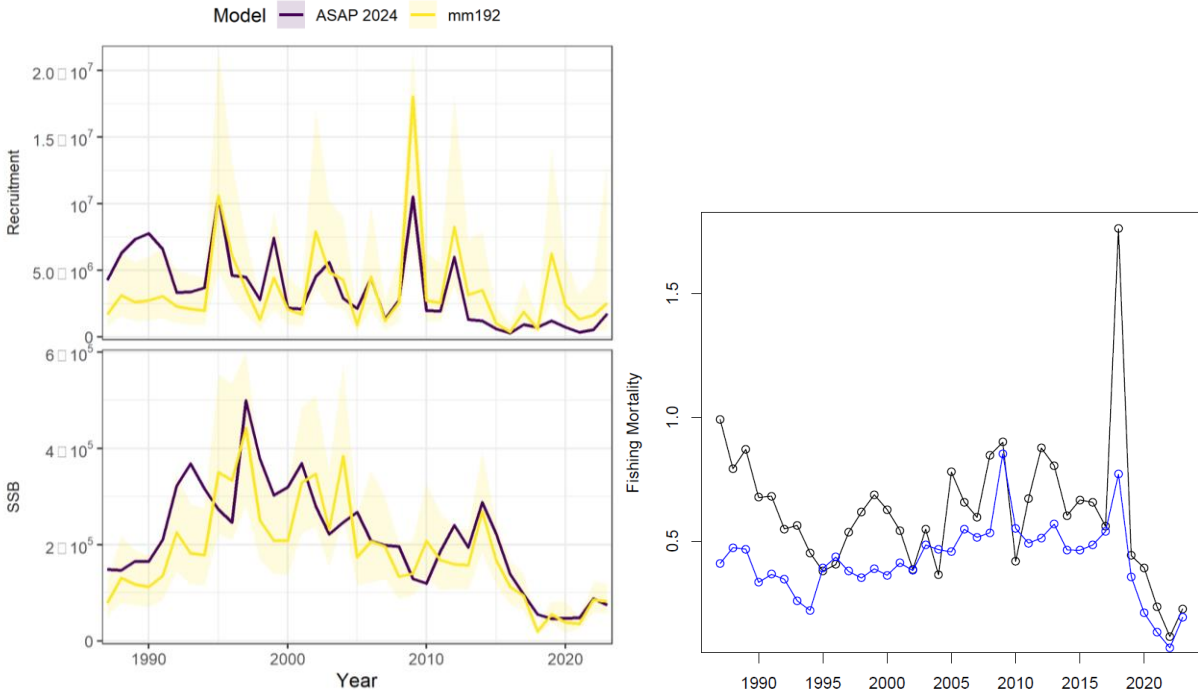


Figure 5: Results compared for the 2024 MT assessment (ASAP) and 2025 RT assessment (WHAM, mm192). Comparisons are provided for spawning stock biomass (SSB) and recruitment (left) and fishing mortality (right). For fishing mortality, the WHAM estimates are provided in black, and the ASAP results are presented in blue.

The Panel seeks to emphasize the effort of the WG to implement an Age-1 recruitment index based on seabird diet or the utilization of other environmental indices as covariates in the final WHAM model. In all cases, the data showed a positive signal, but the model did not improve enough to justify the inclusion of these extra parameters. In addition, some variables used produced counterintuitive relationships and thus need further exploration. The Panel recommends to continue work on this topic.

TOR #5: Update or redefine status determination criteria (SDC; point estimates or proxies for BMSY, BTHRESHOLD, FMSY, and MSY reference points) and provide estimates of those criteria and their uncertainty, along with a description of the sources of uncertainty. If analytic model-based estimates are unavailable, consider recommending alternative measurable proxies for reference points. Compare estimates of current stock size and fishing mortality to existing, and any redefined, SDCs.

The Panel concluded that this TOR was adequately addressed.

The principles of previous assessments have been maintained or slightly improved since previous assessments, and the parameter setting and updates of input data were deemed appropriate. As in previous assessments, a stock-recruit relationship was not established because even very low stock sizes are as likely to produce average recruitment as large stock sizes. In addition, the WG believed

that stock-recruit data from WHAM did not suggest an identifiable relationship (Figure 6). Therefore, the WG used a proxy, F40% (based on SPR calculations) for Fmsy. Assuming continued average recruitment might be problematic at low stock sizes, but given the current management strategy of reducing F when SSB is below half B40% for the major fishing fleet (the mobile-fleet), this assumption results in a low fishing pressure at low stock size.

Figure 6. Stock-recruit plot from WHAM, as provided in the TOR 4-6 working paper.

F40% is calculated differently in ASAP versus WHAM. In ASAP, the mobile-fleet selectivity is considered to find F40%, while the fixed-fleet is entirely ignored (so F40% will be higher in ASAP because the fixed-fleet is ignored). In contrast, WHAM estimates a global F40% that when distributed among the two fleets produces SPR40%, implicitly accounting of both fleets. WHAM estimates a global F40%, and then the fleet-specific F40%s are derived based on relative selectivity. B40% only slightly considers the fixed fleet in ASAP, but it is more accurate in the WHAM approach.

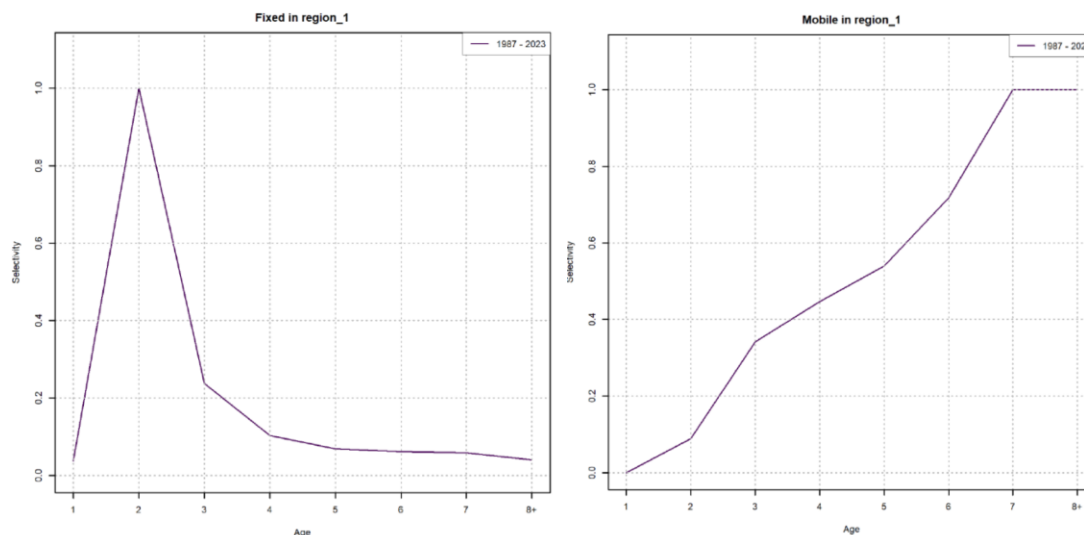


Figure 7. Selectivity patterns by age for the fixed (left) and mobile (right) fleets, as provided in the TOR 4-6 working paper.

In recent years internationally, focus increased on density-dependence (DD) in growth, maturity, and natural mortality in long-term projects, including in reference point calculations. DD in recruitment—to be more precise in survival from egg to recruitment—is appropriately addressed by using stock-recruit model or, as in this assessment, by assuming recruitment to be constant and independent of spawning stock. Density-dependence on recruitment is the main compensation mechanism for fishing in fish stocks generally, but recent science has shown that DD in growth, maturity, and natural mortality can also contribute substantially in fish stock dynamics, and missing it could result in an overestimation of stock size in reference points. This might be explored in future assessments of this stock as well.

While using F40% and B40% may be considered antiquated, they have worked reasonably well for many years when managing fish stocks. Newer science involving multispecies interactions, cannibalism, DD, and meta-analysis are available and may be worth considering. For instance, proxy Fmsy estimates based on life history parameters (e.g., age at 50% maturity and von Bertalanffy growth parameters K and Linf) are now available. Some of these new approaches could be considered. Or at minimum, comparing the results of these to F40% or B40% may be insightful. Alternative reference points (e.g., at 30% or 50%) were not presented, thus determining how sensitive results are to the reference point specification is difficult. Although intuitive regarding the directionality of reference point change impacts when considering alternative percentages, the magnitude of the impact could not be assessed by the Panel. While the Panel understands and ultimately supports the continued use of 40% based on life history information, further comparisons to other reference points would offer valuable insights.

TOR #6: Define appropriate methods for producing projections; provide justification for assumptions of fishery selectivity, weights at age, maturity, and recruitment; and comment on the reliability of resulting projections considering the effects of uncertainty and sensitivity to projection assumptions.

The Panel concluded that this TOR was adequately addressed.

The assumptions and input data to the projections were considered adequate by the Panel. However, the projection results seemed highly uncertain (e.g., Figure 8). As such, the Panel was uncertain on how useful projection estimates beyond the bridge year + 1 are for providing management advice. The Panel was of the opinion the median value projected showing a quite steep increase was a balanced result of the data and analysis available.

The Panel believed the SSB estimates are likely overestimated, given the projections suggest that SSB can be rebuilt to historic (or time-series high) levels within the next three to four years (Figure 8). Density-dependent effects on growth, maturity, and natural mortality would also likely be realized in this case and prevent these levels. Conversely, the lower confidence limit is probably an underestimate as the weight-at-age input data for the projections ignores a slight upward trend in weight-at-age in the most recent couple of years.

The rapid increase in the stock under the projections did not appear driven by recruitment assumptions, given these recruitment levels are small when compared with SSB in 2025 and 2026 and would not enter SSB before 2027 in significant numbers. However, the Panel did recommend further development in the WHAM code to allow for better sensitivity exercises on the recruitment projections (comparison in recruitment average values versus the recruitment parameter are provided in Figure 9). The random effects were discussed in length. They are ignored in the projections, but despite an ar_y process, the NAA random effects would quickly trend to 0. The negative random effects in recent years in the assessment was a concern of the Panel, but the model did not support a correlation between years.

A recommendation was proposed to conduct the projections in a retrospective manner. The increasing trend of SSB from 2018 to 2023 was theorized to influence projections. Changing to an earlier terminal year and re-running the projections would allow for understanding how optimistic projections are and whether the large uncertainties are linked to the method or recent years' data.

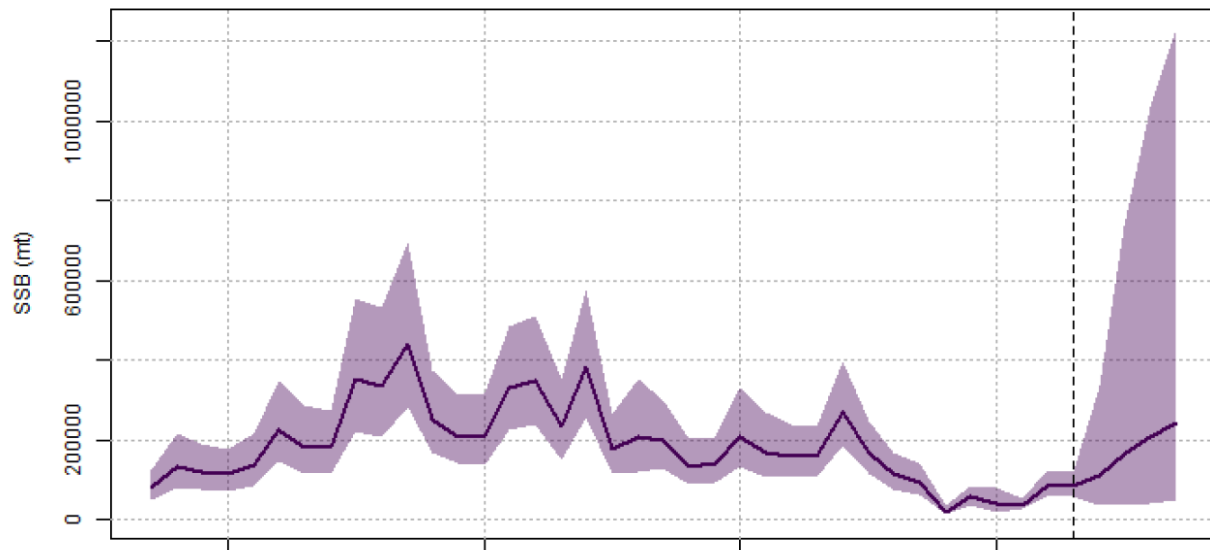


Figure 8. Estimated spawning stock biomass (SSB) from WHAM and projections. The vertical dashed line represents the demarcation between model estimates and projection estimates after 2023. Figure was provided in the TOR 4-6 working paper.

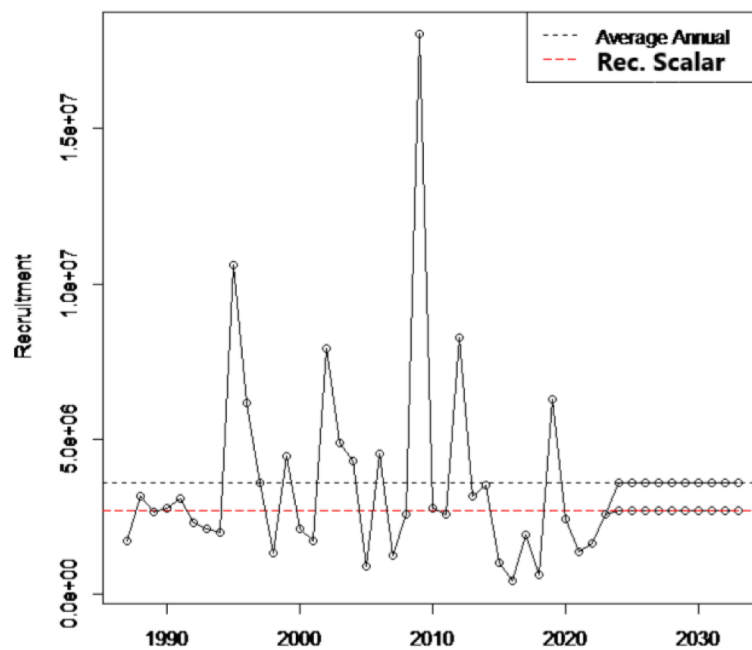


Figure 9. Recruitment time series from WHAM and recruitment projection values between recent time series averages (black) and recruitment estimates from the scalar parameter (red). Figure was provided during the review.

During the review, the Panel noted a forthcoming Projections RT WG that will evaluate how to improve short-term projection methods. The Panel strongly encouraged Atlantic herring being a case study within this RT.

TOR #7: Review, evaluate, and report on the status of research recommendations from the last assessment peer review, including recommendations provided by the prior assessment working group, peer review panel, and SSC. Identify new recommendations for future research, data collection, and assessment methodology. If any ecosystem influences from TOR 2 could not be considered quantitatively under that or other TORs, describe next steps for development, testing, and review of quantitative relationships and how they could best inform assessments. Prioritize research recommendations.

The Panel concluded that this TOR was adequately addressed.

The WG reviewed proposed recommendations from previous assessments, review panels, and SSC discussions. Some elements previously listed and noted from this exercise were not fully discussed or addressed by the WG (e.g., utility of the study fleet data, further expansion of acoustic surveys and research). The Panel asked for the WG to respond to these verbally during the Review. The Panel noted the research recommendations posed by the WG were not prioritized, resulting in challenges for the Panel to respond to recommendations on priorities with WG feedback. As such, during the Review, the Panel asked the WG to note the highest priority research fields from its list in the reports. These recommendations included three themes with sub-elements:

Survey Data

- Continue enhancing survey methodologies, such as incorporating age-length data, to improve reliability and consistency.
- Apply VAST methodologies to combined State and Federal Surveys.
- Evaluate the inclusion of innovative recruitment indices, like seabird diet data, for stock assessments.

Assessment Methods

- Explore alternative age-specific selectivity models and the use of random effects selectivity parameters.
- Investigate the use of larval indices as a potential index of recruitment.
- Refine projection models by integrating ecosystem indicators, such as zooplankton abundance and thermal habitat suitability.

Projection Methods

- Integrate environmental datasets, including temperature and prey availability indices, to refine projection assumptions.
- Address overly optimistic projections by exploring methods that better account for recruitment variability and environmental drivers.
- Evaluate how and if NAA random effects should be treated during the projection period.
- Consider refining how weight- and maturity-at-age are specified in the projection period (i.e., perhaps a recent 5-year average is not best, especially with trending traits).

The Panel supported this list, as well as its recommendations put forth in the other TORs. The Panel did iterate multiple research recommendations again to ensure they were pursued in the future. The first involved continuing investigating recruitment either as an index of abundance or redefining it in WHAM. Using the inshore surveys or the seabird diet data show promise in constructing a recruitment index for Atlantic herring. In addition, the WHAM could start at Age-2 as opposed to Age-1 given whether the consensus continues that no informative data for Age-1 abundance exists. The Panel reemphasized the need to better understand the impacts of NAA random effects on the WHAM model, particularly their influence on projections. Further development of the environmental covariates for future WHAM testing could be fruitful, as well as additional evaluation of natural mortality for a species that can have high natural mortality rates at younger age classes.

TOR #8: Develop a backup assessment approach to providing scientific advice to managers if the proposed assessment approach does not pass peer review or the approved approach is rejected in a future management track assessment.

The Panel concluded that this TOR was adequately addressed.

The WG concluded that if WHAM is rejected (WHAM configurations with random effects or those with fixed effects and thus replicating ASAP), the issues causing this rejection would not be resolvable within an alternative age-based assessment platform. Thus, the WG concluded that an index or survey trend-based backup would be appropriate. The WG chose the existing Ismooth approach (Legault et al. 2022) as an appropriate backup plan method, which has been used for several stocks in the northeast US region. The approach integrated all fisheries-independent survey indices used in the proposed WHAM model into the Ismooth approach. The WG noted that weighting the indices used in Ismooth based on some confidence criteria (e.g., by survey area coverage, likelihood values from previous ASAP or WHAM MT/RT assessments) could be evaluated as needed. However, the Panel noted that this was not a priority. The Panel concluded that the proposed backup approach would be appropriate if the WHAM model was rejected.

Appendix 1: Terms of Reference for the Atlantic Herring Research Track Stock Assessment

- 1.** Identify relevant ecosystem and climate influences on the stock. Characterize the uncertainty in the relevant sources of data and their link to stock dynamics. Consider findings, as appropriate, in addressing other TORs. Report how the findings were considered under impacted TORs.
- 2.** Estimate catch from all sources, including landings and discards. Describe the spatial and temporal distribution of landings, discards, and fishing effort. Characterize the uncertainty in these sources of data.
- 3.** Present the survey data used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, application of catchability and calibration studies, etc.) and provide a rationale for which data are used. Describe the spatial and temporal distribution of the data. Characterize the uncertainty in these sources of data.
- 4.** Use the appropriate assessment approach to estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) for the time series, and estimate their uncertainty. Compare the time series of these estimates with those from the previously accepted assessment(s). Evaluate a suite of model fit diagnostics (e.g., residual patterns, sensitivity analyses, retrospective patterns), and (a) comment on likely causes of problematic issues, and (b), if possible and appropriate, account for those issues when providing scientific advice and evaluate the consequences of any correction(s) applied.
- 5.** Update or redefine Status Determination Criteria (SDC; point estimates or proxies for BMSY, BTHRESHOLD, FMSY, and MSY reference points) and provide estimates of those criteria and their uncertainty, along with a description of the sources of uncertainty. If analytic model-based estimates are unavailable, consider recommending alternative measurable proxies for reference points. Compare estimates of current stock size and fishing mortality to existing, and any redefined, SDCs.
- 6.** Define appropriate methods for producing projections; provide justification for assumptions of fishery selectivity, weights at age, maturity, and recruitment; and comment on the reliability of resulting projections considering the effects of uncertainty and sensitivity to projection assumptions.
- 7.** Review, evaluate, and report on the status of research recommendations from the last assessment peer review, including recommendations provided by the prior assessment working group, peer review panel, and SSC. Identify new recommendations for future research, data collection, and assessment methodology. If any ecosystem influences from TOR 1 could not be considered quantitatively under that or other TORs, describe next steps for development, testing, and review of quantitative relationships and how they could best inform assessments. Prioritize research recommendations.
- 8.** Develop a backup assessment approach to providing scientific advice to managers if the proposed assessment approach does not pass peer review or the approved approach is rejected in a future management track assessment.

Appendix 2: Atlantic Herring Research Track Assessment Peer Review Meeting Draft Agenda (March 10-14, 2025)

Clark Conference Room, NEFSC Aquarium Building, Woods Hole, MA

Google Meet joining info: <https://meet.google.com/her-pcjt-aog>
or dial: (US) +1 316-536-0378 PIN: 521 394 633#

DRAFT AGENDA* (v. 2/12/2025)

**All times are approximate at the discretion of the Review Panel Chair. The meeting is open to the public; however, during the Report Writing sessions we ask that the public refrain from engaging in discussion with the Peer Review Panel.*

Monday, March 10, 2025

Time	Topic	Presenter(s)	Notes
9:00am - 9:15am	Welcome, Introductions, & Agenda Logistics	Conor McManus Brian Hooper	
9:15am - 9:30am	Research Track Process Overview	Kristan Blackhart	
9:30am - 10:00am	Overview of Herring RT	Matthew Cieri	
10:00am - 10:30am	Management History and Current Practices	Jamie Cournane	
10:30am - 10:45am	BREAK		
10:45am - 12:00pm	TOR 1 - Ecosystem and Socioeconomic Profile & Supporting Analyses	Adelle Molina	Ecosystem
12:00pm - 1:00pm	LUNCH		
1:00pm - 2:00pm	TOR 1 - Copepods & VAST	Sarah Gaichas	Ecosystem
2:00pm - 3:00pm	TOR 1 - Haddock Predation	Micah Dean	Ecosystem
3:00pm - 3:15pm	BREAK		
3:15pm - 4:00pm	TOR 1 - Stakeholder Observations	Jamie Cournane	Ecosystem
4:00pm - 4:15pm	Public Comment	Public	
4:15pm - 5:00pm	Discussion/Summary	Review Panel	Conclusions, Recommendations, & Final Wrap-up for TOR 1
5:00pm	ADJOURN		

Tuesday, March 11, 2025

Time	Topic	Presenter(s)	Notes
9:00am - 9:05am	Welcome/Logistics/Agenda	Conor McManus Brian Hooper	
9:05am - 10:30am	TOR 2	Ashley Asci Matthew Cieri	Catch
10:30am - 10:45am	BREAK		
10:45am - 12:00am	TOR 3	Matthew Cieri	Surveys
12:00pm - 1:00pm	LUNCH		
1:00pm - 3:00pm	TOR 4	Jonathan Deroba	Model
3:00pm - 3:15pm	BREAK		
3:15pm - 3:45pm	TOR 4, continued	Jonathan Deroba	Model
3:45pm - 4:00pm	Public Comment	Public	
4:00pm - 5:00pm	Discussion/Summary	Review Panel	Conclusions, Recommendations, & Final Wrap-up for TORs 2, 3, & 4
5:00pm	ADJOURN		

Wednesday, March 12, 2025

Time	Topic	Presenter(s)	Notes
9:00am - 9:05am	Welcome/Logistics/Agenda	Conor McManus Brian Hooper	
9:05am - 10:00am	Review Homework	Conor McManus	If needed
10:00am - 10:30am	TOR 5	Jonathan Deroba	BRPs
10:30am - 10:45am	BREAK		
10:45am - 12:00pm	TOR 5, continued	Jonathan Deroba	BRPs
12:00pm - 1:00pm	LUNCH		
1:00pm - 3:00pm	TOR 6	Jonathan Deroba	Projections
3:00pm - 3:15pm	BREAK		
3:15pm - 3:45 pm	TOR 8	Jonathan Deroba	Backup Approach
3:45pm - 4:00pm	Public Comment	Public	

Time	Topic	Presenter(s)	Notes
4:00pm - 5:00pm	Discussion/Summary	Review Panel	Conclusions, Recommendations, & Final Wrap-up for TORs 4, 5, 6, & 8
5:00pm	ADJOURN		

Thursday, March 13, 2025

Time	Topic	Presenter(s)	Notes
9:00am - 9:05am	Welcome/Logistics/Agenda	Conor McManus Brian Hooper	
9:05am - 10:00am	Review Homework	Conor McManus	If needed
10:00am - 10:30am	TOR 7	Jamie Cournane	Research Recommendations
10:30am - 10:45am	BREAK		
10:45am - 12:00pm	TOR 7, continued	Jamie Cournane	Research Recommendations
12:00pm - 1:00pm	LUNCH		
1:00pm - 3:00pm	Revisit any remaining issues	Conor McManus	If needed
3:00pm - 3:15pm	BREAK		
3:15pm - 3:30pm	Public Comment	Public	
3:30pm - 5:00pm	Discussion/Summary	Review Panel	Conclusions, Recommendations, & Final Wrap-up for TOR 7, any remaining issues
5:00pm	ADJOURN		

Friday, March 14, 2025

Time	Topic	Presenter(s)	Notes
9:00am - 5:00pm	Closed panel writing session	Review Panel	*If necessary, open session may be reconvened to revisit any remaining issues
5:00pm	ADJOURN		

Appendix 3: Atlantic Herring Research Track Assessment Peer Review Attendees (March 10-13, 2025)

CIE - Center for Independent Experts

GARFO - Greater Atlantic Regional Fisheries Office

MAFMC - Mid-Atlantic Fisheries Management Council

NEFMC - New England Fishery Management Council

NEFSC - Northeast Fisheries Science Center

SSC - Science and Statistical Committee

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### Peer Review Panel

| First  | Last     | Affiliation       |
|--------|----------|-------------------|
| Conor  | McManus  | NEFMC SSC (Chair) |
| Henrik | Sparholt | CIE               |
| Lorian | Berg     | CIE               |
| Gary   | Melvin   | CIE               |

### Working Group

| First    | Last       | Affiliation             |
|----------|------------|-------------------------|
| Ashley   | Asci       | GARFO                   |
| Matt     | Cieri      | Maine DMR (Chair)       |
| Jamie    | Cournane   | NEFMC                   |
| Kiersten | Curti      | NEFSC                   |
| Micah    | Dean       | MA DMF                  |
| Jonathan | Deroba     | NEFSC (Assessment Lead) |
| Sarah    | Gaichas    | NEFSC                   |
| Gavin    | Fay        | SMAST                   |
| John     | Wiedenmann | Rutgers                 |

### Attendees

| First   | Last       | Affiliation                 |
|---------|------------|-----------------------------|
| Emilie  | Franke     | ASMFC                       |
| Richard | Klyver     | Blue Green Future           |
| Gerry   | O'Neill    | Cape Seafoods Inc           |
| Gareth  | Lawson     | Conservation Law Foundation |
| Kurt    | Gottschall | CT DEEP                     |
| Kevin   | Job        | CT DEEP                     |
| M       | Smith      | Public                      |
| Tim     | Barrett    | Fisheries and Oceans Canada |

| First       | Last         | Affiliation                              |
|-------------|--------------|------------------------------------------|
| Nathan      | Hebert       | Fisheries and Oceans Canada              |
| Kaleigh     | Hill         | GARFO                                    |
| Carrie      | Nordeen      | GARFO                                    |
| Ashley      | Trudeau      | GARFO                                    |
| Jonathan    | Watson       | GARFO                                    |
| Raffaella   | Terzo        | Gloucester Fishermen's Wives Association |
| Jeff        | Kaelin       | Lunds Fisheries                          |
| Sefatia     | Romeo Theken | MA Department of Fish and Game (FWE)     |
| Melanie     | Griffin      | MA DMF                                   |
| Kelly       | Whitmore     | MA DMF                                   |
| Jason       | Didden       | MAFMC                                    |
| Brandon     | Muffley      | MAFMC                                    |
| Megan       | Ware         | Maine Department of Marine Resources     |
| Addie       | Binstock     | ME DMR                                   |
| Andrew      | Applegate    | NEFMC                                    |
| Emily       | Bodell       | NEFMC                                    |
| Rachel      | Feeney       | NEFMC                                    |
| Cate        | OKeefe       | NEFMC                                    |
| Charles     | Adams        | NEFSC                                    |
| Larry       | Alade        | NEFSC                                    |
| Christina   | Asante       | NEFSC                                    |
| Brandon     | Beltz        | NEFSC                                    |
| Kristan     | Blackhart    | NEFSC                                    |
| Jason       | Boucher      | NEFSC                                    |
| Russell     | Brown        | NEFSC                                    |
| Maxwell     | Grezzlik     | NEFSC                                    |
| Amanda      | Hart         | NEFSC                                    |
| Daniel      | Hennen       | NEFSC                                    |
| Cameron     | Hodgdon      | NEFSC                                    |
| Brian       | Hooper       | NEFSC                                    |
| Christopher | Legault      | NEFSC                                    |
| Chengxue    | li           | NEFSC                                    |
| Emily       | Liljestrand  | NEFSC                                    |
| Brian       | Linton       | NEFSC                                    |
| Tim         | Miller       | NEFSC                                    |
| Adelle      | Molina       | NEFSC                                    |
| Paul        | Nitschke     | NEFSC                                    |
| Stephanie   | Owen         | NEFSC                                    |



| First          | Last      | Affiliation                                 |
|----------------|-----------|---------------------------------------------|
| Charles        | Peretti   | NEFSC                                       |
| Burton         | Shank     | NEFSC                                       |
| Laura          | Solinger  | NEFSC                                       |
| Katherine      | Sosebee   | NEFSC                                       |
| Michele        | Traver    | NEFSC                                       |
| Samuel         | Truesdell | NEFSC                                       |
| Abigail        | Tyrell    | NEFSC                                       |
| Sara           | Weeks     | NEFSC                                       |
| Anthony        | Wood      | NEFSC                                       |
| Renee          | Zobel     | NH Fish & Game                              |
| Cheri          | Patterson | NH Fish & Game                              |
| Joseph         | Warren    | NOAA Affiliate                              |
| Mary Beth      | Tooely    | O'Hara Corporation                          |
| Justin         | Didden    | Public                                      |
| Bill           | Lucey     | Save the Sound                              |
| Alexander      | Jensen    | SEFSC                                       |
| Maria Cristina | Perez     | SMAST                                       |
| Jaclyn         | Higgins   | Theodore Roosevelt Conservation Partnership |
| Andrew         | Jacobs    | WTGHA                                       |

## Appendix 4: Materials Provided or Referenced During the Atlantic Herring Research Track Stock Assessment Peer Review Meeting

Working papers and presentations are available on a NEFSC website <https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php> by selecting the species and year of assessment.

### Working Papers and Background Documentation

| Information Type  | File Name                                       |
|-------------------|-------------------------------------------------|
| All Files         | 2025_HER_UNIT_1.zip                             |
| All Files         | 2025_HER_UNIT_2.zip                             |
| Assessment Report | 2025_Herring_RT_assessment report_final_508.pdf |
| Figures           | Figures_Homework and other_Deroba_revised.pdf   |
| Background        | Acoustic-WP.pdf                                 |
| Background        | Boosted Regression Tree-WP.pdf                  |

| Information Type | File Name                                                                |
|------------------|--------------------------------------------------------------------------|
| Background       | CAMS-WP.pdf                                                              |
| Background       | Copepod Indices-WP.pdf                                                   |
| Background       | ESP-WP.pdf                                                               |
| Background       | Fecundity-WP.pdf                                                         |
| Background       | Haddock_predation-WP.pdf                                                 |
| Background       | Management-WP.pdf                                                        |
| Background       | RecCovariates-WP.pdf                                                     |
| Background       | Seabird_Diet-derived_Recruitment_Index-WP.pdf                            |
| Background       | Spawn_timing-WP.pdf                                                      |
| Background       | Stakeholder-WP.pdf                                                       |
| Background       | TOR_2-WP.pdf                                                             |
| Background       | TOR_3-WP.pdf                                                             |
| Background       | TOR_4-5-6-WP.pdf                                                         |
| Background       | TOR_7- WP.pdf                                                            |
| Background       | TOR_8-WP.pdf                                                             |
| Background       | Threshold-WP.pdf                                                         |
| Background       | ToR_1-WP.pdf                                                             |
| Background       | _Working_paper_list.pdf                                                  |
| Presentations    | Presentation_Management History and Current Practices_Cournane.pdf       |
| Presentations    | Presentation_Overview_TORs_2-3_Cieri.pdf                                 |
| Presentations    | Presentation_TOR 1_Copepods and VAST_Gaichas.pdf                         |
| Presentations    | Presentation_TOR 1_Ecosystem and Socioeconomic Profile_Molina.pdf        |
| Presentations    | Presentation_TOR 1_Stakeholder Engagement_Cournane.pdf                   |
| Presentations    | Presentation_TOR 1_haddock predation_Dean.pdf                            |
| Presentations    | Presentation_TOR 2_Asci.pdf                                              |
| Presentations    | Presentation_TOR 4-6_Deroba.pdf                                          |
| Presentations    | Presentation_TOR 4_Zooplankton indices as covariates in WHAM_Gaichas.pdf |
| Presentations    | Presentation_TOR 7_Cournane.pdf                                          |
| Presentations    | Presentation_TOR 8_Deroba.pdf                                            |

# RESEARCH TRACK WORKING GROUP REPORT

Report prepared by members of the Atlantic Herring Research Track Working Group:

- Matt Cieri, MEDMR
- Jon Deroba, NEFSC
- Kiersten Curti, NEFSC
- Sarah Gaichas, NEFSC
- Jamie Cournane, NEFMC
- Ashley Asci, GARFO
- Micah Dean, MADMF
- John Wiedenmann, Rutgers University
- Gavin Fay, University of Massachusetts / SMAST

The Atlantic herring stock assessment working group met multiple times online, as well as conducting two in-person meetings in Woods Hole, MA at the NEFSC.

## PARTICIPANTS

### Working Group (WG)

| Name            | Affiliation                         |
|-----------------|-------------------------------------|
| Matt Cieri      | MEDMR, chair                        |
| Jon Deroba      | NEFSC, assessment lead              |
| Kiersten Curti  | NEFSC                               |
| Sarah Gaichas   | NEFSC                               |
| Jamie Cournane  | NEFMC                               |
| Ashley Asci     | GARFO                               |
| Micah Dean      | MADMF                               |
| John Wiedenmann | Rutgers University                  |
| Gavin Fay       | University of Massachusetts / SMAST |

**GARFO** - Greater Atlantic Regional Fisheries Office

**NEFSC** - Northeast Fisheries Science Center

**NEFMC** - New England Fishery Management Council

**MEDMR** - Maine Dept. of Marine Resources

**MADMF** - MA Div. of Marine Fisheries

**SMAST** - School for Marines Science and Technology

In addition to the Working Group members, the following individuals participated heavily in either the analysis or the stakeholder engagement session:

| Chair-invited participants |                      |
|----------------------------|----------------------|
| Adelle Molina              | NOAA Affiliate       |
| Addie Binstock             | MEDMR                |
| Emily Bodell               | NEFMC                |
| Mark Wuenschel             | NEFSC                |
| Mike Jech                  | NEFSC                |
| James Gartland             | VIMS                 |
| Sean Hardison              | University of Alaska |

## ACKNOWLEDGEMENTS

The WG would like to acknowledge the many people responsible for data collection that are too numerous to list. In addition, the WG appreciated input from Atlantic herring stakeholders throughout the process. Lastly, the WG thanks Chris Legault for regularly attending WG meetings and providing helpful guidance.

## EXECUTIVE SUMMARY

***Term of Reference (TOR) #1:*** Identify relevant ecosystem and climate influences on the stock. Characterize the uncertainty in the relevant sources of data and their link to stock dynamics. Consider findings, as appropriate, in addressing other TORs. Report how the findings were considered under impacted TORs.

Atlantic herring (*Clupea harengus*) are schooling planktonic feeding fish inhabiting the Western Atlantic. While ranging from Newfoundland, Canada to the Mid-Atlantic, United States, this stock assessment focused on the Gulf of Maine/Georges Bank stock complex found in US waters. Atlantic herring exhibits a complex life cycle, transitioning from planktonic larvae to forming coastal schools as juveniles. In this region, spawning occurs primarily in autumn across inshore and offshore banks, with egg deposition occurring in dense mats that hatch within 14 to 21 days. Critical recruitment drivers include food availability, larval temperature stress, and egg predation, particularly from haddock (*Melanogrammus aeglefinus*). Analysis using dynamic linear models linked predator consumption to herring abundance, supporting a constant predation mortality rate.

Temperature bottlenecks were identified, with bottom temperatures suitable for embryos but sea surface temperatures increasingly stressful for larval stages, especially during prolonged summer conditions. These temperature challenges reduce the optimal thermal window for larval survival, potentially increasing density-independent mortality. Prolonged periods of unsuitable thermal conditions may delay the onset of fall cooling, further constraining larval survival rates. In addition, fecundity assessments revealed stable-to-increasing reproductive output, highlighting significant maternal effects, particularly in larger, older females, which contribute disproportionately to egg production. Research suggests that maternal effects, such as enhanced fecundity and larval viability, could be further explored to refine stock assessment models and improve projections. Integration of these maternal factors may also provide insights into recruitment variability and stock resilience under changing environmental conditions.

The results of this TOR suggested two additional model runs as sensitivities: a run to examine these recruitment covariates, and another to examine the effects of haddock predation on herring eggs. Efforts to model time-varying natural mortality were abandoned because of diagnostic issues and lack of support (e.g., fit statistics, external support).

***TOR #2:*** Estimate catch from all sources, including landings and discards. Describe the spatial and temporal distribution of landings, discards, and fishing effort. Characterize the uncertainty in these sources of data.

Atlantic herring catch data reflects significant historical variability, influenced by changes in management, fleet composition, availability, utilization, and ecosystem influences. During the 1960s and 70s, catches peaked at more than 450,000 metric tons (mt) because of intense fishing by domestic, Canadian, and distant-water fleets. This was followed by a sharp decline in catches with the implementation of the Magnuson-Stevens Fishery Conservation and Management Act in 1978 and reduced fishing effort. After the early 1980s, the catch increased as the stock rebounded

from depletion to above 100,000 mt by the early 2000s. In recent decades, the catch has since declined and currently ranges from 4,000 to 9,000 mt due to low abundance and correspondingly low quotas. The current fishery primarily targets herring as bait for American lobster (*Homarus americanus*) operations by using midwater trawl, purse seine, and bottom trawl gear, although alternative bait sources have reduced dependency on herring.

The transition to NOAA's Catch Accounting and Monitoring System (CAMS) for this stock assessment has improved the consistency and accuracy of catch data. Historical comparisons between CAMS and previous systems have shown minor differences, confirming the reliability of the updated methodology. CAMS integrates multiple data sources, including vessel trip reports (VTRs), dealer reports, and observer data, providing a unified approach to catch for quota monitoring and stock assessments. Use of CAMS is recommended going forward.

The fishery biological sampling programs continue to monitor biological data, such as size, age, and reproductive stage, ensuring robust data collection and aiding assessment for this stock. These improvements in data collection and integration support more accurate assessments of fishing impacts and enhance the understanding of temporal and spatial catch patterns, particularly for assessing regional differences in herring utilization and management compliance.

***TOR #3: Present the survey data used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, application of catchability and calibration studies, etc.) and provide a rationale for which data are used. Describe the spatial and temporal distribution of the data. Characterize the uncertainty in these sources of data.***

Survey data for Atlantic herring include the National Marine Fisheries Service (NMFS) spring and fall bottom trawl surveys, NMFS acoustic surveys, and the NMFS summer (shrimp) survey. Key surveys, such as the NMFS spring and fall bottom trawl and summer shrimp surveys, have shown consistent cohort tracking but declining indices since 2009, reflecting broader declines in abundance. These surveys provide critical data on age composition, abundance, and spatial distribution, which are essential for modeling stock dynamics.

Methodological updates, including improved age composition data collection, have enhanced the reliability of these indices. The spring and fall Maine/New Hampshire and Massachusetts state bottom trawl surveys provide valuable insights into inshore recruitment dynamics, particularly for younger age classes. However, they were excluded from the final models because of restricted spatial coverage and potential bias favoring inshore components.

To address data gaps, a novel approach to integrate seabird diet data was explored, providing an innovative recruitment index for stock assessments. Despite this, the seabird diet index was not used in any of the final model runs. These innovative methodologies contribute to a more comprehensive understanding of herring recruitment patterns and help identify critical habitat areas for management and conservation efforts.

***TOR #4: Use appropriate assessment approach to estimate annual fishing mortality, recruitment, and stock biomass (both total and spawning stock) for the time series, and estimate their uncertainty. Compare the time series of these estimates with those from the previously accepted assessment(s). Evaluate a suite of model fit diagnostics (e.g., residual patterns, sensitivity analyses, retrospective patterns), and (a) comment on likely causes of problematic issues, and (b), if possible and appropriate, account for those issues when providing scientific advice and evaluate the consequences of any correction(s) applied.***

This assessment transitioned Atlantic herring from the Age-Structured Assessment Program (ASAP) to the Woods Hole Assessment Model (WHAM), which offers improved flexibility for incorporating environmental covariates and improved estimation of process and observation uncertainty. Diagnostic evaluations indicated acceptable performance, with improvements in retrospective patterns achieved through the integration of random effects on numbers-at-age transitions. This approach reduced biases and improved the reliability of stock status determinations.

The WHAM model provided a robust platform for evaluating stock dynamics, revealing critical insights into herring population trends. Natural mortality was maintained at a fixed constant rate ( $M=0.35$ ), aligning with historical assumptions and predator-prey relationships observed in the ecosystem. Time-invariant selectivity patterns were applied to ensure consistency across age classes and gear types. Recruitment, modeled as independent and identically distributed (iid) random effects, highlighted variability linked to environmental factors and fishery-independent indices. The integration of random effects on numbers-at-age transitions enhanced the model's accuracy, particularly in accounting for strong and weak year classes. While haddock biomass and the effects of temperature, as well as food availability, were tested as potential recruitment covariates, no significant correlation was observed, indicating other drivers or multiple drivers may play a more prominent role in recruitment variability.

In addition, the WHAM model underscored the importance of environmental conditions, such as temperature and prey availability, in shaping recruitment and stock resilience. These findings suggest that incorporating additional ecosystem indicators, such as zooplankton abundance and thermal habitat suitability, could further refine future assessments. Sensitivity analyses highlighted the model's robustness to parameter adjustments, reinforcing confidence in its application for stock evaluation and management.

***TOR #5: Update or redefine status determination criteria (SDC; point estimates or proxies for BMSY, BTHRESHOLD, FMSY, and MSY reference points) and provide estimates of those criteria and their uncertainty, along with a description of the sources of uncertainty. If analytic model-based estimates are unavailable, consider recommending alternative measurable proxies for reference points. Compare estimates of current stock size and fishing mortality to existing, and any redefined, SDCs.***

The WG continued using F40% as the  $F_{MSY}$  proxy, applying life history traits based on a recent five-year average. The recruitment scalar parameter from the WHAM model was selected to determine B40%, minimizing subjective decision-making and ensuring internal consistency with model parameters. This approach provides a stable foundation for estimating biological reference points and evaluating stock status.

Current reference points include B40% = 233,176 mt and global F40% = 0.358. Terminal year (2023) estimates showed spawning stock biomass (SSB) at 82,402 mt (90% CI: 60,582–112,082), with fishing mortality at 0.225.

The objective of this research track is to develop the assessment and projection methodology that will be used in subsequent management track assessments. As such, stock status recommendations are not part of the research track Terms of Reference, and the results from this research track assessment will not be used directly in management. Instead, this research track assessment will inform a management track assessment scheduled for June 2026. The 2026 management track assessment will provide updated estimates of stock status using data through 2025 and will be used to inform management measures for 2027-28.

***TOR #6: Define appropriate methods for producing projections; provide justification for assumptions of fishery selectivity, weights at age, maturity, and recruitment; and comment on the reliability of resulting projections considering the effects of uncertainty and sensitivity to projection assumptions.***

Projections were developed using processes consistent with the preferred WHAM model. Results indicated rapid increases in SSB and catch under current fishing mortality rates below F40%. This optimistic outlook is attributed to assumptions of iid recruitment and the absence of negative random effects in the projection period. Without temporal correlation, recent poor recruitment events are not projected to persist, allowing for more favorable projections. The WG suggests these overly optimistic results may not be accurate given past stock recruitment.

Further exploration of uncertainty revealed that the use of iid recruitment could overestimate stock recovery rates if environmental drivers or density-dependent effects are not accounted for. While the projections demonstrate potential for rapid rebuilding, the WG noted that the absence of negative random effects in the projection period may not fully capture real-world dynamics.



In addition, the group identified the importance of integrating environmental datasets, including temperature and prey availability indices, to refine projection assumptions. Sensitivity analyses showed that projections were sensitive to fishing mortality rates, highlighting the need for continuous refinement and evaluation of projection models. These enhancements will improve the reliability of projections and support more robust decision-making processes, ensuring that management strategies remain adaptive to evolving stock conditions and environmental factors.

***TOR #7: Review, evaluate, and report on the status of research recommendations from the last assessment peer review, including recommendations provided by the prior assessment working group, peer review panel, and SSC. Identify new recommendations for future research, data collection, and assessment methodology. If any ecosystem influences from TOR 1 could not be considered quantitatively under that or other TORs, describe next steps for development, testing, and review of quantitative relationships and how they could best inform assessments. Prioritize research recommendations.***

The WG addressed prior recommendations and identified new research priorities to enhance future Atlantic herring assessments as outlined below.

### **Review of Past Research Recommendations**

#### *Low Recruitment Mechanisms:*

- The WG examined recruitment variability (TOR 4), finding no significant decline but noted retention variability and explored covariates (e.g., haddock predation, temperature, plankton). No single driver was identified.

#### *Projections and Reference Points:*

- Change Point Analysis Consistency: No longer relevant.
- F40% in Lower Productivity: No evidence for revising F40% as an FMSY proxy (TOR 5).
- Direct FMSY Estimation: MSY-based reference points remain incalculable; proxies B40% and F40% are retained.

#### *Fleet Selectivity:*

- The WG retained the two-fleet structure, finding no support for increased selectivity of younger fish by the mobile fleet.

#### *Recruitment Index via Seabird Diet:*

- Addressed in TOR 3.

#### *Natural Mortality (M):*

- Little support for time- or age-varying mortality models (TOR 1, TOR 4).

#### *Stock Structure and Movement:*

- Deferred to genetics studies planned for 2025-26.

*Survey Data and Age Observations:*

- Uncertainty persists regarding summer surveys, with no data collected in 2024 and future surveys unlikely. Related impacts remain unresolved.

*Recruitment Penalties and Missing Data:*

- Recruitment penalties are not used in WHAM. Missing 2020 survey data were addressed, resolving retrospective issues.

*Condition, Growth, and Fecundity:*

- Examined under TOR 1 and related working papers.

**New Research Recommendations**

*Maternal Effects and Fecundity:*

- Refine reference points using maternal effects, including fecundity and body condition metrics.

*Spawning Timing:*

- Prioritize spring body condition indices to avoid fall spawning weight confounding.

*Egg Predation:*

- Study haddock predation impacts on recruitment.

*Larval Temperature Stress:*

- Investigate warming impacts on larval survival and mortality.

*Food Availability:*

- Develop zooplankton indices for critical herring life stages.

*Natural Mortality:*

- Enhance predator-prey models for mortality estimates.

*Survey Data:*

- Improve methodologies and sampling (e.g., age-length data, seabird diet indices), including additional biological sampling and standardized collections of seabird diet, and formal data-sharing agreements to make data access easier.

*Assessment Methods:*

- Explore new selectivity models, larval indices, and ecosystem indicators for projections.

*Projection Methods:*

- Refine environmental data integration, recruitment variability, and NAA random effects in projections.

After careful consideration, the WG concluded that the aforementioned Research Recommendations should improve the Atlantic herring assessment going forward.

***TOR #8: Develop a backup assessment approach to providing scientific advice to managers if the proposed assessment approach does not pass peer review or the approved approach is rejected in a future management track assessment.***

In the event of diagnostics failure in the primary WHAM model, the Ismooth approach was identified as the preferred backup. The Ismooth approach would use all indices of abundance included in the age-based assessment. This trend-based method uses standardized abundance indices to provide catch advice, ensuring robustness in rebuilding scenarios. The Ismooth approach integrates recent survey observations, including those from the spring following the terminal year, to enhance its responsiveness to changing stock conditions.

Adjustments to the indices used in Ismooth may be necessary, depending on survey availability and spatial coverage. For example, the suspension of the NMFS summer shrimp survey in 2024 may require reconsideration of its inclusion in the backup methodology. The Ismooth approach offers a practical contingency plan, balancing simplicity with reliability in data-limited scenarios. This flexibility ensures that management decisions remain data-informed, including cases where primary assessment methodologies encounter challenges.

## INTRODUCTION

Atlantic herring (*Clupea harengus*) is a small schooling Clupeid that ranges in the Western Atlantic from Newfoundland, Canada through the Mid-Atlantic, US Atlantic herring are obligate planktonic feeders, forming large dense schools. Spawning generally occurs in the autumn, across a number of both inshore and offshore banks (Figure 10) when fish are mature: generally, age 3 or older. Eggs are sticky and demersal, with hatching occurring from dense mats approximately 14 to 21 days after spawning. The resulting larvae are planktonic, feeding on smaller plankton in the water column until spring, when they become more coastal and start forming schools. These juvenile herring, called “brit” in some locations, feed and grow until adulthood. Generally, Atlantic herring live until at least age 10-14. Throughout its life cycle, herring are an important consumer, of zooplankton, as well as important forage for commercially and recreationally important species such as bluefin tuna, striped bass, dogfish, and cod. Further, herring can be an important food item for seabirds, whales, dolphins, and seals. A full examination of the life history of Atlantic herring can be found in TOR 1 as well as TOR 1-WP.

The subject of this stock assessment is the Georges Bank/Gulf of Maine stock complex. This stock is composed of at least two subcomponents, the inshore Gulf of Maine (GOM) and the offshore Georges Bank (GB). Both components mix during non-spawning seasons, resulting in distinguishing these two components in the catch being difficult to nearly impossible using current methods. Given this uncertainty in substructure, the US Atlantic herring stock is assessed as a single unit, incorporating both inshore and offshore components.

While some degree of mixing between the GB/GOM US stock and the Canadian 4WX unit occurs, the degree of this mixing is uncertain and is the subject of ongoing research. Nonetheless, a portion of the Canadian catches are assumed to be from the US GB/GOM stock complex. The New Brunswick weir and stop seine fishery, which operates in the southwest region of New Brunswick, is generally believed to catch mostly juveniles from the US GB/GOM stock.

Exploited well before European colonization, herring has been an important source of sustenance, fertilizer, and bait for other commercial fisheries for centuries. Before the 1970s and the institution of the 200-mile exclusive economic zone, herring was the subject of substantial removals via foreign fleets. Currently, the fishery is mostly prosecuted for bait to supply the economically important American lobster fishery. As a low-value, high-volume fishery, the principal gear types used in the fishery are mobile gear (midwater trawl, purse seine, and bottom trawl) and fixed gear (stop seine and weir).

Atlantic herring has a long history of assessment. The resource was first assessed using Virtual Population Analysis (VPA) in the 1960s and 70s as part of the International Commission for the Northwest Atlantic Fisheries (ICNAF), and later as part of the Transboundary Resource Assessment Committee (TRAC) with the Canadian Fisheries and Oceans (DFO) through the 1990s and early 2000s. The last TRAC assessment for this stock occurred in 2009. Since 2009 the stock has been assessed using the Age Structured Assessment Program (ASAP) by the Northeast Fisheries Science Center (NEFSC). The last benchmark stock assessment was conducted in 2018, with updates occurring every other year in 2020, 2022, and most recently in 2024.

The Atlantic herring population has fluctuated relatively dramatically since the 1960s, according to the most recent Management Track Stock Assessment (Figure 11) conducted in 2024 (NEFSC 2024). Since the late 1960s, the herring population declined precipitously from near-historic highs to very low levels by the late 1970s and early 1980s. Rebuilding occurred in the late 1980s through the late 1990s, with a peak in abundance observed in 1997. Since then, the stock has declined, although this decline was variable, often offset by strong year classes for periods of time. Since 2012 recruitment has been at or near historic lows, leading to a steep decline in stock abundance to well below  $B_{MSY}$ . Currently, the stock is below  $\frac{1}{2} B_{MSY}$  and is both overfished and in a rebuilding plan. However, the harvest is below proxy  $F_{MSY}$  and is not considered to be experiencing overfishing.

Current management of Atlantic herring is by the New England Fishery Management Council (NEFMC), the Atlantic States Marine Fisheries Commission (ASMFC), and NOAA Fisheries. Atlantic herring is a quota-managed fishery, with catches being monitored in-season with limits in four management areas (Figure 12) linked to accountability measures, with the goal of preventing overharvest of the smaller subcomponents. Other management measures include permit/license conditions, specifications on vessel size, closed areas, and seasons, as well as catch caps for non-target species of river herring and shad, as well as haddock. Further, Atlantic herring has a harvest control rule (HCR), which sets the level of catch and exploitation based on stock conditions. This HCR was selected after extensive stakeholder engagement through a Management Strategy Evaluation (Feeney et al. 2018, NEFMC 2019). Further exploration of the history of herring management can be found in the Management-WP.

The goal of the current assessment is to transition this stock to the state space modeling approach, the Woods Hole Assessment Model (WHAM), to allow for the future consideration of environmental covariates, as well as the ability to estimate process and observation uncertainty for this variable stock. To accomplish this, nine Terms of Reference (TOR) should be examined:

1. Identify relevant ecosystem and climate influences on the stock. Characterize the uncertainty in the relevant sources of data and their link to stock dynamics. Consider findings, as appropriate, in addressing other TORs. Report how the findings were considered under impacted TORs.
2. Estimate catch from all sources, including landings and discards. Describe the spatial and temporal distribution of landings, discards, and fishing effort. Characterize the uncertainty in these sources of data.
3. Present the survey data used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, application of catchability and calibration studies, etc.) and provide a rationale for which data are used. Describe the spatial and temporal distribution of the data. Characterize the uncertainty in these sources of data.
4. Use the appropriate assessment approach to estimate annual fishing mortality, recruitment, and stock biomass (both total and spawning stock) for the time series, and estimate their uncertainty. Compare the time series of these estimates with those from the previously accepted assessment(s). Evaluate a suite of model fit diagnostics (e.g., residual patterns, sensitivity analyses, retrospective patterns), and (a) comment on likely causes of problematic

issues, and (b), if possible and appropriate, account for those issues when providing scientific advice and evaluate the consequences of any correction(s) applied.

5. Update or redefine Status Determination Criteria (SDC; point estimates or proxies for  $B_{MSY}$ ,  $B_{THRESHOLD}$ ,  $F_{MSY}$ , and  $MSY$  reference points) and provide estimates of those criteria and their uncertainty, along with a description of the sources of uncertainty. If analytic model-based estimates are unavailable, consider recommending alternative measurable proxies for reference points. Compare estimates of current stock size and fishing mortality to existing, and any redefined, SDCs.
6. Define appropriate methods for producing projections; provide justification for assumptions of fishery selectivity, weights at age, maturity, and recruitment; and comment on the reliability of resulting projections considering the effects of uncertainty and sensitivity to projection assumptions.
7. Review, evaluate, and report on the status of research recommendations from the last assessment peer review, including recommendations provided by the prior assessment working group, peer review panel, and SSC. Identify new recommendations for future research, data collection, and assessment methodology. If any ecosystem influences from TOR 1 could not be considered quantitatively under that or other TORs, describe the next steps for development, testing, and review of quantitative relationships and how they could best inform assessments. Prioritize research recommendations.
8. Develop a backup assessment approach to providing scientific advice to managers if the proposed assessment approach does not pass peer review or the approved approach is rejected in a future management track assessment.
9. Identify and consider any additional stock-specific analyses or investigations that are critical for this assessment and warrant peer review and develop additional TOR(s) to address as needed.

Notably, this report represents a summary report. Most, but not all, of the TORs are more fully analyzed in dedicated TOR Working Papers. These in turn draw on specific Additional Working Papers.

## ECOSYSTEM, CLIMATE, AND OTHER INFLUENCES

**Term of Reference (TOR) #1:** *Identify relevant ecosystem and climate influences on the stock. Characterize the uncertainty in the relevant sources of data and their link to stock dynamics. Consider findings, as appropriate, in addressing other TORs. Report how the findings were considered under impacted TORs.*

### *Relevant Ecosystem and Climate Influences on the Stock*

Key ecosystem and climate factors impacting Atlantic herring in the Northeast US were identified across spawning, egg, larval, juvenile, and adult stages (see ESP-WP). These insights are presented in a conceptual model (Figure 13) and life history table (see TOR 1-WP). Critical recruitment drivers include food availability, egg predation, and larval temperature stress (Figure 14). Spawning timing and maternal effects were noted as secondary but significant factors.

Boosted regression tree analysis highlighted recruitment drivers: food availability for larvae and juveniles, egg predation, and larval temperature stress. These indicators guided recruitment covariate testing in the stock assessment model.

### *Management History*

The Atlantic herring fishery in waters off the US has been managed since 1972, with international management from 1972-76, federal management from 1978-1982, interstate management from 1983-2000, and joint federal and state management under the Atlantic States Marine Fisheries Commission (ASMFC) and the New England Fishery Management Council (NEFMC) since 2001. The fishery is currently managed using a stock-wide annual catch limit (ACL) that is assigned to sub-ACLs in four spatial management units. The stock-wide ACL is derived using an acceptable biological catch (ABC) control rule designed to account for herring's role as forage in the ecosystem that was developed using stakeholder-driven management strategy evaluation and implemented in 2021.

Stock status is currently overfished (below  $\frac{1}{2}$  the spawning stock biomass target level) but not subject to overfishing (fishing mortality is below the fishing mortality limit).

Atlantic herring are primarily used as bait in lobster fisheries and are targeted with purse seine, midwater trawl, and bottom trawl gear. Recent herring catches range from 4,000-9,000 metric tons, down from catches in the 50,000-95,000 metric ton range 2010-17.

For more details, see the Atlantic herring management summary working paper (Management-WP).

### *Stakeholder Observations*

A June 2024 stakeholder engagement session identified key market and ecological dynamics influencing Atlantic herring (Stakeholder-WP). Participants highlighted herring's diminished role in the regional bait market, now dominated by menhaden and frozen alternatives, attributed to

declining and inconsistent herring catches, increased prices, and lower quotas. These challenges, compounded by rising fuel costs, have discouraged exploratory fishing and reduced communication among fishers.

Environmental concerns included warming waters and zooplankton shifts impacting recruitment, alongside haddock predation on herring eggs. Participants stressed the need for detailed analysis of zooplankton interactions, changing forage bases, and predator nutritional stress. Notable ecological shifts included predator dietary transitions favoring menhaden over herring. Recommendations included examining herring fecundity, fat content, and aggregation patterns through acoustic detection.

### *Natural Mortality*

Dynamic linear modeling (DLM) linked predator consumption to herring abundance, supporting a constant predation mortality rate (Figure 15). Attempts to model time-varying mortality faced diagnostic challenges or failed to improve fit (e.g., likelihood), leading to its exclusion.

Abundant predators were identified as a key ecosystem influence on juvenile, adult, and spawning herring. Historical assessments used predator consumption data to infer time-varying natural mortality rates, but uncertainties in predator sampling, particularly for striped bass, undermined reliability. Consequently, the 2018 benchmark adopted a constant mortality rate ( $M$ ) across ages and time. The 2025 research track revisited these assumptions to evaluate potential improvements (see TOR 4).

Gartland and Latour (2024) estimated herring consumption using spatiotemporal modeling of predator stomach contents and survey data (1978-2019). Consumption rates, higher in fall than in spring, fluctuated over time, with lows in the 1980s and greater variability post-2000. Analysis revealed no consistent trend in consumption relative to biomass but identified a rising trend in consumption relative to catch.

DLM examined nine potential drivers, including atmospheric and oceanographic indices (North Atlantic Oscillation, Southern Oscillation), regional oceanography (Gulf Stream extent, cold pool area, warm slope water proportions), zooplankton ratios, herring survey indices, and catch. Results indicated that predator consumption of herring closely tracked herring abundance in spring and fall (Figure 15), suggesting a constant predation mortality rate.

Despite the insights, efforts to incorporate time-varying natural mortality into stock assessments encountered challenges, including poor diagnostic performance and overfitting risks. These limitations reaffirmed the use of a constant  $M$  in the assessment model. However, the findings underscore the importance of continued monitoring and refinement of predator-prey interactions to improve mortality estimates.

### *Maternal Effects and Fecundity*

Spawning stock biomass (SSB) as a reproductive potential indicator assumes proportional fecundity to spawner weight at age. However, fecundity tends to be higher in larger, older females, leading to potential overestimation of reproductive potential as age structure skews toward



younger fish. Research on Nova Scotia, Canada herring stocks demonstrated non-proportional egg production relative to SSB (Barrett et al. 2022).

Fecundity assessments for mature female herring (2011-19) in the Gulf of Maine revealed stable-to-increasing fecundity, suggesting that reduced fecundity did not drive population declines. Lower fecundity was noted from 2011-15, followed by increases in 2016-18, potentially influenced by environmental or density-dependent factors. Significantly higher reproductive output was observed in 2018-19.

Maternal effects analysis indicated a hyper-allometric relationship between fecundity and both length and weight, with weight showing a stronger correlation. Females exceeding 200 g exhibited higher-than-expected fecundity. Preliminary findings by Joseph Warren (UMass) suggest that fall spawners may have greater fecundity than spring spawners, with larger females contributing disproportionately to egg production. These findings, derived from NEFSC and MADMF surveys (2021-23), highlight the importance of maternal effects.

Further analysis is recommended to refine reference points incorporating maternal effects. For comprehensive details, see the fecundity and maternal effects working paper (Fecundity-WP).

### *Spawning Timing*

Macroscopic maturity data collected during NEFSC spring and fall bottom trawl surveys were analyzed to determine the proportions of developing, ripe, spent, and resting mature female Atlantic herring across seasons. Multinomial regressions evaluated the influence of sampling week, bottom temperature, and decade on observed spawning conditions, providing insights into potential temporal and environmental shifts in spawning phenology.

The Atlantic herring population is dominated by fall spawners, with spring spawning contributing a minor amount. An observed increase in developing fish during spring surveys since 2000 is partly, but not solely, attributed to a shift in survey timing closer to the spring spawning season. Before 2000, spring surveys primarily sampled fish before spawning. Fall surveys have similarly shifted later in the year since the early 2000s, coinciding with an increased proportion of resting fish, which suggests that these later surveys now capture the end of the spawning season. Despite these timing changes, fall bottom temperatures have continued to rise, indicating that warming waters are not directly altering the timing of spawning but may influence other spawning-related dynamics.

Given the declining prevalence of spring spawners, prioritizing spring body condition indices when analyzing changes in herring body condition is recommended. This approach avoids the confounding effects of significant weight fluctuations (15-20% of body weight) associated with the fall spawning season.

For a more comprehensive analysis, see the spawning phenology working paper (Spawn\_timing-WP).

## *Egg Predation*

Haddock, identified as an important predator of Atlantic herring eggs (Haddock\_predation-WP), experienced a population surge between 2010 and 2020, coinciding with a decline in herring recruitment. A haddock species distribution model (SDM) was developed to explore this relationship using NEFSC offshore and Massachusetts–Maine–New Hampshire inshore bottom trawl survey data from fall (September–November), the herring spawning season. The spatiotemporal model, built using the sdmTMB package in R, employed haddock catch per unit effort as the response variable, with depth, seafloor complexity, year, time of day, and survey platform as predictors. All predictors except seafloor complexity were included in the final model. Herring egg distribution was synthesized from the literature, and from where herring eggs were observed in haddock diet data.

The haddock SDM and herring egg distribution data created an egg predation index. Annual fall haddock biomass density was predicted across the region using a 5-km grid. The index calculated the annual average haddock density within areas likely to contain herring eggs, with uncertainty estimated via the “emmeans” package.

The index revealed high haddock predation on herring eggs in the 1960s, a decline through the 1980s and 1990s, a peak from 2010 to 2020, and a subsequent decrease in recent years (Figure 16). A significant negative correlation ( $R = -0.33$ ;  $p = 0.011$ ) was observed between the index and herring recruits-per-spawner ( $R/SSB$ ) as estimated in the 2022 stock assessment model updated through 2023 (Figure 16).

These findings suggest that haddock predation may play a substantial role in herring recruitment dynamics. See the haddock egg predation index working paper for more details (Haddock\_predation-WP).

The haddock egg predation index was tested as a recruitment covariate within the Atlantic herring assessment model (see TOR 4).

## *Larval Temperature Stress*

Two temperature bottlenecks for Atlantic herring were identified in the conceptual model. Bottom temperatures between August and December impact embryos and yolk sac larvae, while sea surface temperatures affect early and late larval stages during fall. Temperatures exceeding 16°C are considered stressful, and those above 21°C are lethal.

For embryos and yolk sac larvae, bottom temperatures in the Gulf of Maine and Georges Bank are generally suitable, with predation and other factors likely having a more significant role. However, sea surface temperatures pose a critical challenge for pelagic larval stages. Stressful conditions before winter and lethal temperatures during several days in the last decade have been documented. Prolonged summer conditions mean lethal temperatures persist later into the year, delaying the onset of fall cooling and reducing the optimal thermal window for larval survival.

The duration of the optimal thermal window has declined over time (Figure 17), although exceptions in years like 2010 and 2018 showed longer windows, comparable to earlier decades.

Extended optimal windows improve larval survival by minimizing exposure to lethal temperatures. Overall, warming fall surface temperatures near spawning grounds represent a significant source of density-independent mortality for larval herring. For more detailed information, see the Threshold-WP.

### *Food Availability*

Existing zooplankton indices for the Northeast US were implemented for general ecosystem reporting rather than tailored to Atlantic herring life history. Therefore, new zooplankton indices were developed using VAST spatiotemporal modeling of NEFSC zooplankton survey data collected between 1982-2022. Based on the results of the Ecosystem and Socioeconomic Profile (ESP) literature review and the boosted regression tree analysis (ESP-WP), the first two indices are large copepods in spring (influencing the growth of herring post-larvae and juveniles), and small copepods in fall (influencing survival of herring larvae over the winter). The spatial scale of these indices is the Atlantic herring bottom trawl survey strata in spring and fall, respectively.

Large copepods include the taxa *Calanus finmarchicus*, *Metridia lucens*, *Calanus minor*, *Eucalanus* spp., and *Calanus* spp. Small copepods include the taxa *Centropages typicus*, *Pseudocalanus* spp., *Temora longicornis*, *Centropages hamatus*, *Paracalanus parvus*, *Acartia* spp., *Clausocalanus arcuicornis*, *Acartia longiremis*, *Clausocalanus furcatus*, *Temora stylifera*, *Temora* spp., *Tortanus discaudatus*, and *Paracalanus* spp.

The third index is more refined to focus on herring larval food and habitat, using temporal and spatial bounds defined by herring larvae observations in the zooplankton dataset. This third index focuses on small copepods from September to February in the area where more than 70% of herring larval density was identified between 1982-2022.

The indices suggest that spring large copepods increased to a relatively high level in 2015 but have been declining since, although no long-term trend appears in the time series. Fall small copepods have generally increased from a low in the mid-2000s and have remained relatively stable from 2010-present and similarly have no long-term trend in the time series (Figure 18).

For a more detailed analysis see [Zooplankton and VAST Working Paper](#)

### *Consideration of Findings in Other TORs*

#### *TOR 4*

The results of this TOR suggested two additional model runs as sensitivities: a run to examine these recruitment covariates, and another to examine the effects of haddock predation on herring eggs. Efforts to model time-varying natural mortality were abandoned because of diagnostic issues.

#### *TOR 7*

Research recommendations include exploring maternal effects and alternative reference points beyond SSB, such as age-structured fecundity metrics and body condition indices.

## CATCH & SAMPLING

**TOR #2:** *Estimate catch from all sources, including landings and discards. Describe the spatial and temporal distribution of landings, discards, and fishing effort. Characterize the uncertainty in these sources of data.*

A more comprehensive analysis of this TOR can be found in the TOR 2 working paper (TOR 2-WP).

### *Historic Trends in Catch*

As shown in Figure 19, herring catches surged during the 1960s and 70s because of domestic, Canadian, and distant-water fleets, peaking at more than 450,000 mt before the Magnuson–Stevens Fishery Conservation and Management Act (MSA) implementation in 1978. However, catch data from this period, particularly from Russian and Polish vessels, are uncertain because of self-reporting issues. Gear used before the early 1980s included bottom trawls, purse seines, weirs, and stop seines, with industrial fleets favoring purse seines and trawls. Post-1987 records provide greater certainty, with midwater trawls dominating from the mid-1990s onward (Figure 20).

More recent management measures, such as the inshore summer prohibition on midwater trawls (implemented in 2010), shifted catches further offshore. Declining US quotas due to low herring abundance have increased the relative proportion of Canadian fixed-gear catches, which remain stable due to the absence of quota restrictions. Regional catch trends are illustrated in Figure 21.

### *Market and Utilization*

Before ICNAF fisheries, most landed herring supported Maine’s sardine industry, targeting smaller fish (ages 1-2) for canning (Anthony & Waring 1980). During ICNAF operations, catches shifted to spawning-aged fish (3+), largely for export markets. The 1980s marked the rise of the lobster bait market, which demanded larger fish unsuitable for canning. Mechanized canning in the 1990s further increased the preferred fish size, resulting in canned herring “steaks,” a product still common in Canada.

By the late 2000s, nearly all herring landings supported the lobster industry, peaking at 100,000 mt annually. With the 2010 closure of the last US canning plant in Prospect Harbor, nearly all US Atlantic herring now serves as lobster bait, with minor amounts for aquariums and zoos.

### *Catch and Landings Data*

Catch data before the MSA primarily originated from sardine facilities and ICNAF quota monitoring. Improved dealer reporting in the 1990s captured landings outside sardine operations, while the introduction of vessel trip reports (VTR) and interactive voice reporting (IVR) in 1999 standardized reporting.

Until this Research Track, VTR data served as the primary source of catch data for assessments. Maine DMR conducted QA/QC checks on VTR data, correcting errors and reconciling

discrepancies before submitting data to NOAA. However, inconsistencies between VTR and quota monitoring systems prompted the WG to evaluate alternative methods.

NOAA's Catch Accounting and Monitoring System (CAMS) was developed as a unified source of catch (landings and discards) data for stock assessments, quota monitoring, and related analyses in New England and Mid-Atlantic fisheries. A working paper on the details of the transition to using CAMS for Atlantic herring can be found elsewhere (CAMS-WP). The working paper analyzes a refinement in discard estimation methods within CAMS. The transition aligns Atlantic herring discard estimation with other federally managed species using the calendar year (CY) approach. CAMS integrates multiple fishery-dependent data sources, including VTRs, dealer reports, and observer data, offering consistent estimates for both landings and discards.

Based on these results, the WG concluded that the use of the CAMS CY approach was the preferred method to estimate discards. A comparison between the previous catch accounting system performed by Maine DMR and CAMS is shown in Table 1. The differences between the two catch accounting systems are relatively minor, and the WG was comfortable going forward with the CAMS CY approach as the primary system in this and subsequent assessments. In addition, the stock assessment was insensitive to the switch to CAMS.

An additional source of catch and landings information for this assessment comes from DFO Canada. Catches in the New Brunswick (NB) fixed-gear fishery are assumed to be from the US GOM/GB stock complex (NEFSC 2018) and mainly consist of juvenile fish. Canada updated the catch time series it provided since the 2024 management track assessment. The differences in the time series were largely induced by changes to the gear types used for age-length keys and a move to standardized code used to calculate the catches. The changes were relatively minor (Figure 22) and had negligible effects on the stock assessment.

### *Fishery Sampling*

Atlantic herring have been sampled for length, weight, and age since before the 1970s. Early sampling efforts were conducted by the offshore ICNAF fishery and inshore sardine operations. By the 1980s, sampling shifted primarily to sardine canneries, with occasional collections from bait operations.

The Maine DMR established a standardized sampling program in the late 1990s, funded by the Inter-Jurisdictional Fisheries (IJF) and Atlantic Coastal Cooperative Statistics Program (ACCSP). This program collects two 50-fish samples per gear type, per statistical area, on a bimonthly basis during the fishing season with the total number of samples per year fluctuating based on fleet activity (Figure 23). Additional fresh fish samples are collected to monitor spawning areas under ASMFC management, implemented in 1999. Sampling is conducted across all states where herring are landed, from Maine to New Jersey.

Since 1999, sampling has targeted vessels using vessel monitoring system (VMS)/VTR reports to align with the program's design. Samples are either analyzed immediately or frozen for later examination. Fish are measured for weight and length, and two fish per centimeter size bin are randomly selected for further analysis. These fish are aged using otoliths, which are extracted, dried, and embedded in epoxy resin. Gonads are also removed, weighed, sexed, and staged

according to ICNAF protocols. Since 2011 fresh fish in spawning stages higher than five are included in a fecundity study (see Fecundity-WP).

Aging is performed under a microscope, with images archived for QA/QC. Calibrations between Maine DMR, NOAA's Age and Growth Lab, and DFO occur every 3-7 years to ensure consistency.

All sampling data is stored in a Maine DMR relational database, linked to NOAA's VTR records to trace individual catch events and locations. In addition, this database contains digitized historical data from ICNAF and sardine cannery sampling programs. These datasets support stock assessments, management decisions, and academic research (Becker et al. 2020).

Data on size and age from the NB fixed gear fishery is supplied directly from DFO.

## SURVEY DATA

**TOR #3:** *Present the survey data used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, application of catchability and calibration studies, etc.) and provide a rationale for which data are used. Describe the spatial and temporal distribution of the data. Characterize the uncertainty in these sources of data.*

Recent assessments relied on several comprehensive surveys to evaluate trends and stock dynamics. Key surveys include:

- NMFS spring bottom trawl survey (1968-present), NMFS fall bottom trawl survey (1965-present), and NMFS summer shrimp survey (1983-present).
- NMFS acoustic surveys conducted during the fall bottom trawl surveys since 1998.

The methodologies applied to these surveys remain consistent with the standards set in the 2018 benchmark stock assessment (NEFSC 2018 TORB2). Significant effort has been directed toward addressing data gaps, particularly by developing an age-1 recruitment index based on seabird diet data, as early cohort strength observations remain limited. While Massachusetts and Maine/New Hampshire state surveys were analyzed, their restricted spatial coverage led to their exclusion from assessment models. Moreover, the WG noted that because both surveys sampled more inshore component fish, a risk that including these surveys would bias the data in favor of this one component was present.

### *NMFS Spring Bottom Trawl Survey*

The NMFS Spring bottom trawl survey has undergone no methodological changes since the 2018 benchmark assessment (NEFSC 2018). The survey's index trends have shown a steady decline since 2009 (Figure 24). Age composition data demonstrates clear cohort tracking over time, validating its utility in stock assessment. The WG's preferred model continues to split the survey

into two distinct time series to account for the transition from the Albatross to the Bigelow vessel in 2008 and 2009.

#### *NMFS Fall Bottom Trawl Survey*

Similarly, no methodological adjustments have been instituted to the NMFS fall bottom trawl survey. In addition, index trends from this survey have exhibited a declining trajectory since 2009 (Figure 24). Age composition patterns highlight consistent cohort tracking. As is the case with the spring survey, the fall survey is split into two time series to accommodate vessel changes, ensuring data continuity and reliability within the WG's preferred modeling framework.

#### *NMFS Gulf of Maine Northern Shrimp (summer) Survey*

Since 2018 the primary methodological update for the NMFS summer shrimp survey involves replacing borrowed age-length keys with directly collected age composition data. This adjustment, implemented during the 2022 management track assessment, enhances the accuracy of stock age data. Recent years have shown declining index trends for this survey (Figure 24). Given operational challenges, this survey was not conducted in 2024, and the timeline for its resumption remains uncertain.

#### *NMFS Acoustic Survey*

The NMFS acoustic survey, conducted during the fall bottom trawl survey, continues to provide critical data. Details regarding its methodology and findings are documented comprehensively in the working document authored by Jech (Acoustics-WP).

#### *Age-1 Recruitment Index via Seabird Diet Data*

Efforts to develop an age-1 recruitment index using seabird diet data address a key data gap in cohort strength observations. The detailed methodologies and outcomes of this work are elaborated in the document *Seabird\_Diet-derived\_Recruitment\_Index-WP.pdf*.

#### *Maine/New Hampshire Survey*

The Maine/New Hampshire (ME-NH) survey has operated since 2000, utilizing a stratified random sampling design across four depth strata and five geographic regions. Sampling stations, revisited in spring and fall, involve 20-minute tows using a modified shrimp net. Species-specific measurements include length, weight, and, where applicable, maturity assessments. Catch numbers and weights have declined since its inception (Figure 25 & Figure 26), although trends exhibit variability. Despite being excluded from final modeling, the ME-NH survey aligns with trends observed in other surveys, offering insights into the inshore recruitment dynamics of Atlantic herring.

#### *Massachusetts Survey*

The Massachusetts Division of Marine Fisheries (MADMF) has conducted seasonal inshore trawl surveys since 1978, with spring and fall cruises. Spring surveys predominantly capture age-1 herring (~6 cm), while fall surveys often capture larger individuals, typically representing age-1

(~11 cm) and age-2+ (~24 cm) cohorts (Figure 27 & Figure 28). Significant interannual variability in herring indices is observed, with large shifts linked to spatial availability and bottom temperature fluctuations (Figure 29, 30, & 31). Herring are most frequently encountered in the deepest, coldest regions of Massachusetts state waters, emphasizing the influence of environmental conditions on survey results.

## ASSESSMENT METHODS

**TOR #4:** Use appropriate assessment approach to estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) for the time series, and estimate their uncertainty. Compare the time series of these estimates with those from the previously accepted assessment(s). Evaluate a suite of model fit diagnostics (e.g., residual patterns, sensitivity analyses, retrospective patterns), and (a) comment on likely causes of problematic issues, and (b), if possible and appropriate, account for those issues when providing scientific advice and evaluate the consequences of any correction(s) applied.

### **Model Evaluation Criteria**

Throughout model development, some combination of the list below was used for model selection. During stages of development that required comparison among many models, selection relied largely on convergence properties and AIC because visual comparisons of residual plots and diagnostics that require simulation (e.g., jitter, self-tests) are impractical for more than a few model alternatives. At stages when the WG was evaluating just a few models (~ <10), a fuller suite of the diagnostics below were used. More details can be found in the TOR\_4-5-6-WP.

- **Convergence:** To be considered acceptable, all models were required to converge to a solution with a maximum gradient <e-10 and an invertible Hessian. Models with retrospective peels that all converged were also preferred over models that did not.
- Models with standard deviation (SD) estimates of zero for any random effects process were eliminated from consideration.
- **Residuals:** Models with fewer patterns in standard Pearson residuals and OSA residuals were preferred over models with more obvious patterning. Residuals were examined for patterns among years, ages, cohorts, and observations.
- Retrospective patterns were examined visually and summarized using Mohn's rho. Patterns in fishing mortality, spawning stock biomass (SSB), and recruitment were all examined. Retrospective patterns in recruitment are typically not used for model selection, but the WG found them to be indicative of model sensitivity to data inputs on a few occasions (see below).
- AIC was used to compare models with a preference for smaller AIC values. When two models had similar AIC, the negative log-likelihood was also examined to evaluate whether



the model alternative with more parameters was having any significant effect on fit. Given similar AIC and likelihood values, the simpler model with fewer parameters was preferred.

- **Self-tests:** Pseudo-data were generated from model fits with observation uncertainty only (i.e., parameters fixed at their estimated values and no process uncertainty), and then the model refits to each pseudo-dataset. Relative error was then summarized for time series estimates of F, SSB, and R. Acceptable models would not have relative errors that were systematically different from zero or trend among years.
- Tests of normality and the standard deviation of OSA residuals were also used for model selection. OSA residuals should be approximately normal (Trijoulet et al. 2023 and Li et al. 2024), and OSA residuals for age composition data should not have a standard deviation  $>>1$ , which can be indicative of model misspecification (Li et al. 2024).

Mean absolute scaled error (MASE; Carvalho et al., 2021; Kell et al., 2021), a measure of predictive skill, was calculated but is generally not useful for model selection (Li et al., 2024).

### ***Summary of Preferred Model***

#### ***Data***

More details can be found in (TOR\_4-5-6-WP). All input data for the preferred model was identical to the 2024 Management Track stock assessment (NOAA 2024) with two exceptions: 1) the Canadian catch and weight-at-age time series were revised, and 2) US catch and discards used CAMS estimates from 2020 onward (See TOR 2-WP). Both of these changes had negligible effects on the assessment. Age compositions by fleet and proportion of the catch by fleets are given in Figure 32 & Figure 33, respectively. Age compositions by each index are given in Figure 34, 35, & 36, while both the nominal and the log-scaled indices are shown in Figure 36.

#### ***Age Composition Likelihoods***

A broad suite of alternatives for age composition likelihoods was explored. The WG agreed that the logistic-normal-ar1-miss0 provided the best overall diagnostics, and in particular, improved the OSA residuals for the fit to age composition data from the spring and fall bottom trawl survey since 2009 (i.e., during the Bigelow years).

#### ***Initial numbers-at-age***

Estimating initial numbers-at-age improved fit and was supported by AIC over assuming these values were at equilibrium. These values were estimated in the preferred model.

#### ***Selectivity***

With some exceptions, the selectivity forms applied were the same as recent management track assessments as outlined below.

- **Mobile fleet:** selectivity-at-age is estimated for ages 1-6 and fixed at 1.0 for ages 7-8.

- **Fixed fleet:** selectivity-at-age is estimated for all ages except age-2, which is fixed at 1.0.
- **Summer (Shrimp) survey:** selectivity-at-age-3 is estimated while younger ages are fixed at 0.0 and older ages are fixed at 1.0.
- **Acoustic survey:** has no age composition data and selectivity is knife-edged with full selection for ages 3-8.
- **Spring bottom trawl 1987-2008:** selectivity-at-age-2 is estimated while younger ages are fixed at 0.0 and older ages are fixed at 1.0.
- **Fall bottom trawl 1987-2008:** uses logistic selectivity.
- **Spring bottom trawl 2009-2023:** estimates selectivity-at-age for ages 2-3, while younger ages are fixed at 0.0 and older ages are fixed at 1.0.
- **Fall bottom trawl 2009-2023:** uses logistic selectivity.

A broad suite of age- and time-varying selectivity random effects were evaluated for the mobile and fixed fleets. In all cases, the SD of these random effects was zero, very small, or did not improve fit based on AIC. As such, time invariant selectivity is used in the preferred model. The WG did not see any justification for considering time-varying selectivity for the indices.

### *Natural Mortality*

A broad suite of age- and time-varying natural mortality parameterizations were evaluated. This included combinations of fixed effects estimated as age-varying or age- and time-invariant parameters and random effects with various age or time correlation structures. Estimating  $M$  as fixed effects did not improve fit based on AIC and had odd retrospective patterns. While model fit improved with  $M$  as iid random effects, the estimates appeared to be chasing observation noise and did not represent real changes in  $M$ . In addition, self-tests on models with random effects on  $M$  had low rates of convergence and bias. Random effects on  $M$  also caused volatility in reference points, and recent research suggests that time-varying  $M$  should only be included with strong, external, corroborating evidence. In this case, external evidence supported time-invariant  $M$ . Consequently, the preferred model had a constant  $M=0.35$  (status quo).

Estimates of Atlantic herring consumption based on piscivore stomach contents data were made for the 2018 benchmark stock assessment (Figure 37). Using the same data, Gartland and Latour (2024) applied a VAST model with a range of covariates and estimated Atlantic herring consumption (Figure 37). The number of dead fish implied by an assumed  $M=0.35$  generally matched the scale and trend of both of these estimates of consumption. Values from Gartland and Latour (2024) had to be doubled for comparison to the assessment because they only provided estimates for six months of each year (i.e., spring and fall) and warned against out-of-sample extrapolation to estimate annual consumption. While reassuring that these estimates are generally similar, the approach likely violates sound statistical practice.

### *Numbers-at-age Transitions*

The model was started in 1987 when age data became available from the bottom trawl surveys. Including random effects on the numbers-at-age transitions greatly improved fit and reduced the retrospective pattern. Fit and AIC diagnostics supported the use of transitions correlated among ages, but not years. This correlation was not coupled with age-1 recruitment. Consequently, the preferred model has random effects on the numbers-at-age transitions with an  $ar1_a$  correlation (Figure 38).

### *Recruitment*

Fit and AIC diagnostics supported the use of iid random effects for recruitment. The preferred model estimates a fixed effect recruitment scaling parameter and annual recruitments as iid random effects around the scaling parameter (i.e., the log scale mean of the iid random effects distribution). SSB and recruitment are shown in Figure 39; SSB and fishing mortality are given in Figure 40, how the F is portioned among the fleets in Figure 41; and the estimated numbers at age by year in Figure 42.

### *Covariates and Other Explorations*

A variant of the preferred model used a haddock predation index as a covariate for recruitment (Haddock\_predation-WP). This covariate did not improve model fit or reduce the process SD for recruitment, and the confidence interval around the covariate parameter included zero (i.e., no effect), which suggested that haddock were not a primary driver of variance in annual recruitment.

Similarly, three additional variants of the preferred model used indices of small zooplankton (larval herring food), large zooplankton (juvenile herring food), and optimal herring larval temperature duration, respectively, as covariates for recruitment. Results were similar for the haddock biomass covariate: within the preferred model structure, these covariates did not substantially improve model fit or reduce the process SD for recruitment, and confidence intervals around the covariate parameters included zero. Further, the estimated larval and juvenile food covariate parameters were negative (suggesting low zooplankton is associated with higher recruitment, and high zooplankton is associated with lower recruitment; opposite of our working hypothesis).

In two recruitment covariate sensitivity runs with NAA RE turned off, both haddock predation and optimal larval temperature duration covariates improved model fit, reduced the process SD for recruitment, and estimated covariate parameters with confidence intervals that did not include 0. However, the overall model fit was greatly reduced without NAA RE included.

### *Diagnostics*

The WG had no major concerns about any diagnostics. Jitter analyses, self-tests, and the normality of OSA age composition residuals all had SD <1. Nearly all the OSA age composition residuals were significantly different from normality, but this was likely due to the high power of the statistical test rather than concerning deviations from normality. Given that no retrospective adjustment was necessary (TOR\_4-5-6-WP), retrospective plots are not shown.

## STATUS DETERMINATION CRITERIA

**TOR #5:** *Update or redefine status determination criteria (SDC; point estimates or proxies for BMSY, BTHRESHOLD, FMSY, and MSY reference points) and provide estimates of those criteria and their uncertainty, along with a description of the sources of uncertainty. If analytic model-based estimates are unavailable, consider recommending alternative measurable proxies for reference points. Compare estimates of current stock size and fishing mortality to existing, and any redefined, SDCs.*

The WG agreed to the continued use of  $F_{40\%}$  as an  $F_{MSY}$  proxy. Life history traits and other necessary inputs to the per-recruit calculations will continue to use a recent 5-year average. As is also current practice (NEFSC 2022; NEFSC in press), only the  $F_{40\%}$  specific to the mobile fleet should be used for official overfishing determination. This approach is taken because the fixed fleet is almost entirely Canadian, and overfishing status should not be driven by a foreign fleet without quota controls. WHAM can produce a “global”  $F_{40\%}$  and an  $F_{40\%}$  specific to the fixed fleet, and these values might be informative but should not be used for official status determination. More details can be found in the TOR\_4-5-6-WP.

$B_{40\%}$  is found by multiplying  $SPR_{40\%}$  by a recruitment scalar (e.g., mean recruitment over some years). In recent assessments, including the 2024 management track, mean recruitment was averaged over 1992-2021 (the last two years dropped due to uncertainty), and this stanza was chosen based on a change point analysis applied to the R/SSB time series that suggested a possible environmental change since 1992 that has led to reduced productivity. The R/SSB time series from the preferred WHAM model does not suggest the same changes, thus the WG agreed that a reduced time stanza is no longer needed. The differences in the R/SSB time series between the 2024 management track ASAP model and the preferred WHAM model were traced to the presence of NAA random effects in WHAM.

The WG considered two methods to define the recruitment scalar that will be used to determine  $B_{40\%}$ . One method involved taking the time series average of the annual estimated recruitments from the preferred WHAM model. The second method involved using the recruitment scaling parameter from which the annual recruitment random effect deviations are estimated. This recruitment scaling parameter is often mistaken for the mean or median recruitment of the natural scale recruitment estimates, but it does not necessarily equal either one. The WG agreed to use the recruitment scaling parameter because: 1) It is more stable than a time series average because it is less affected by extreme recruitment estimates; 2) It avoids subjective decision-making about whether some recruitment estimates (e.g., terminal year) are too uncertain to be included in the time series average; and 3) Using the recruitment scaling parameter creates internal consistency because it is the value from which the log scale recruitments deviate, represents the mean of the log scale recruitment process, and allows for the recruitment process to be used in short-term projections making the estimation model and projection model entirely consistent.

The reference points using this approach were:

- $B_{40\%} = 233,176\text{mt}$  (90%CI 152,540-356,439),
- Global  $F_{40\%}=0.358$ ,  $F_{40\%}$  for the mobile fleet = 0.349 (90%CI 0.305-0.440),  $F_{40\%}$  for the fixed fleet = 0.008,
- Global MSY = 63,835mt, MSY for the mobile fleet = 51,001mt, and MSY for the fixed fleet = 12,835mt.

The SD of the fleet-specific  $F_{40\%}$  is not reported by WHAM, and thus the SD of the global  $F_{40\%}$  was used as a proxy in calculating the mobile fleet  $F_{40\%}$  confidence interval.

Terminal year (2023) mobile fleet  $F = 0.225$  (90%CI = 0.16-0.32). Terminal year (2023) SSB = 82,402mt (90%CI = 60,582-112,082). Mohn's rho for SSB = 0.27 and  $F = -0.16$ , and retrospective adjustments were unnecessary.

By comparison from the 2024 management track assessment:

- $B_{40\%} = 186,367\text{mt}$
- mobile fleet  $F_{40\%} = 0.45$
- global MSY = 78,710mt.

Rho adjusted terminal year (2023) SSB = 47,955mt, which was 26% of  $B_{40\%}$ . Rho adjusted terminal year (2023) mobile fleet  $F = 0.263$ , which was 58% of  $F_{40\%}$ . However, direct comparisons between the results of the 2024 management track assessment and the findings of this research track are inappropriate because of the change in the modeling platform and other advances in methodology for the Atlantic herring assessment.

## PROJECTION METHODS

**TOR #6:** Define appropriate methods for producing projections; provide justification for assumptions of fishery selectivity, weights at age, maturity, and recruitment; and comment on the reliability of resulting projections considering the effects of uncertainty and sensitivity to projection assumptions

As mentioned above, the WG agreed to use the recruitment scaling parameter for reference points and continue the recruitment random effect process into projections (i.e., iid lognormal recruitment), consistent with the estimation model. Using an iid lognormal distribution for recruitment differs from the current projection methodology that uses an ar1 recruitment process. In addition, as noted above, WHAM found no evidence of a significant correlation in the recruitment time series, thus autocorrelation in recruitment was not included. The other basic projection methodologies agreed to by the WG are largely consistent with existing methods. The US mobile fleet catch is specified by applying the NEFMC ABC control rule, which determines

the ABC in year  $y+1$  in response to the ratio of  $B$  to  $B_{MSY}$  proxy in year  $y$  using a “hockey-stick” shaped control rule. The fixed fleet catch is held constant in projections at the most recent 10-year average, consistent with recent management practice. However, this value is considered part of management uncertainty and subject to change as recommended by the NEFMC in its specifications process. See TOR\_4-5-6-WP for more details.

Projections using these methods resulted in relatively rapid increases in SSB and mobile fleet catch (Figure 43). There are several reasons for these results. The stock will trend toward  $B_{40\%}$  and higher when fished below  $F_{40\%}$  (the ABC control rule has a maximum fishing mortality of  $80\% F_{40\%}$ , and target  $F$  declines linearly to zero below half  $B_{40\%}$ ). During the estimation model period through 2023, recent NAA random effects have been negative, which will remove fish from the population faster than the reductions caused by just fishing mortality and  $M$ . Without temporal correlation, these negative random effects do not persist into the projection period (i.e., they equal zero), and thus recent cohorts (even if relatively poor) will contribute to SSB more quickly and for a longer period than in the presence of negative NAA random effects.

Similarly, recruitment is projected as iid as opposed to the  $ar(1)$  process currently used in the ASAP model. Therefore, recruitment does not remain relatively low into the projection period (Figure 44), and instead immediately reverts to the recruitment scaling parameter value. However, the WG agreed that the absence of NAA random effects in the projection period is likely more influential than the recruitment assumption. Catches for the mobile fleet also increase more quickly relative to the 2024 management track methods because WHAM estimates a slightly better stock condition (Figure 45), which permits higher fishing mortality rates for the mobile fleet. Further, the catch will increase exponentially as  $F$  increases linearly based on the ABC control rule.

The WG expressed concern that these projections were overly optimistic but did not have any immediate solutions. The issue of overly optimistic projections is not unique to this Atlantic herring Research Track and might be addressed more broadly through the upcoming Research Track stock assessment on projection methodologies scheduled for 2027.

## RESEARCH RECOMMENDATIONS

***TOR #7: Review, evaluate, and report on the status of research recommendations from the last assessment peer review, including recommendations provided by the prior assessment working group, peer review panel, and SSC. Identify new recommendations for future research, data collection, and assessment methodology. If any ecosystem influences from TOR 1 could not be considered quantitatively under that or other TORs, describe the next steps for development, testing, and review of quantitative relationships and how they could best inform assessments. Prioritize research recommendations.***

The WG examined past Research Recommendations to see whether they were still relevant and what progress had been made. In addition, the WG made recommendations on future work that would improve the Atlantic herring assessment. See TOR\_7-WP for more details.

The following summarizes the WG's response to previous research recommendations.

### ***Past Recommendations***

#### *Investigate mechanisms behind low recruitment:*

The WG has examined this issue in detail (see TOR 4). The main conclusion is that while variable, recruitment has not declined as much as previously understood. Rather, NAA transitions suggest lower retention of fish as they move to older ages in some years. Several covariates on recruitment were also attempted, including haddock predation on eggs, temperature, and plankton abundance (i.e., food availability). Results suggested that these may be partial drivers of recruitment, but no single covariate was identified as largely responsible for herring recruitment patterns.

#### *Consider informing projections with R/S for consistency with change point analysis:*

This recommendation is no longer relevant.

#### *Investigate whether $F_{40\%}$ needs to be changed/reduced in the lower productivity regime:*

The issue of reference points and  $F_{40\%}$  can be found in TOR 5. Briefly, no evidence indicates that the continued use of  $F_{40\%}$  as a proxy of  $F_{MSY}$  is untenable. Given that the evidence for a lower productivity regime has deteriorated, this issue is less urgent.

#### *Estimate $F_{MSY}$ directly:*

The WG has concluded that MSY-based reference points are still incalculable for Atlantic herring and have retained  $B_{40\%}$  and  $F_{40\%}$  as MSY proxies.

#### *Consider younger ages as fully selected by the mobile fleet:*

This assessment did not directly address the recommendation. Instead, the WG continued with the use of a two-fleet structure. The Fixed Gear fleet focuses mainly on smaller, younger fish, while the Mobile fleet targets older and larger fish. The WG attempted many assessment model runs with time—and age-varying selectivity—and no support was found to suggest that younger ages should be more fully selected.

#### *Consider recruitment index based on seabird diet:*

This recommendation is addressed in TOR 3.

#### *Explore approaches to estimating $M$ , especially time-varying:*

As outlined in TOR 1 and TOR 4, little support for time- or age-varying natural mortality existed.

#### *Examine stock structure and movement:*

Given this Research Track's goals and time frame, a full examination of stock structure or migration patterns was not possible. Future work on herring genetics in the Gulf of Maine and Georges Bank is planned for 2025-26.

*Explore model-based indices:*

This recommendation was thoroughly addressed in the 2012 benchmark.

*Continue collecting age data during the summer survey:*

The fate of the summer survey as a whole remains uncertain. While age data has been collected, the survey was not conducted in 2024 and is unlikely to be conducted again in 2025.

*Evaluate the impact of switching from borrowed ALKs to direct age observations from the summer survey:*

No progress has occurred on this recommendation as of this Research track.

*Explore the effect of likelihood penalties on recruitment estimation:*

This is no longer relevant as recruitment penalties are not used in WHAM.

*Monitor the impact of missing 2020 survey data on assessments:*

This recommendation was addressed in the 2022 and 2024 Management Track assessments. Further, missing 2020 survey data combined with NAA random effects caused problems with retrospective analysis in this research track, which was monitored and resolved.

*Examine reproductive status and condition over time:*

This recommendation was addressed at length in TOR 1.

*Improve our understanding of fleet dynamics and the relationship to herring spatial dynamics:*

TORs 1 and 2 partially address this recommendation. In addition, the NEFMC is working to examine this issue in more detail.

*Analyze condition, growth, and fecundity:*

TOR 1 and the additional working papers referenced therein examine this issue in greater detail.

The WG recommends the following new research recommendations grouped by category:

New Recommendations include:

*Maternal Effects and Fecundity:*

- Further analysis is recommended to refine reference points incorporating maternal effects, such as age-structured fecundity metrics and body condition indices.



#### *Spawning Timing:*

- Prioritize spring body condition indices when analyzing changes in herring body condition to avoid confounding effects of significant weight fluctuations associated with the fall spawning season.

#### *Egg Predation:*

- Further analysis of haddock predation on herring eggs and its relationship to recruitment dynamics is recommended.

#### *Larval Temperature Stress:*

- Investigate the implications of warming sea surface temperatures and the reduced optimal thermal window on larval survival to refine models of density-independent mortality.

#### *Food Availability:*

- Develop zooplankton indices tailored to Atlantic herring life history, focusing on spring large copepods and fall small copepods to assess their influence on herring recruitment.

#### *Natural Mortality:*

- Explore and refine predator-prey interaction models to improve natural mortality estimates.

#### *Survey Data:*

- Continue enhancing survey methodologies, such as incorporating age-length data and calibration studies, to improve reliability and consistency.
- Evaluate the inclusion of innovative recruitment indices, like seabird diet data, for stock assessments.
- Apply VAST methodologies to combined State and Federal Surveys.

#### *Assessment Methods:*

- Explore alternative age-specific selectivity models and the use of random effects selectivity parameters.
- Investigate the use of larval indices as a potential index of recruitment.
- Refine projection models by integrating ecosystem indicators, such as zooplankton abundance and thermal habitat suitability.

#### *Projection Methods:*

- Integrate environmental datasets, including temperature and prey availability indices, to refine projection assumptions.

- Address overly optimistic projections by exploring methods that better account for recruitment variability and environmental drivers.
- Evaluate if and how NAA random effects should be treated during the projection period.
- Consider refining how weight- and maturity-at-age are specified in the projection period (i.e., investigate alternatives to a recent 5-year average, especially for trending traits).

## BACKUP ASSESSMENT APPROACH

***TOR #8: Develop a backup assessment approach to providing scientific advice to managers if the proposed assessment approach does not pass peer review or the approved approach is rejected in a future management track assessment.***

The WG concluded that if the preferred WHAM model configuration were to be rejected it would likely be due to unacceptable diagnostics (e.g., residual patterns, unresolvable data conflicts) that may not be resolvable within an age-based assessment. Consequently, the WG concluded that a trend-based backup would be appropriate, and the WG chose the existing Ismooth approach. The Ismooth approach performed relatively well when tested in a management strategy evaluation and was especially good for rebuilding depleted stocks (Legault et al. 2022). The Ismooth approach would use all indices of abundance included in the age-based assessment. Each index would be divided by its time series to standardize all time series to a similar scale. If the Ismooth approach is needed, then spring survey in the year following the terminal year of the age-based assessment will likely be available.

This spring observation would be included in the Ismooth to take advantage of the most recent survey observation. The Ismooth approach uses the mean across indices each year in the application of a LOESS-smoothed average index of abundance. The time series other than the spring survey will be lagged forward one year so that the most recent observation from each survey will be used when taking the annual means (e.g., the fall observation from year y will be averaged with the spring observation from year y+1). The multiplier produced by Ismooth would be applied to a recent average catch to provide catch advice. The multiplier using the data in this research track was 1.56.

The WG noted that the NMFS Gulf of Maine Northern Shrimp survey has been suspended and was not conducted in 2024. Future management tracks should reconsider whether this survey should remain in the Ismooth backup assessment approach. More generally, the indices considered in the Ismooth may need reconsideration depending on survey availability and temporal or spatial coverage (e.g., vessel breakdowns, incomplete strata sampling).

## OTHER ADDITIONAL TORs

***TOR #9: Identify and consider any additional stock-specific analyses or investigations that are critical for this assessment and warrant peer review, and develop additional TOR(s)\* to address as needed.***

No additional TORs were necessary.

## TABLES

**Table 1.** Comparison between current catch accounting and CAMS for fishery-wide catch by year. All catches are in mt from US vessels.

| Year | Current Approach | CAMS   | Difference |
|------|------------------|--------|------------|
| 2020 | 8,069            | 9,866  | (1,797)    |
| 2021 | 5,236            | 5,216  | 20         |
| 2022 | 3,921            | 4,295  | (374)      |
| 2023 | 9,500            | 10,118 | (618)      |

## FIGURES

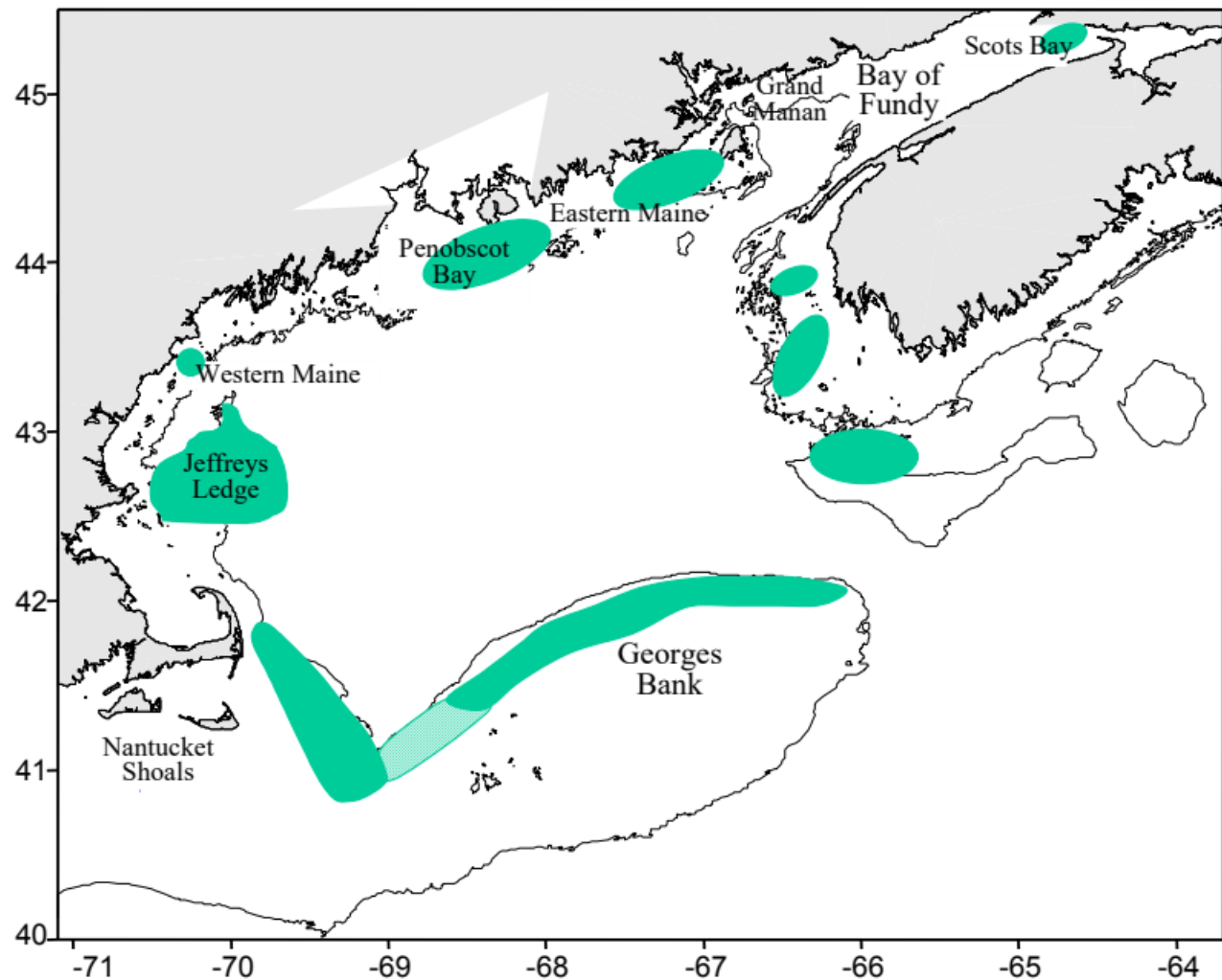


**Figure 10.** Generalized view of the current major herring spawning areas in the Gulf of Maine and on George Bank. From Overholtz et al. 2024

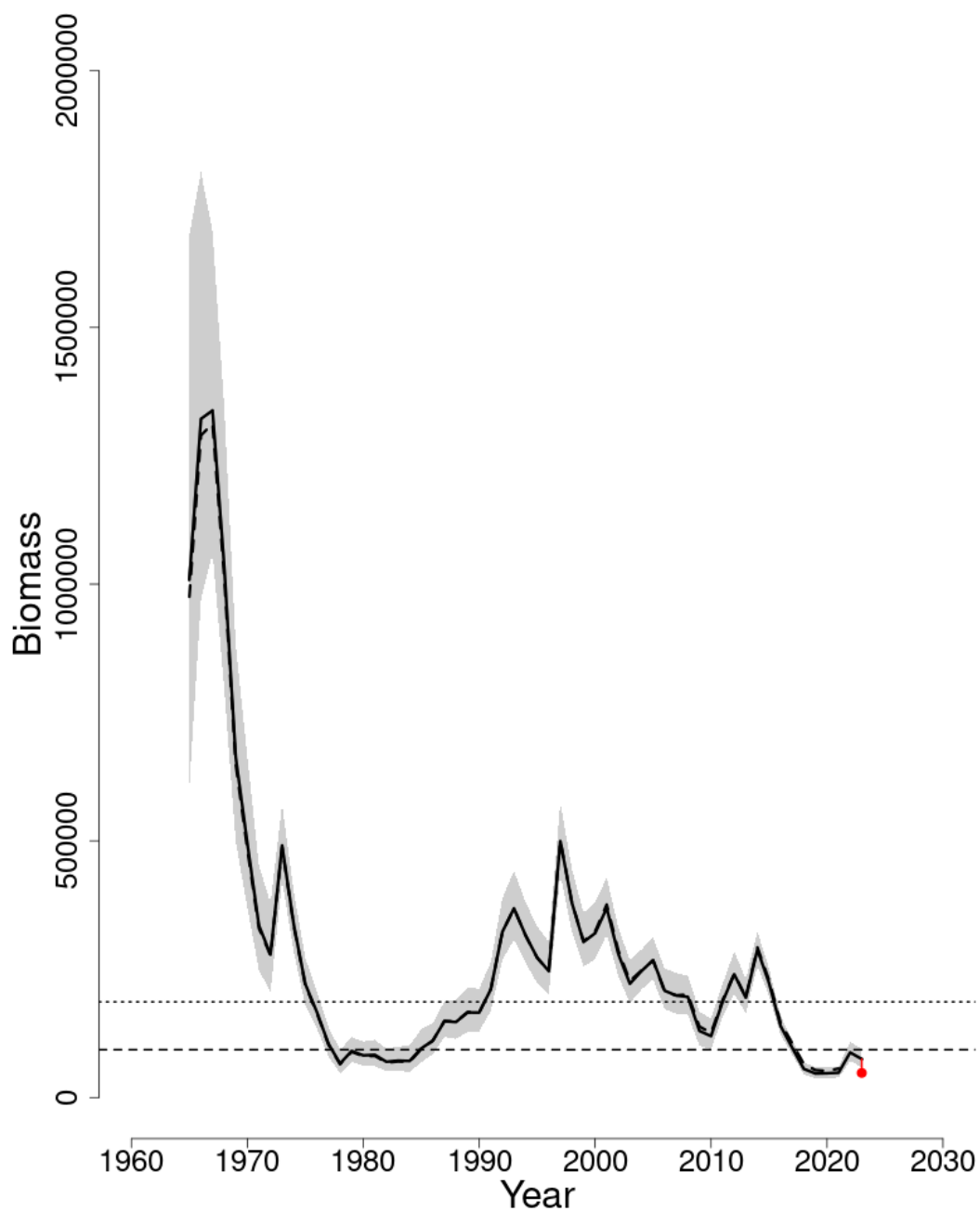


**Figure 11.** Trends in spawning stock biomass of Atlantic Herring between 1965 Trends in spawning stock biomass of Atlantic Herring between 1965 and 2023 from the current (solid line) and previous (dashed line) assessment and the corresponding  $SSB_{Threshold}$  ( $1/2 SSBMSY_{proxy}$ ; horizontal dashed line) as well as  $SSB_{Target}$  ( $SSBMSY_{proxy}$ ; horizontal dotted line) based on the 2024 assessment. The approximate 90% confidence intervals are shown. The red line and dot show the value from the 2024 assessment adjusted for the retrospective pattern. From NEFSC 2024.

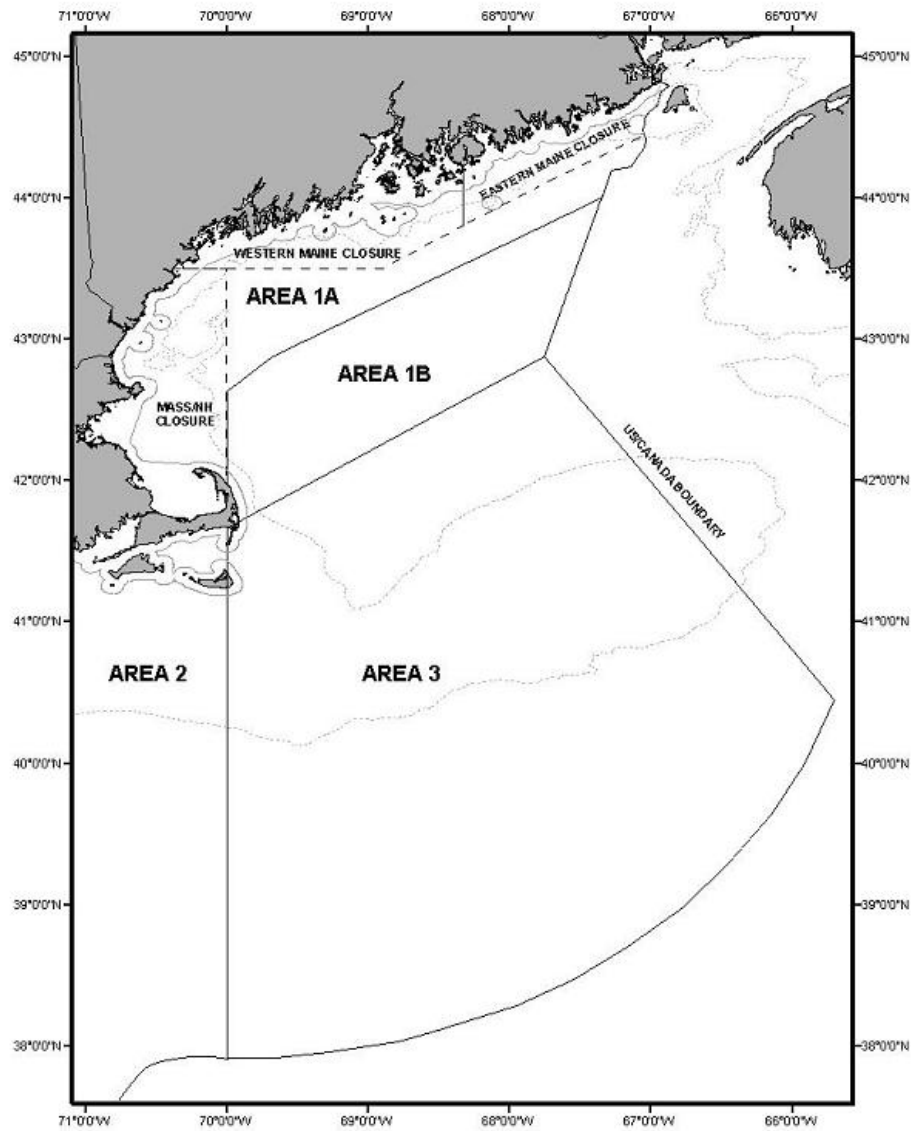


**Figure 12.** Atlantic herring fishery management areas including spawning closures.  
<https://www.maine.gov/dmr/science/species-information/atlantic-herring-biology-and-research>. **Note:** Area 2 extends further south to Cape Hatteras, North Carolina (not shown). See: <https://www.fisheries.noaa.gov/resource/map/herring-management-areas>

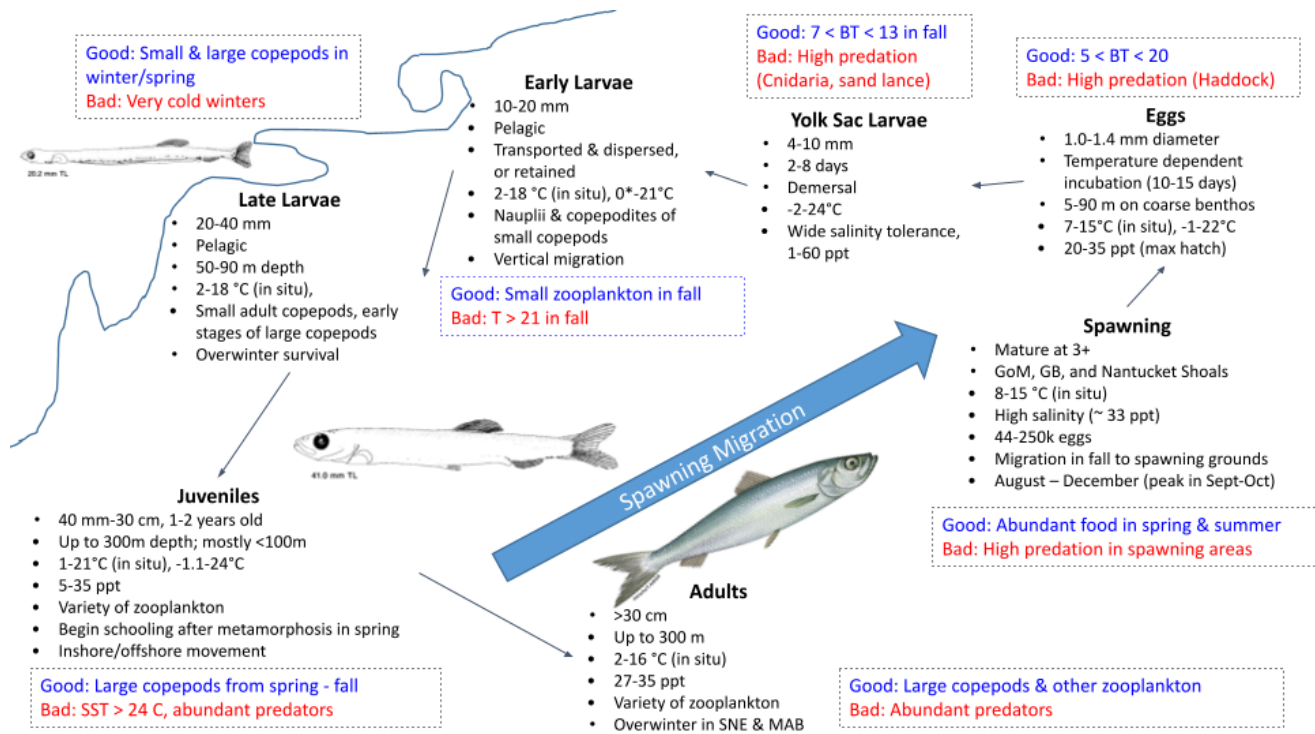


**Figure 13.** Atlantic herring conceptual model.

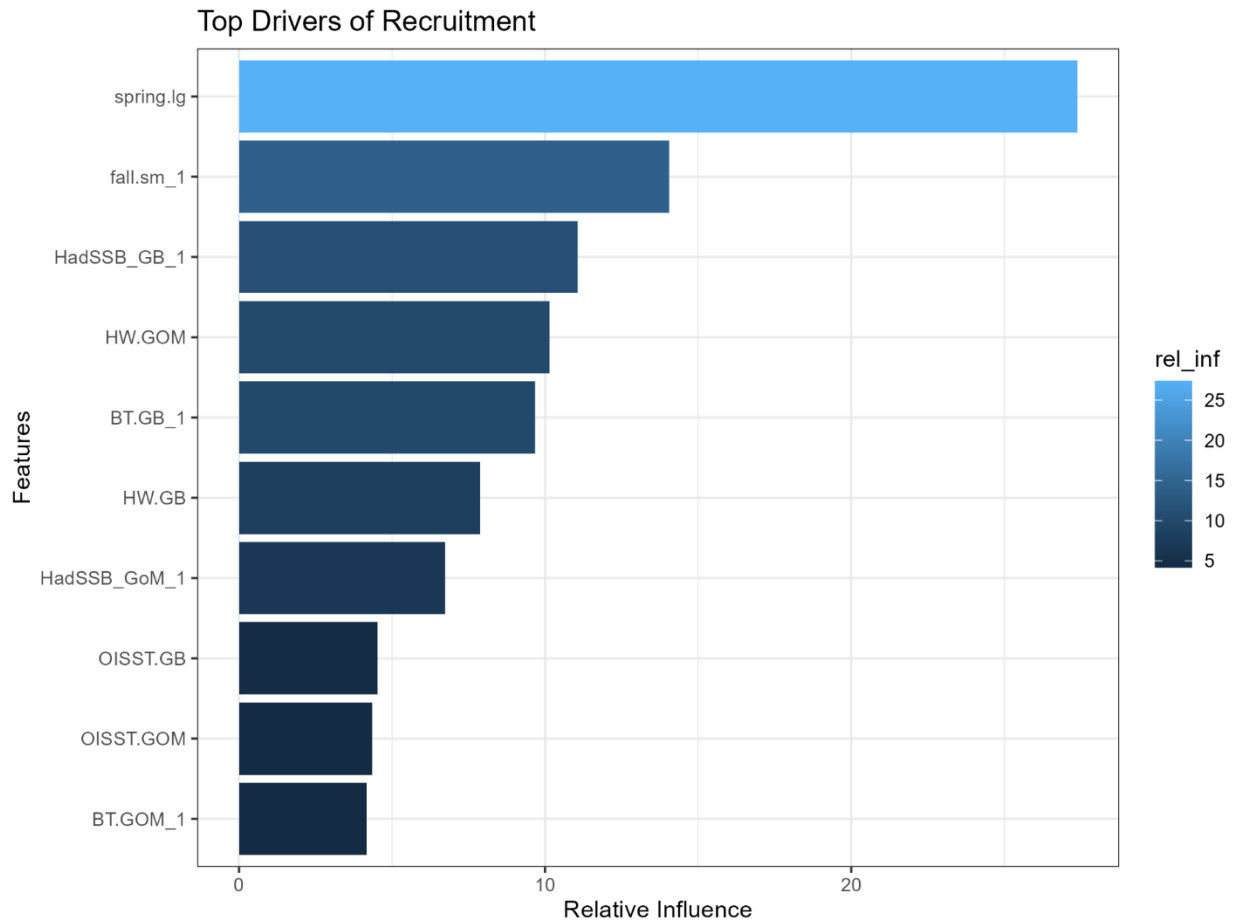


**Figure 14.** Relative influence of different climate and ecosystem drivers on Atlantic herring recruitment. Drivers: unlagged spring large copepods (spring\_lg), lag 1 fall small copepods (fall.sm\_1), lag 1 haddock spawning stock biomass on Georges Bank (HadSSB\_GB\_1), sea surface temperature on Georges Bank (OISST.GB), sea surface temperature Gulf of Maine (OISST.GOM), and lag 1 bottom temperature in the Gulf of Maine (BT.GOM\_1).

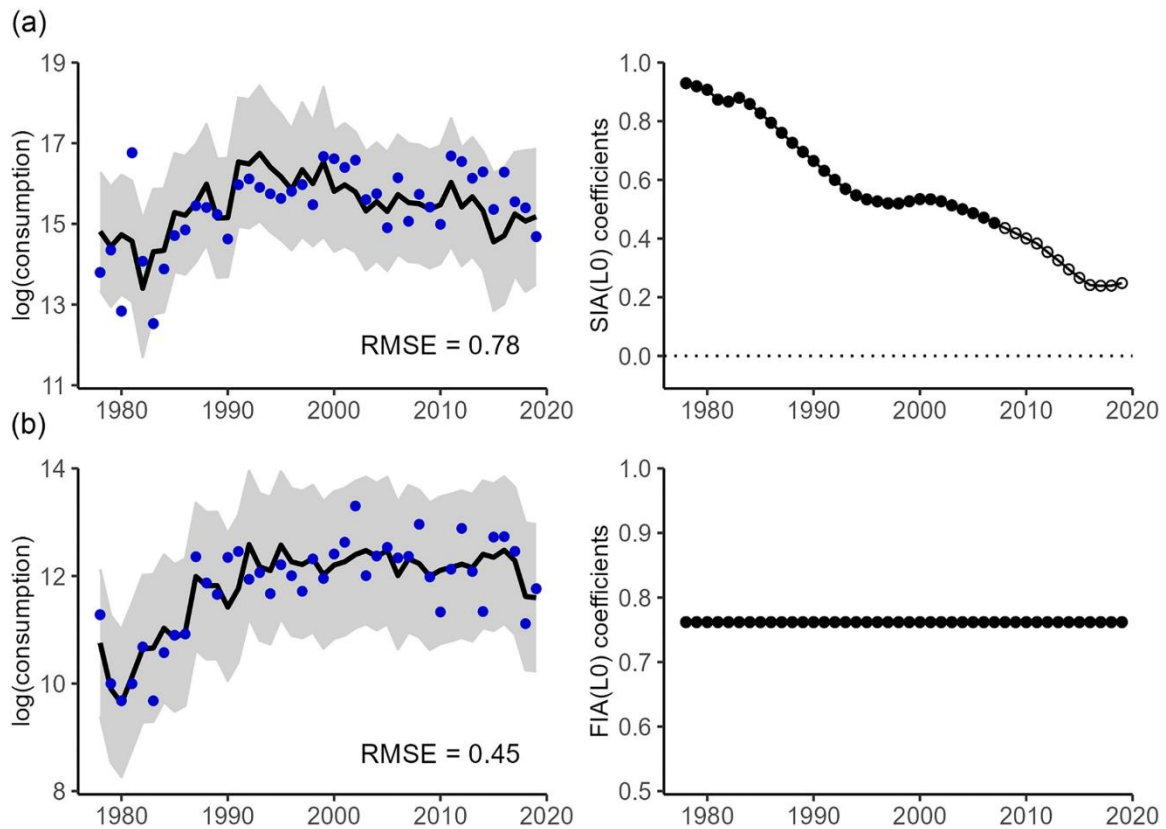


**Figure 15.** Figure 4 from Gartland and Latour 2024. “DLM fits (left panels, lines) and 95% prediction intervals (shading) from relating (a) the spring time-series of Atlantic herring consumption (points) to the spring index of relative abundance for this species at lag-0 (SIA, L0) and (b) the fall time-series of consumption (points) to the fall index of relative abundance at lag-0 (FIA, L0). RMSE of the model fits is given for each season. The right panels provide the associated time-series of coefficient estimates for SIA, L0 and FIA, L0 (a. spring; b. fall). Closed circles represent years in which the 95% CI of these estimates did not overlap zero. Model fits and parameter estimates are provided only for the most supported ( $\Delta\text{AICc} = 0$ ) DLM from each season.”



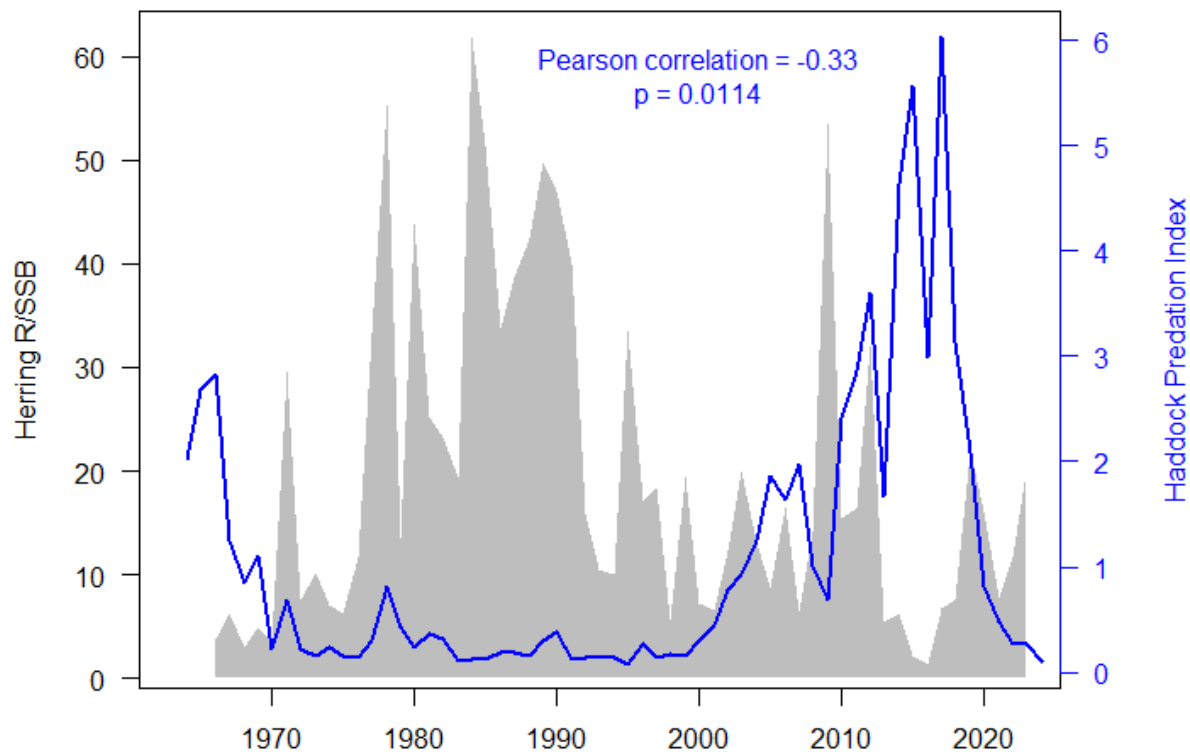


**Figure 16.** Correlation between the haddock predation index (blue line) and herring recruit-per-spawner (grey region) from the 2022 assessment model (updated with data through 2023).

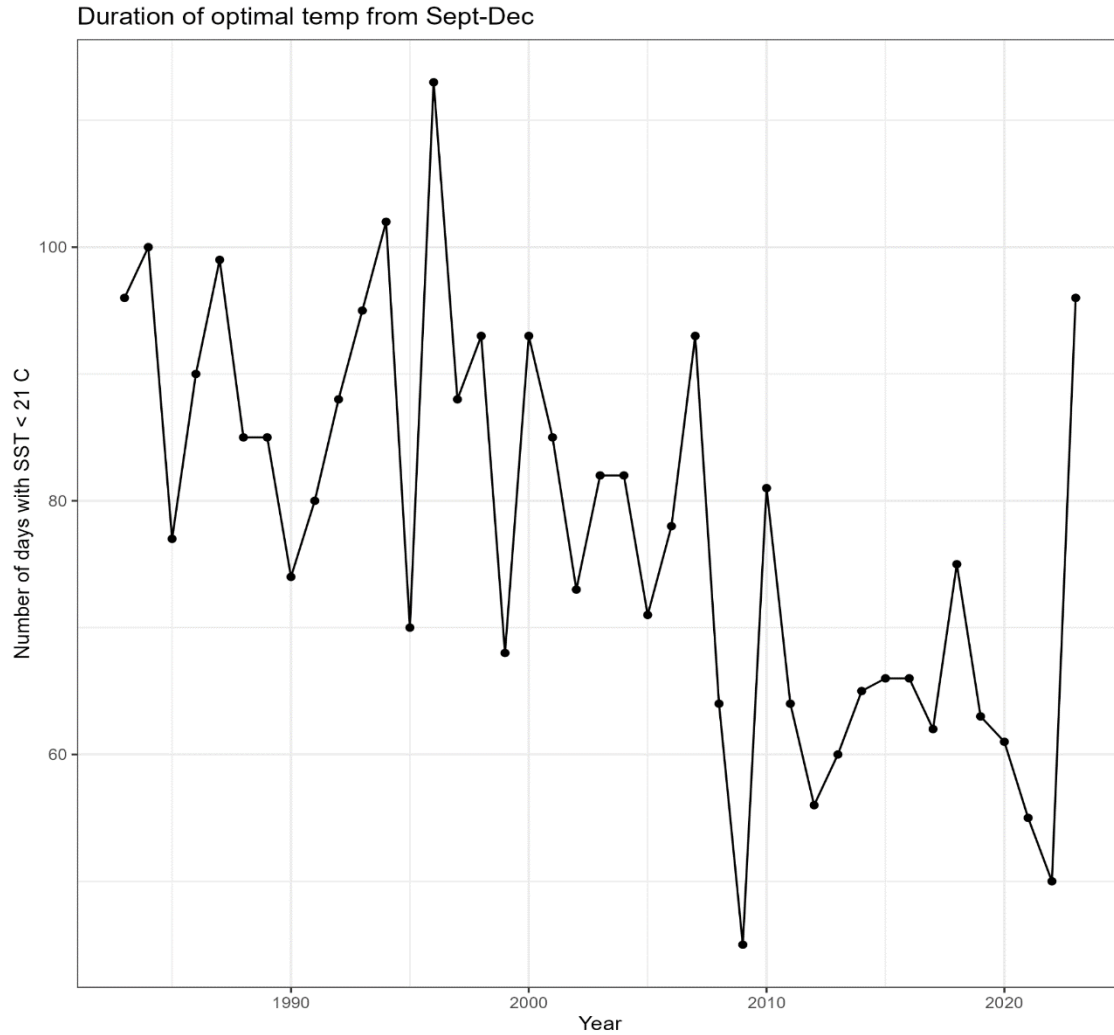


**Figure 17.** Duration of optimal thermal window for herring larvae in the fall (September-December). This is the number of days where none of the sea surface temperature grid cells in the fall NEFSC herring strata are greater than the lethal threshold of 21 C. Duration of optimal temperature has been decreasing over time.

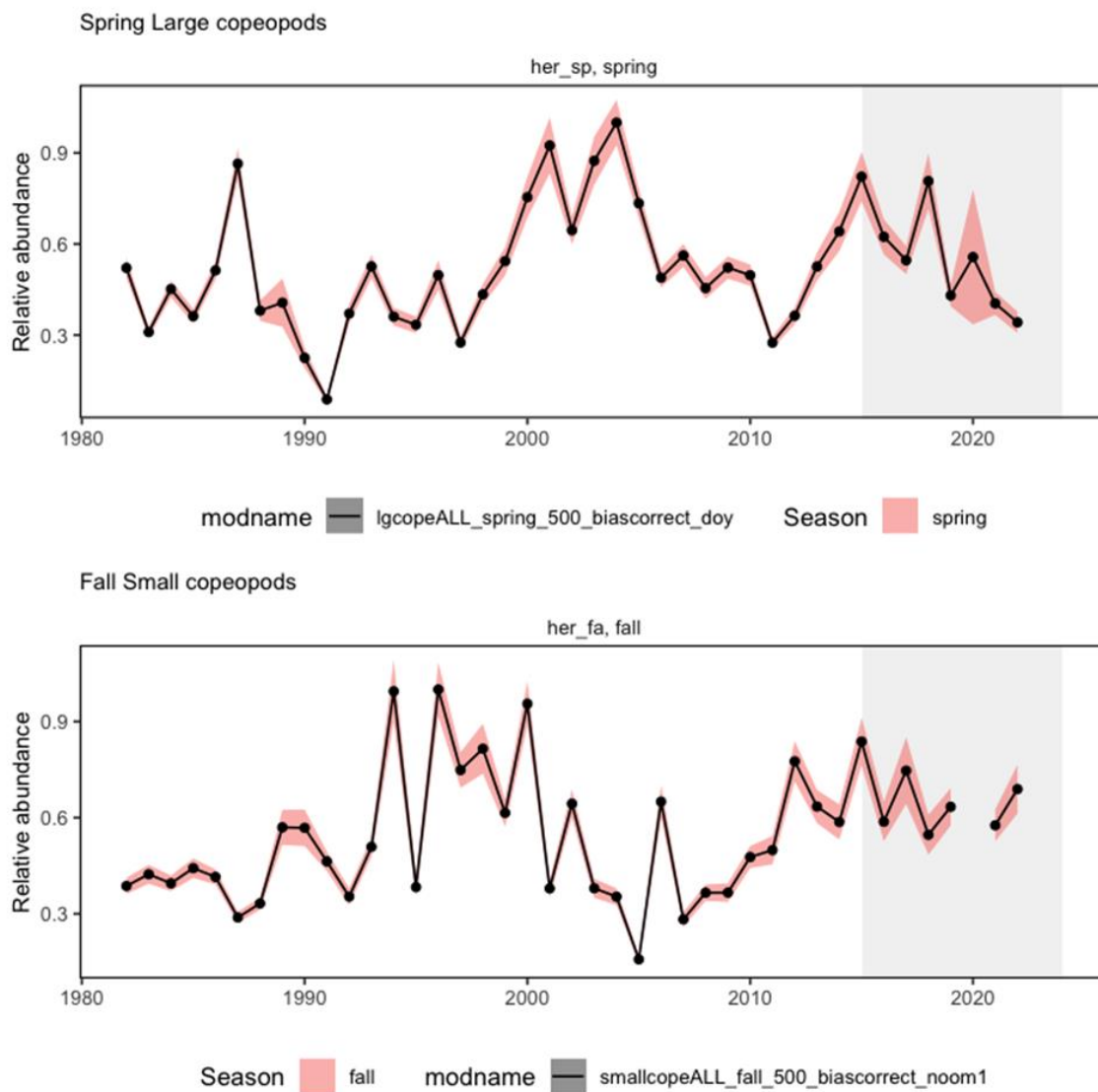


**Figure 18.** VAST-derived copepod indices, 1982-2022. Top panel: Spring (January-June) large copepods in spring Atlantic herring bottom trawl survey strata. Bottom panel: Fall (July-December) small copepods in fall Atlantic herring bottom trawl survey strata.

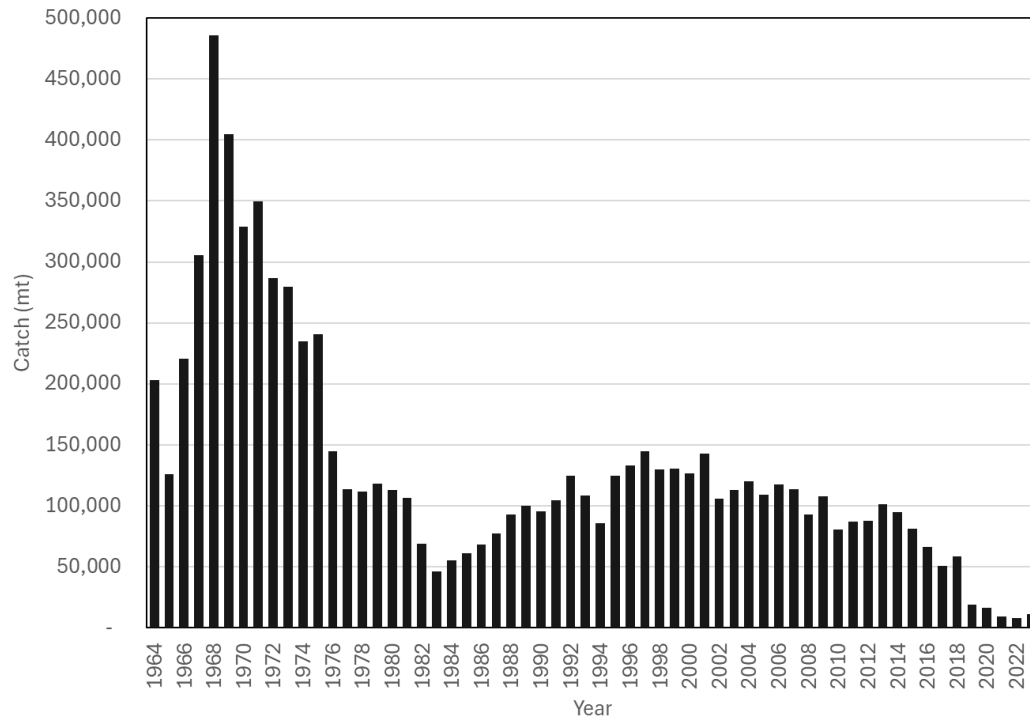


**Figure 19.** Atlantic herring catch by year: 1964 to 2023.

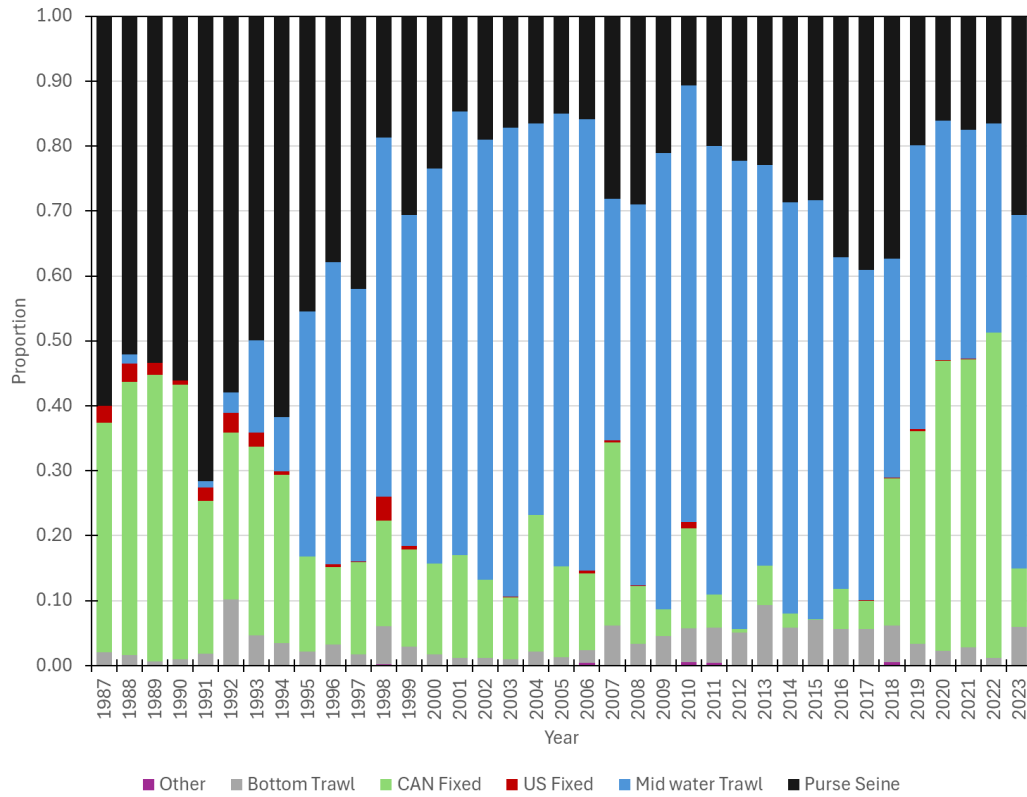


**Figure 20.** Atlantic herring catch by gear type as a proportion of the total catch.

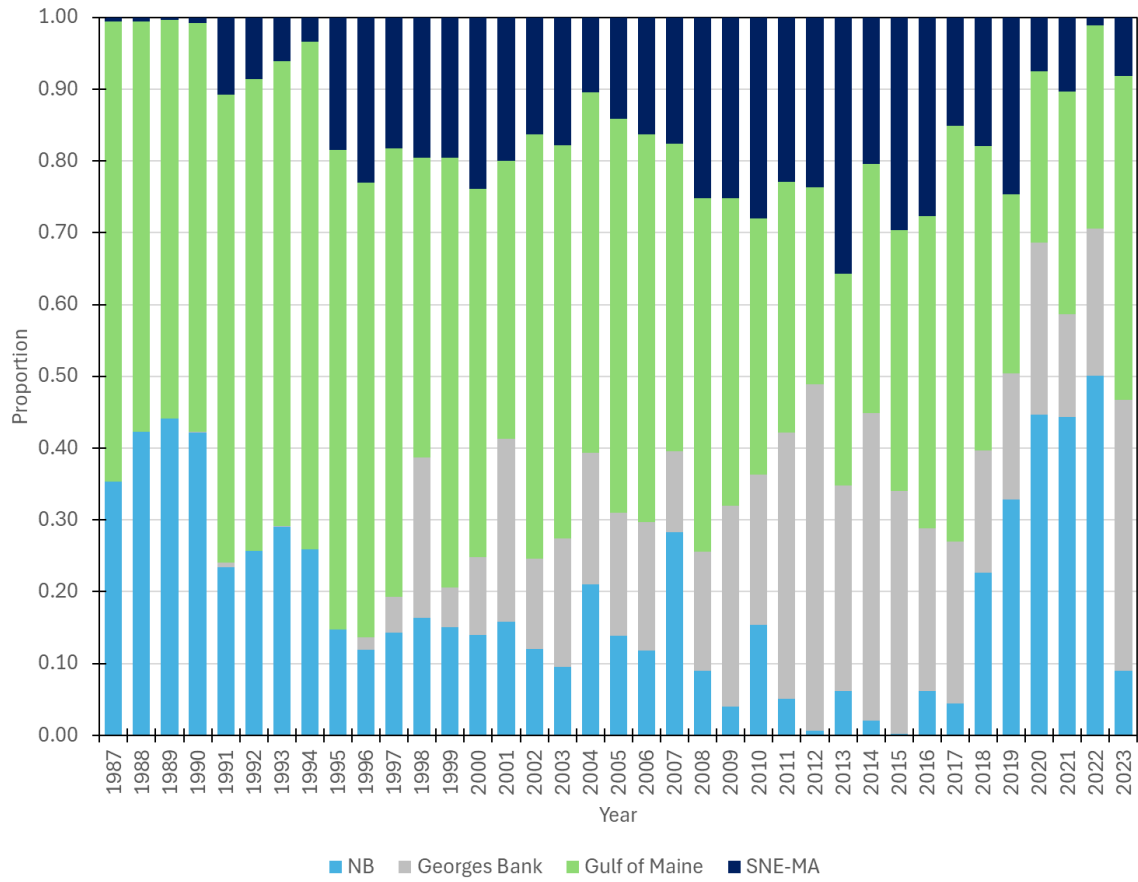


**Figure 21.** Atlantic herring catch by region as a proportion of the total catch.

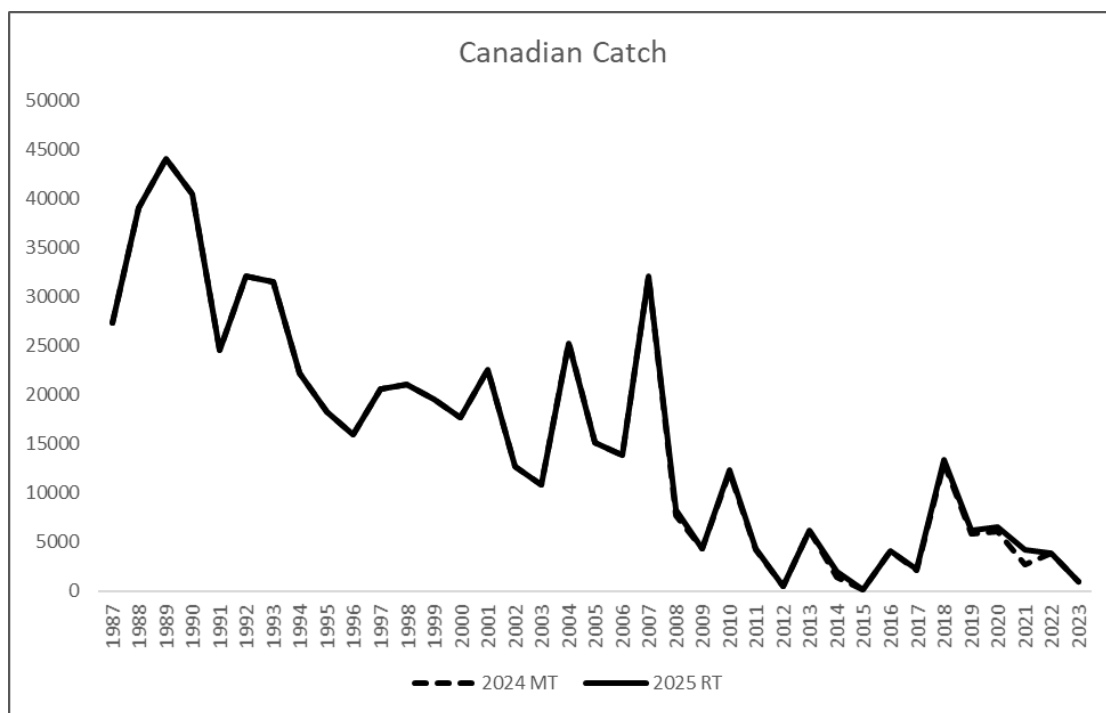


**Figure 22.** Canadian Catch 1987-2023.

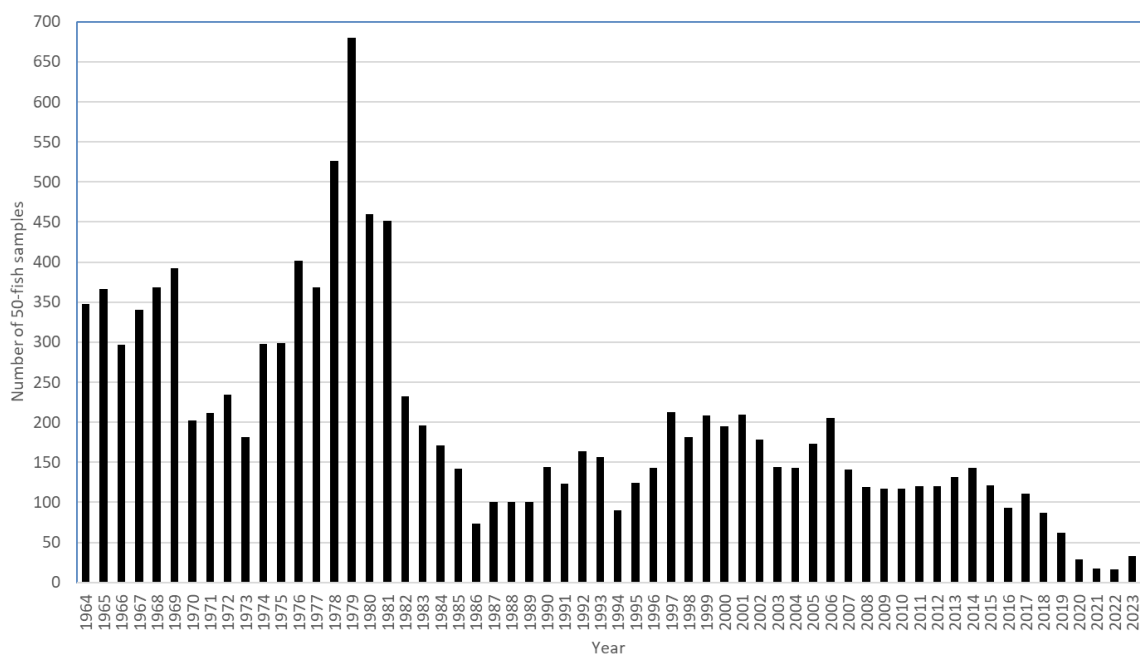


**Figure 23.** Number of 50-fish samples taken as part of the biological sampling program.

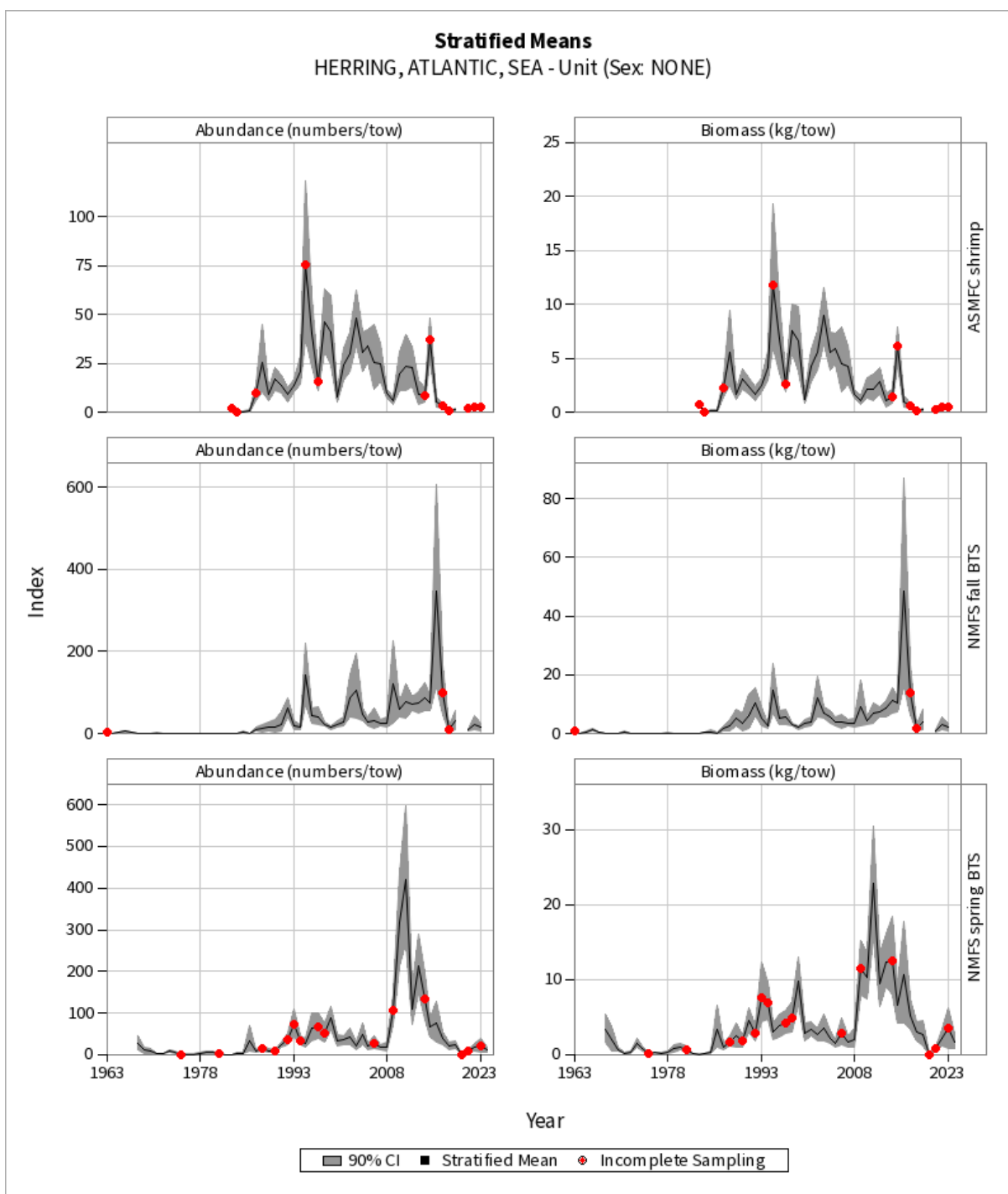


**Figure 24.** Stratified mean indices from NMFS bottom trawl surveys. The assessment uses numbers per tow.



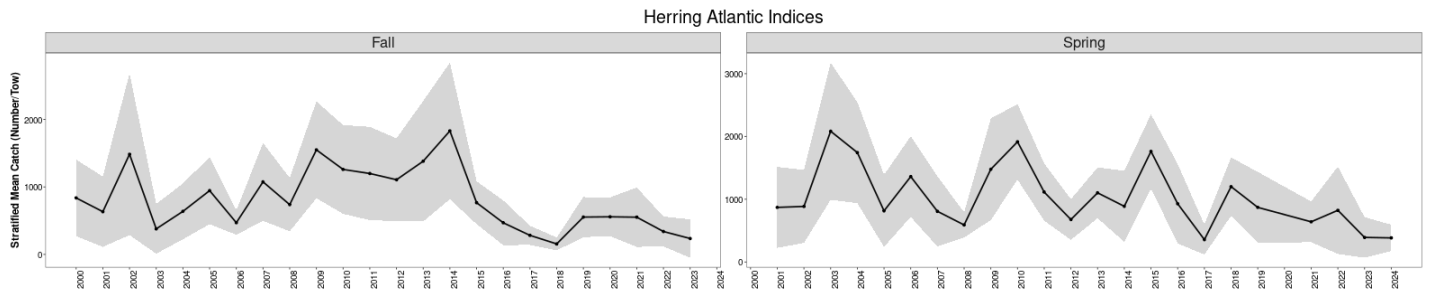


**Figure 25.** Spring and Fall ME-NH survey catch in Number. Shaded area 95% confidence.

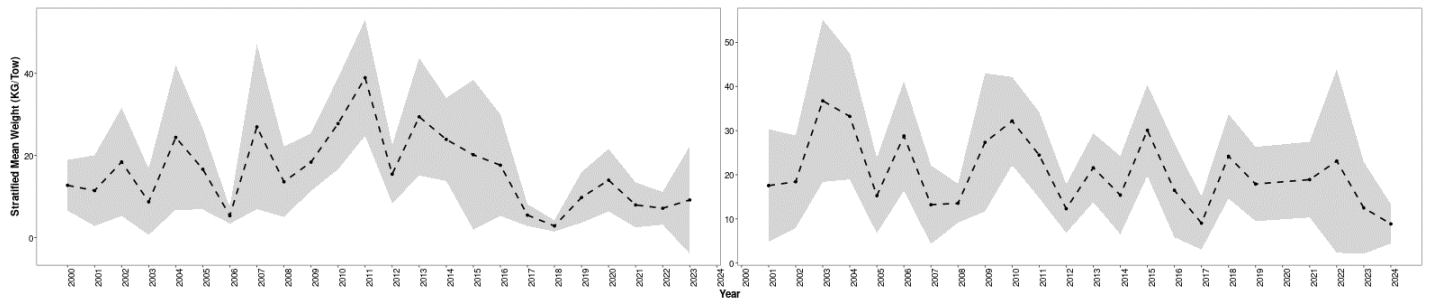


**Figure 26.** Spring and Fall ME-NH survey catch in weight. Shaded area 95% confidence.

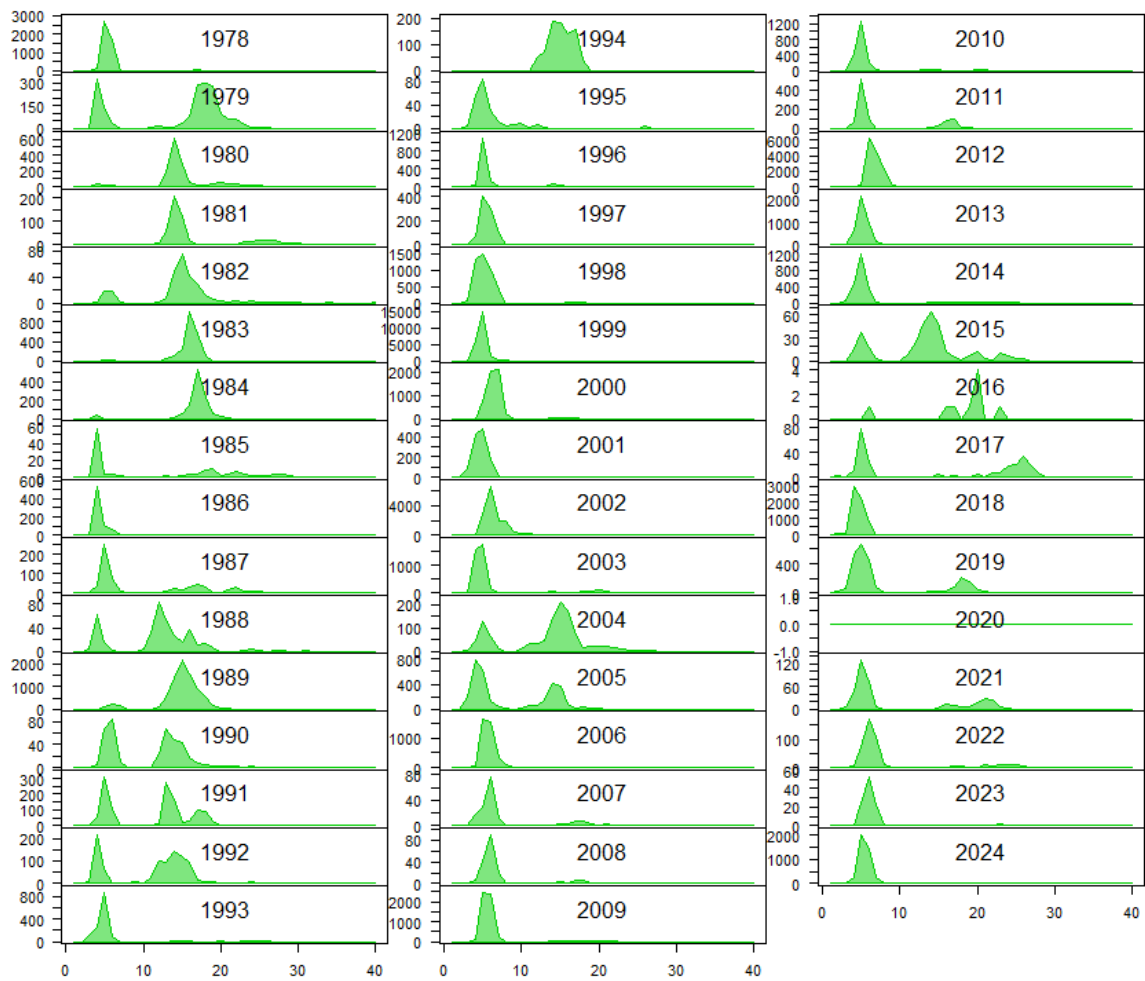


**Figure 27.** Length distribution of Atlantic herring catch from the Spring MADMF inshore trawl survey.

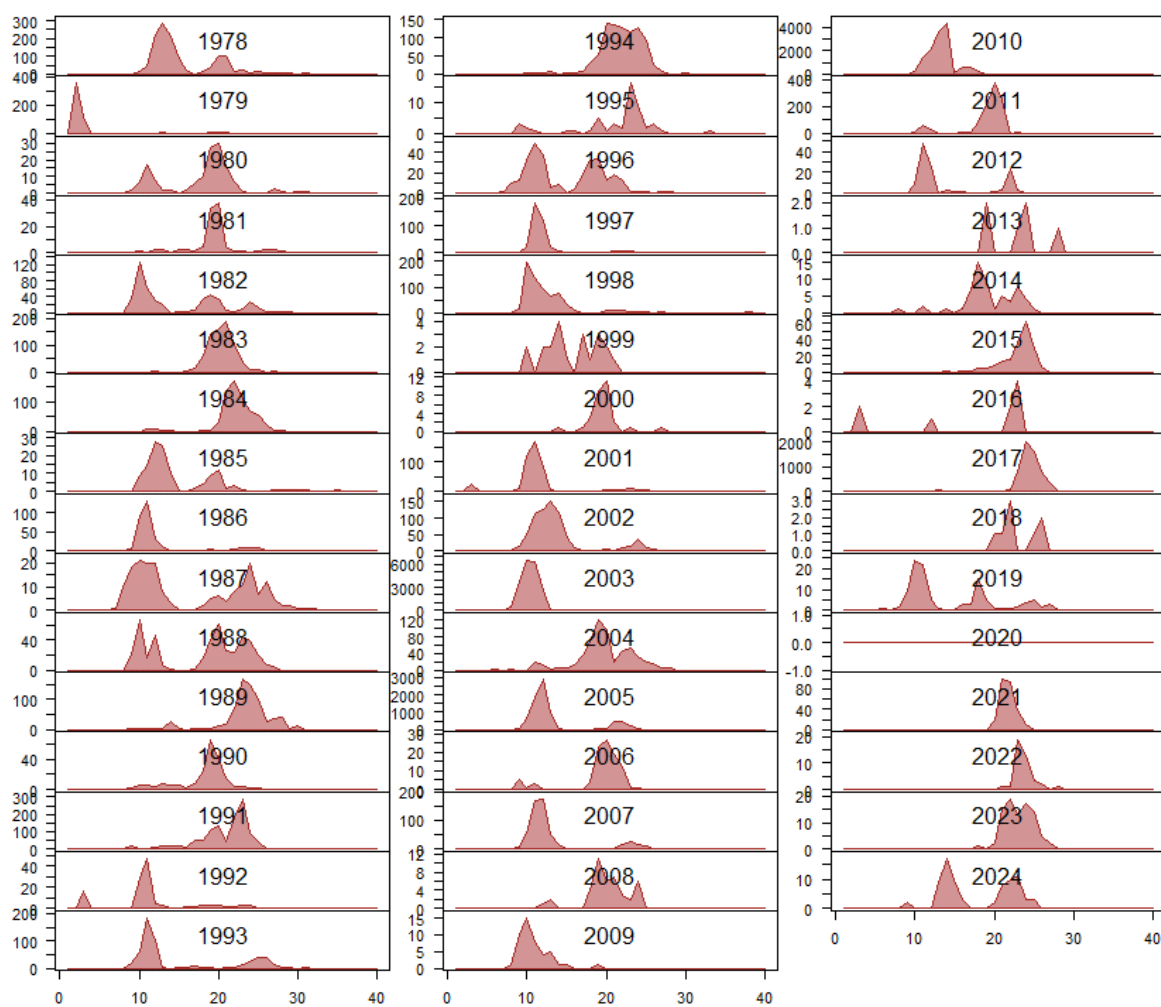


**Figure 28.** Length distribution of Atlantic herring catch from the Fall MADMF inshore trawl survey.

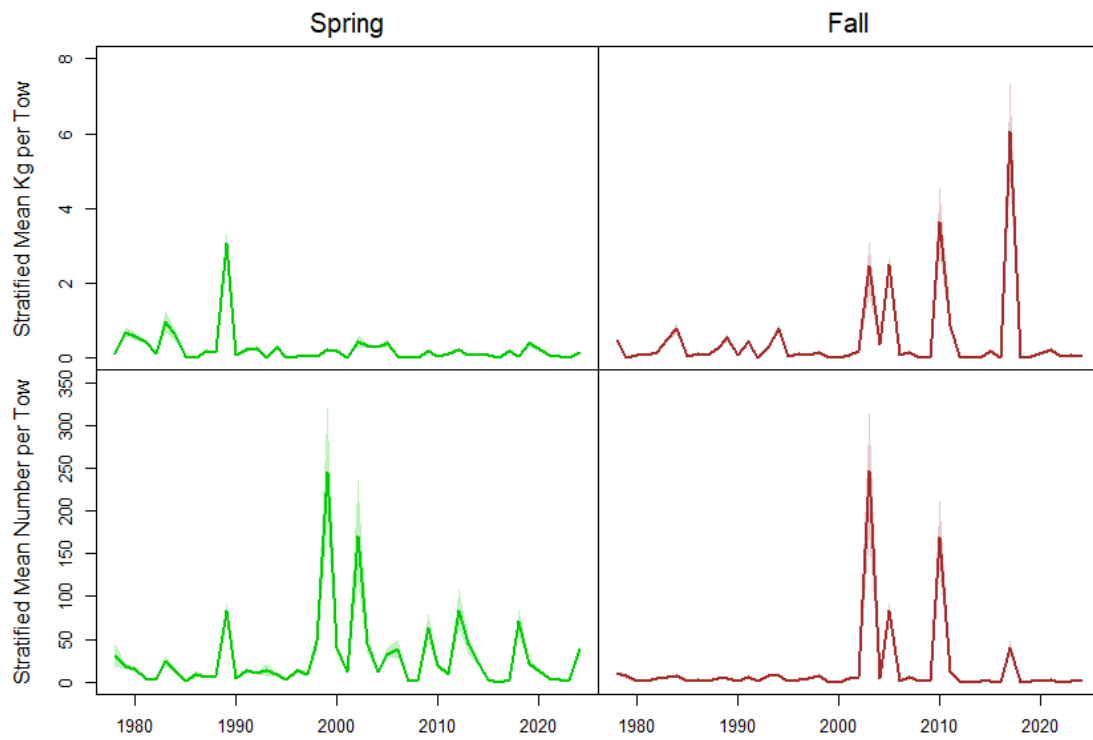


**Figure 29.** Stratified mean herring catch per tow in numbers (bottom) and Kg (top) for the spring (left) and fall (right) MADMF inshore trawl survey.

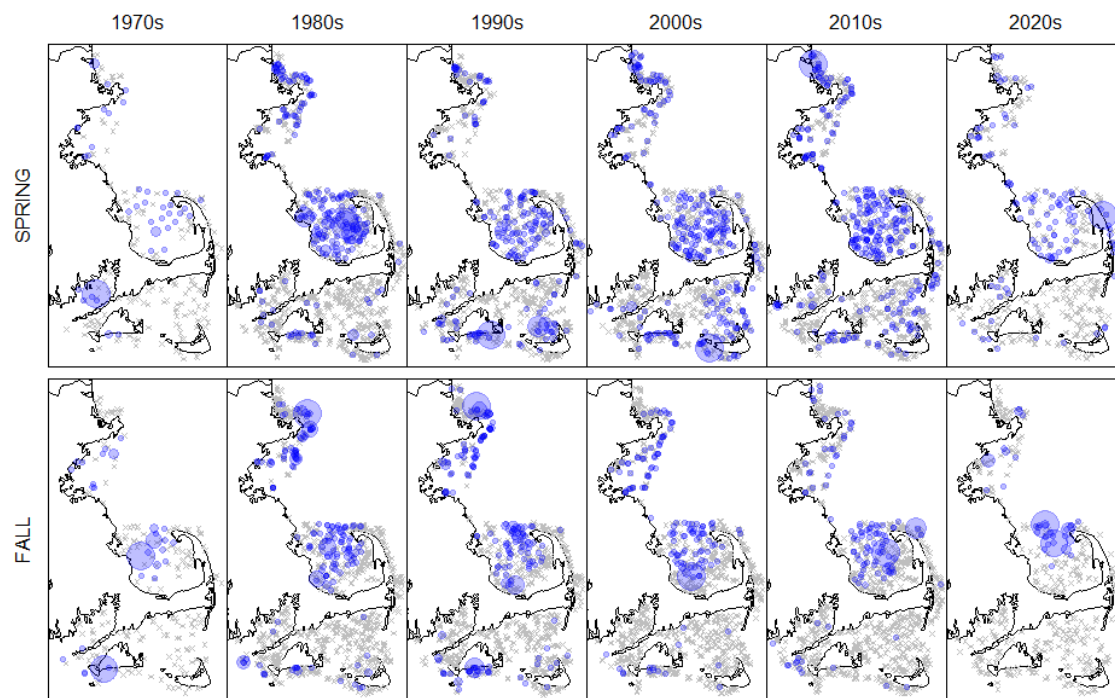


**Figure 30.** Spatial distribution of herring catch by decade and season from the MADMF inshore trawl survey.

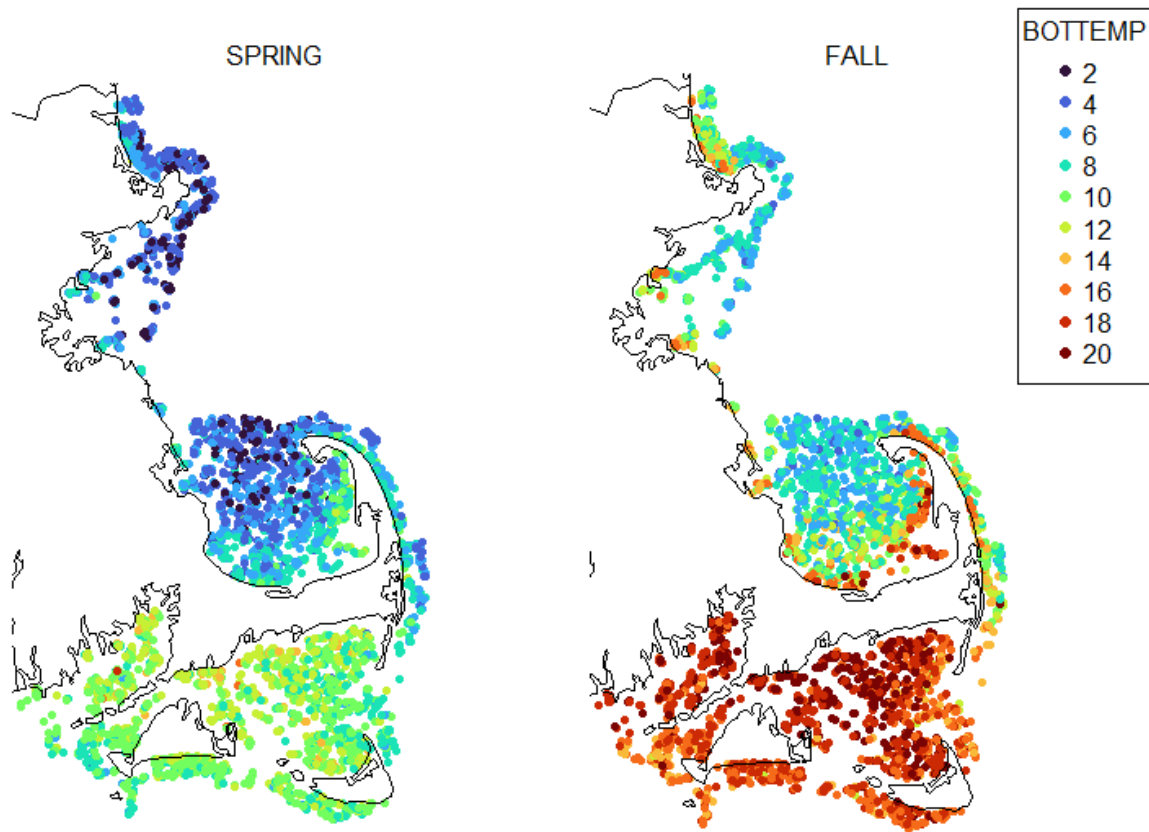


**Figure 31.** Spatial distribution of bottom temperature in the MADMF inshore trawl survey.

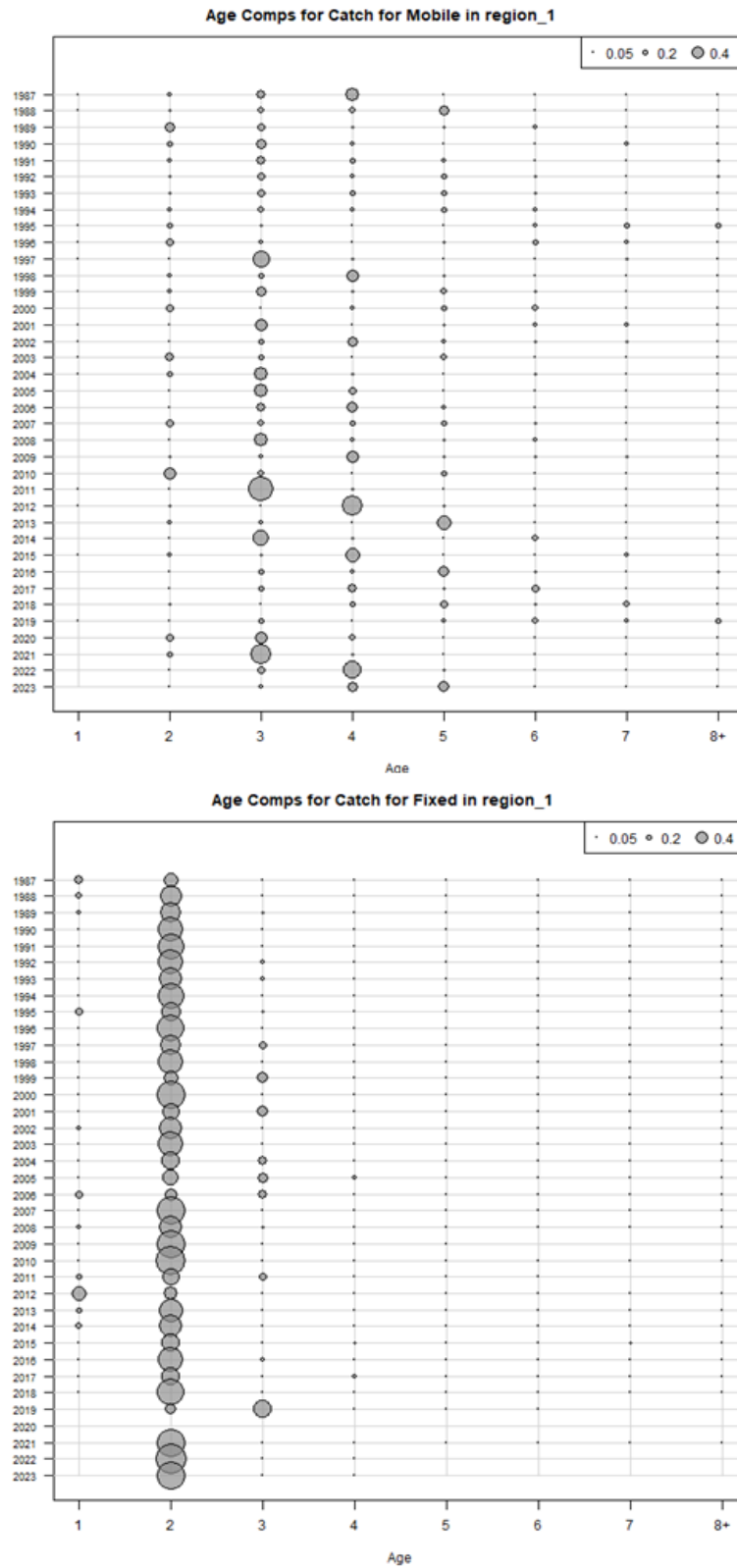


**Figure 32.** Age compositions by fleet. Top Mobile, Bottom Fixed.

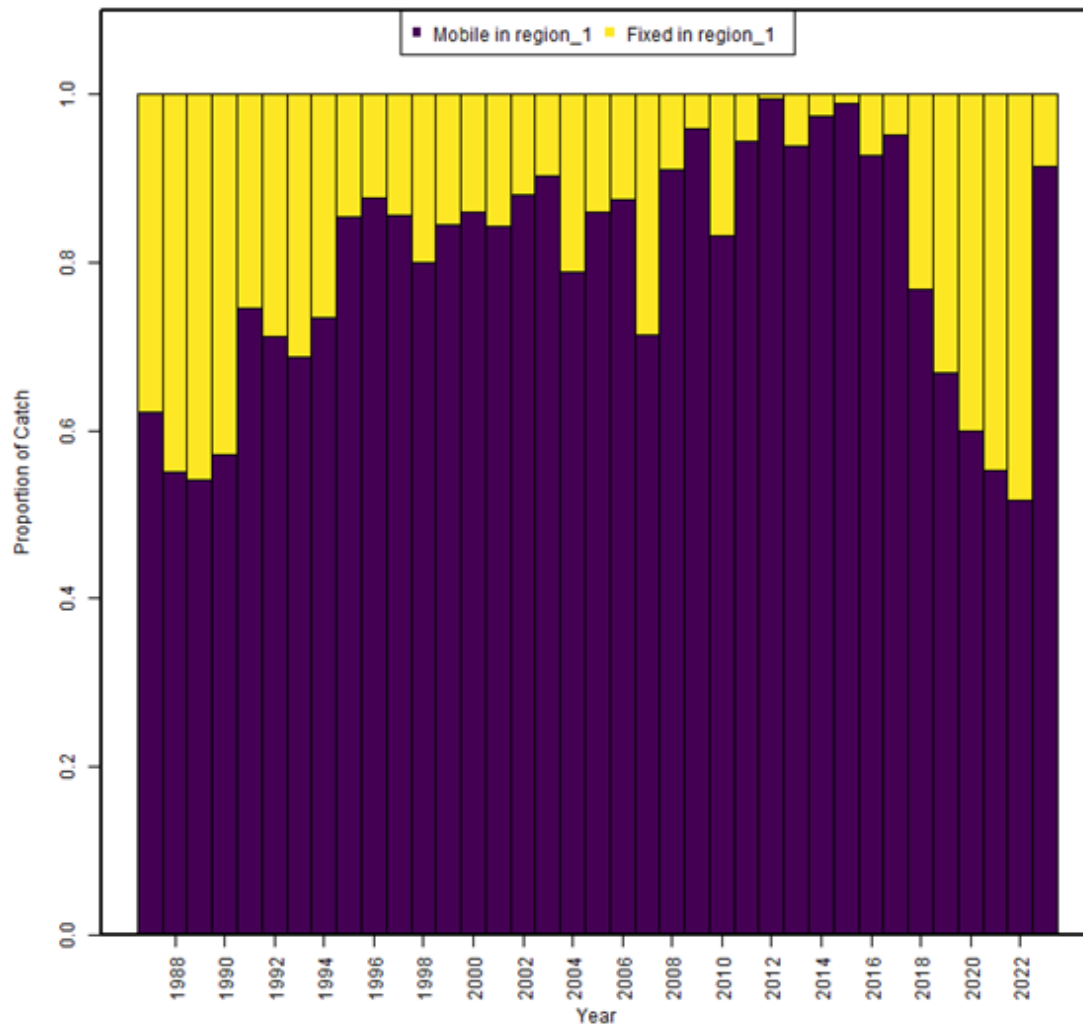


**Figure 33.** Proportion of catch by Mobile and Fixed Gear fleets.





**Figure 34.** Age composition by survey in the Fall. Top Albatross, bottom Bigelow.

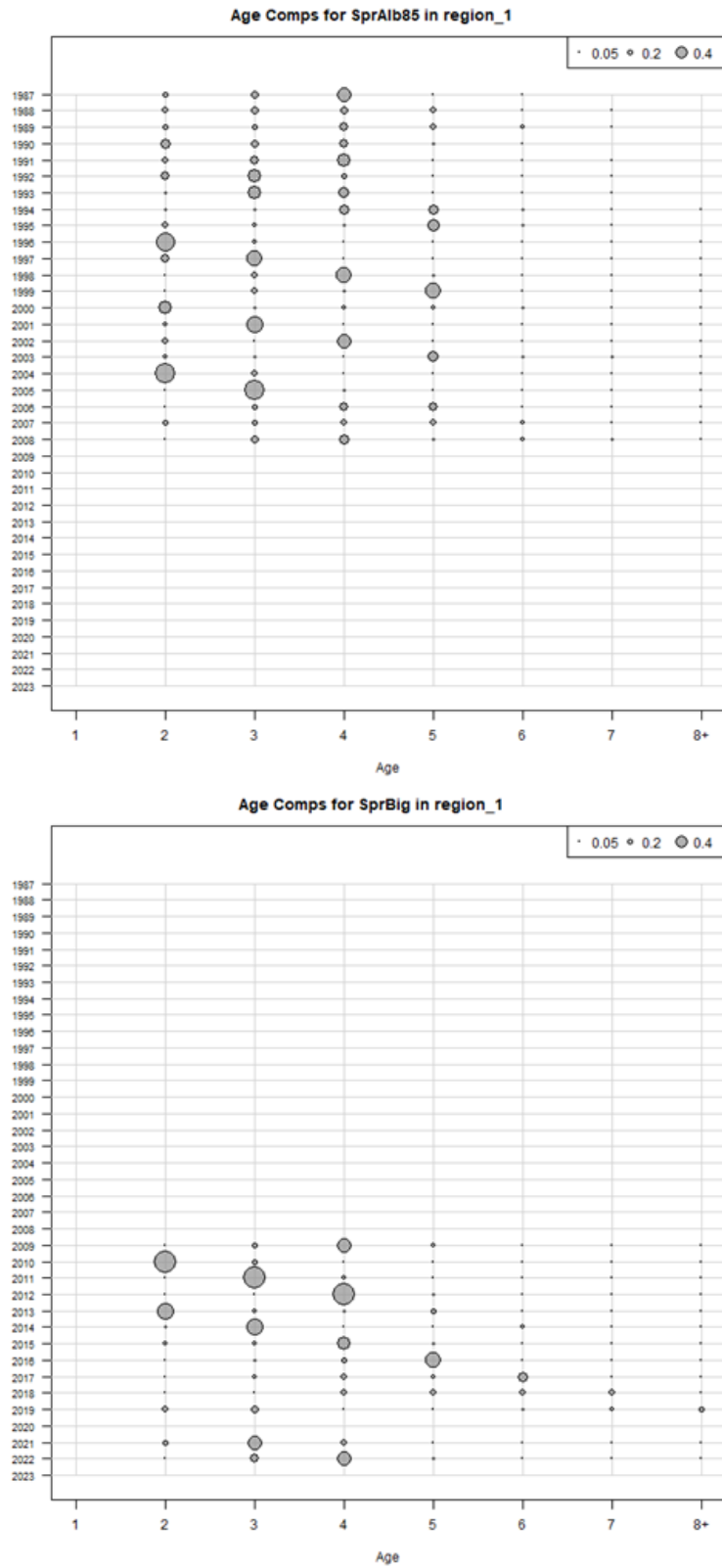


**Figure 35.** Age composition by survey in the Spring. Top Albatross, bottom Bigelow.

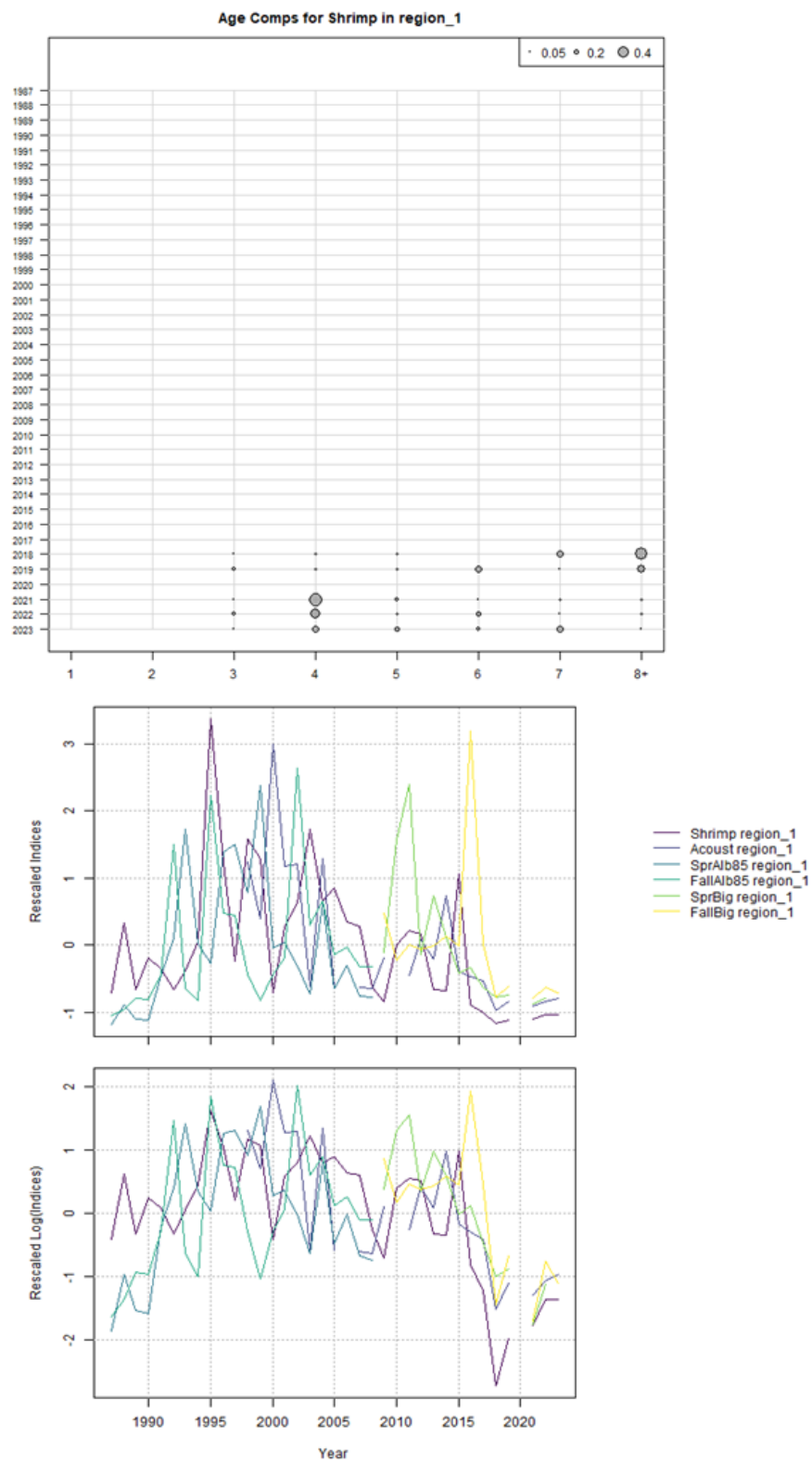


**Figure 36.** NMFS summer (Shrimp) survey age composition (top). Indices of abundance nominal (middle) and log scaled (bottom).

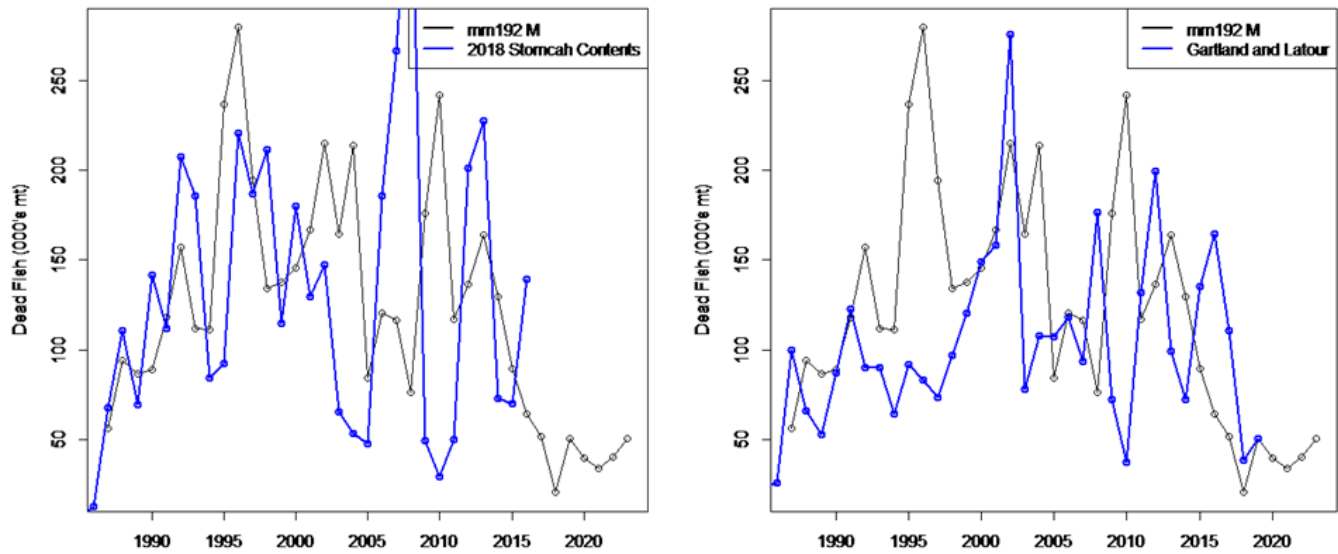


**Figure 37.** Number of dead herring implied by use of an M of 0.35 compared to estimates using stomach contents of predators (left) and estimates from Gartland and Latour 2024 (right).

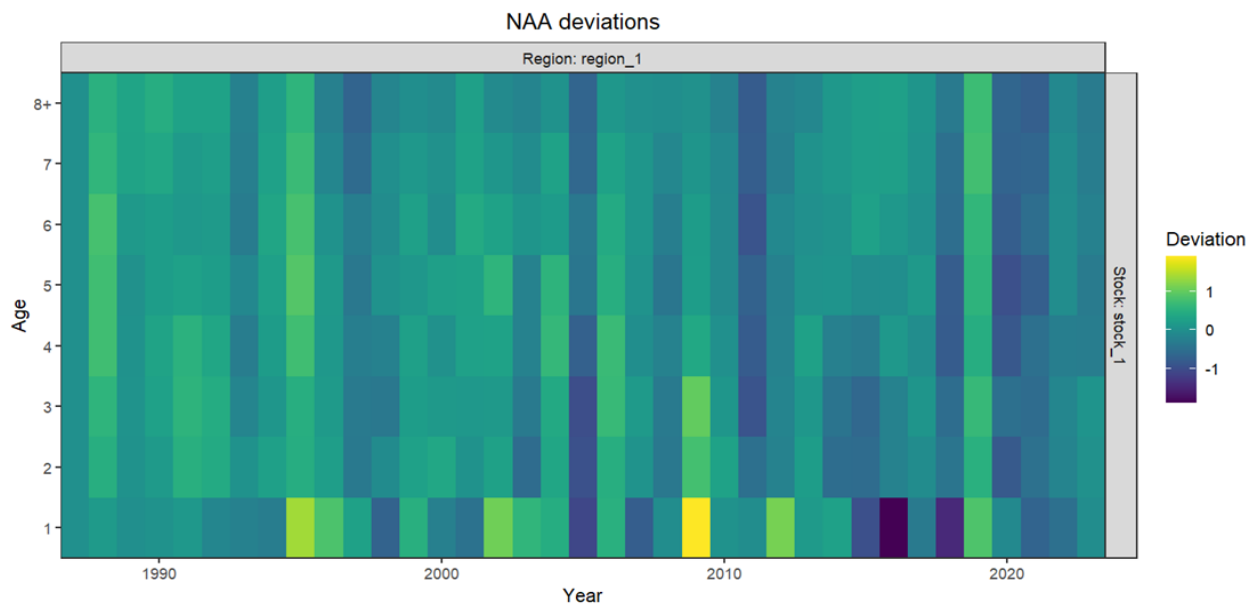


**Figure 38.** NAA deviations by year and age.

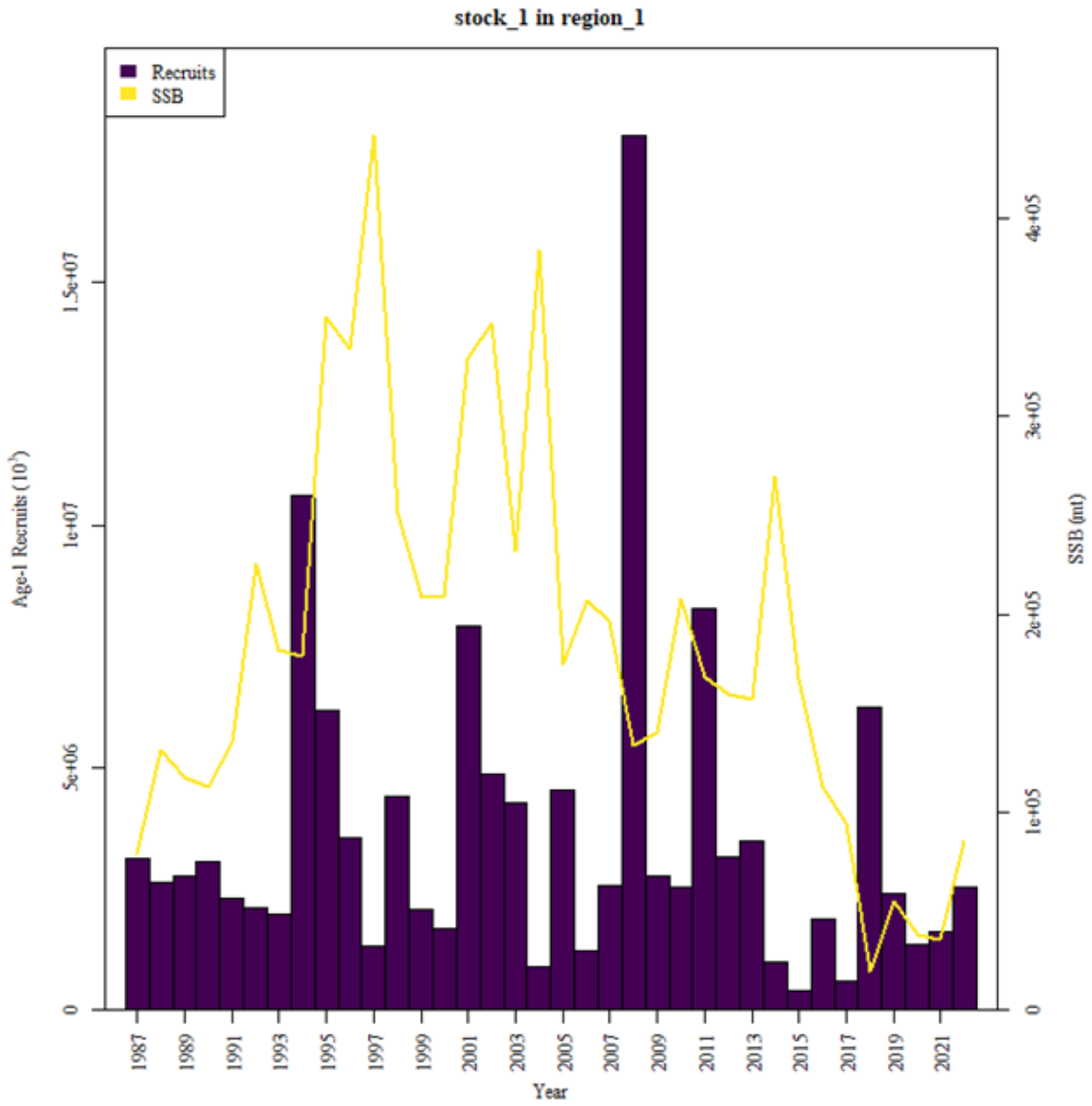


**Figure 39.** Recruitment (bars) and SSB (line) by year. Note scale change.

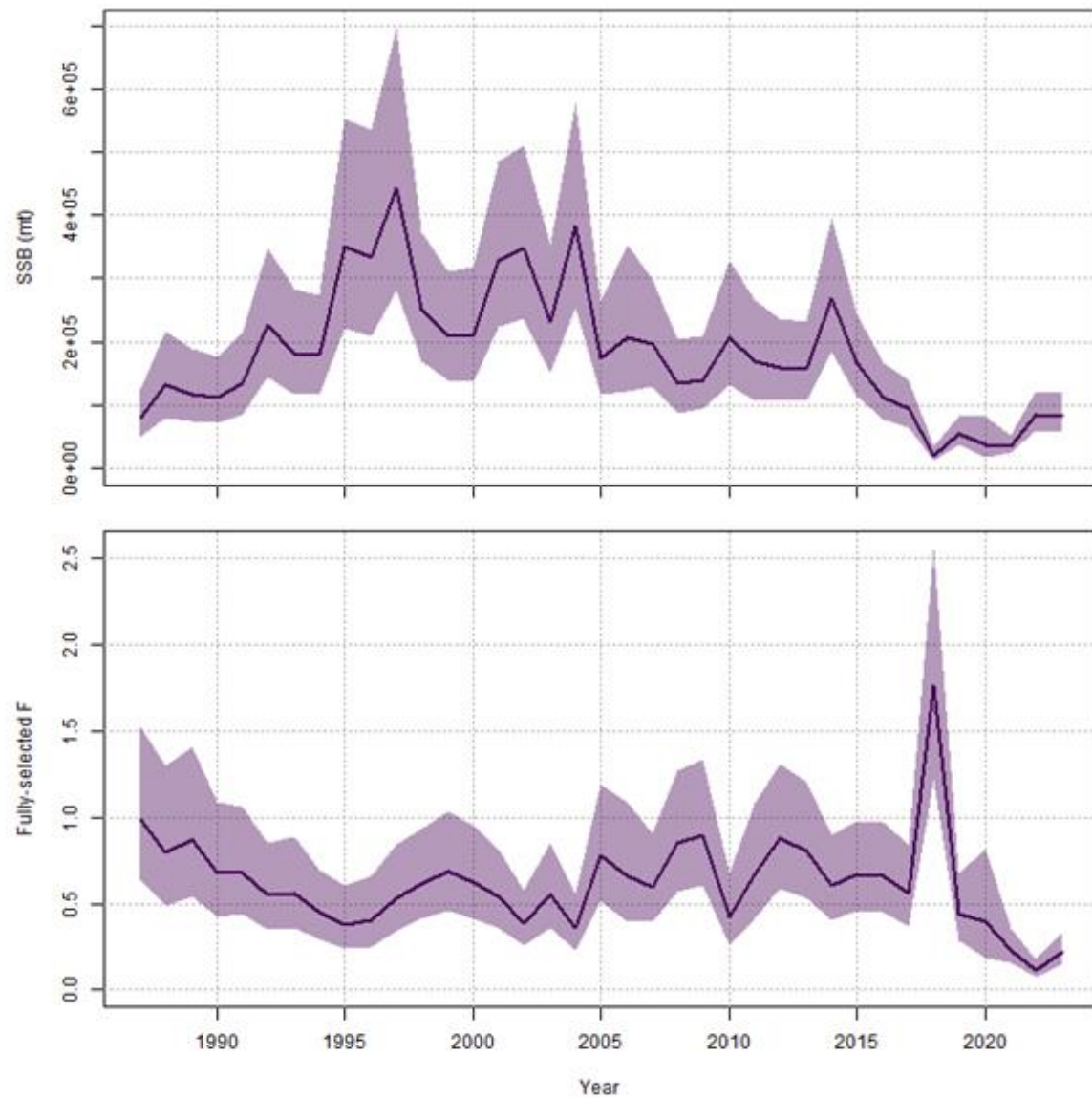


**Figure 40.** SSB (top) and F (bottom) by year with 95% confidence limits.

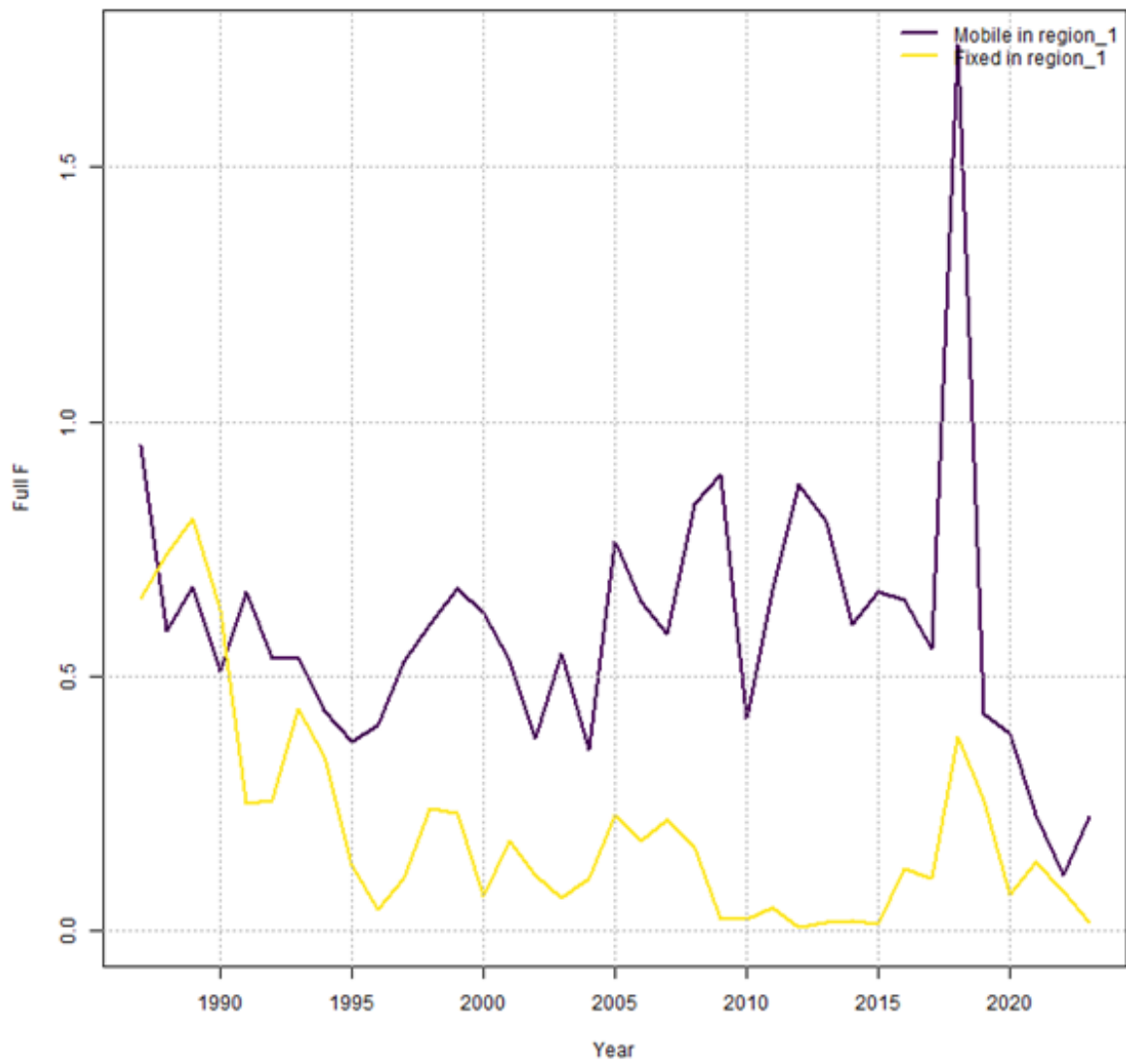


**Figure 41.** Fishing mortality by year by fleet. Purple Mobile, Yellow Fixed.

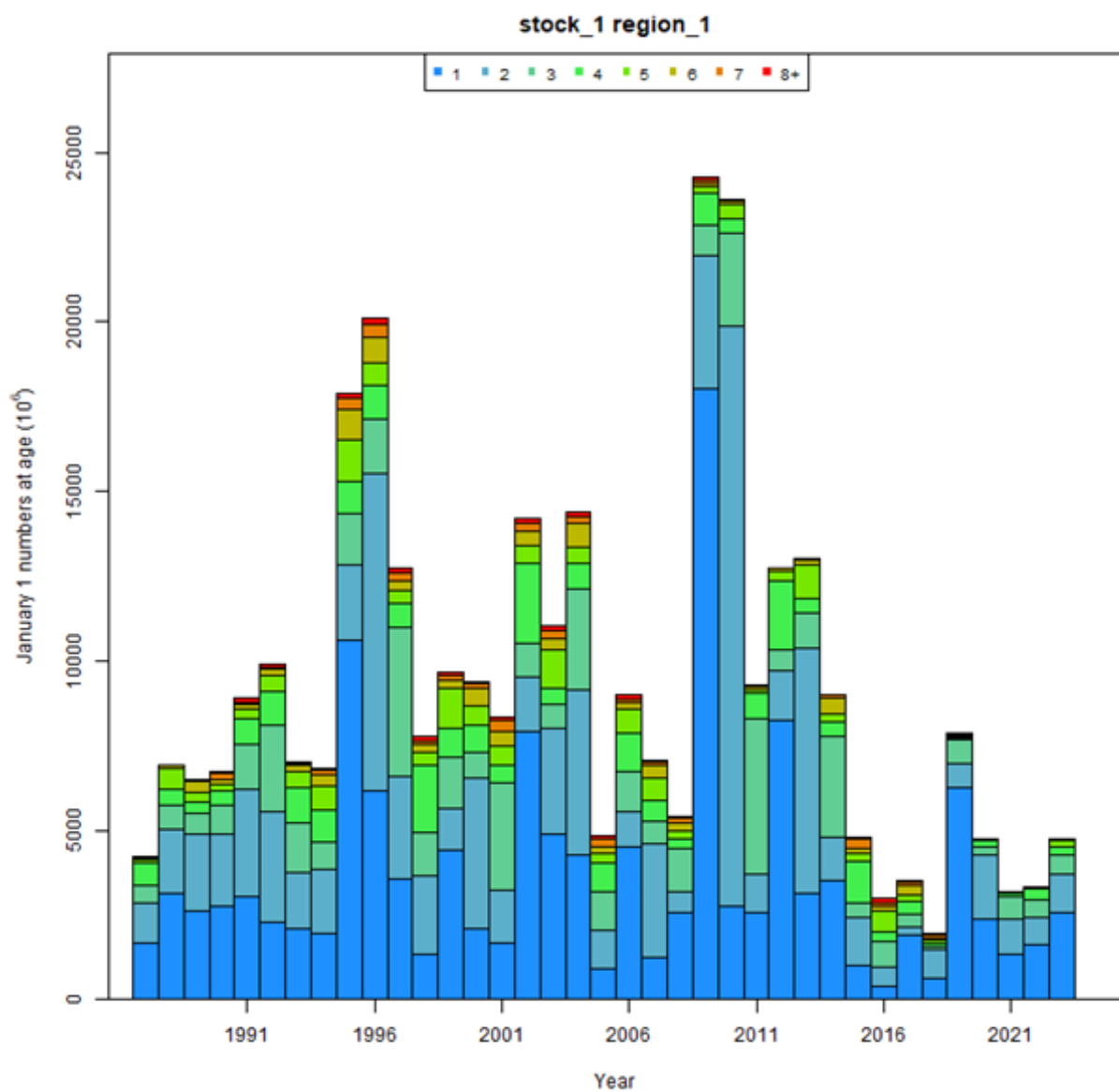


**Figure 42.** Estimated abundance by year and age.



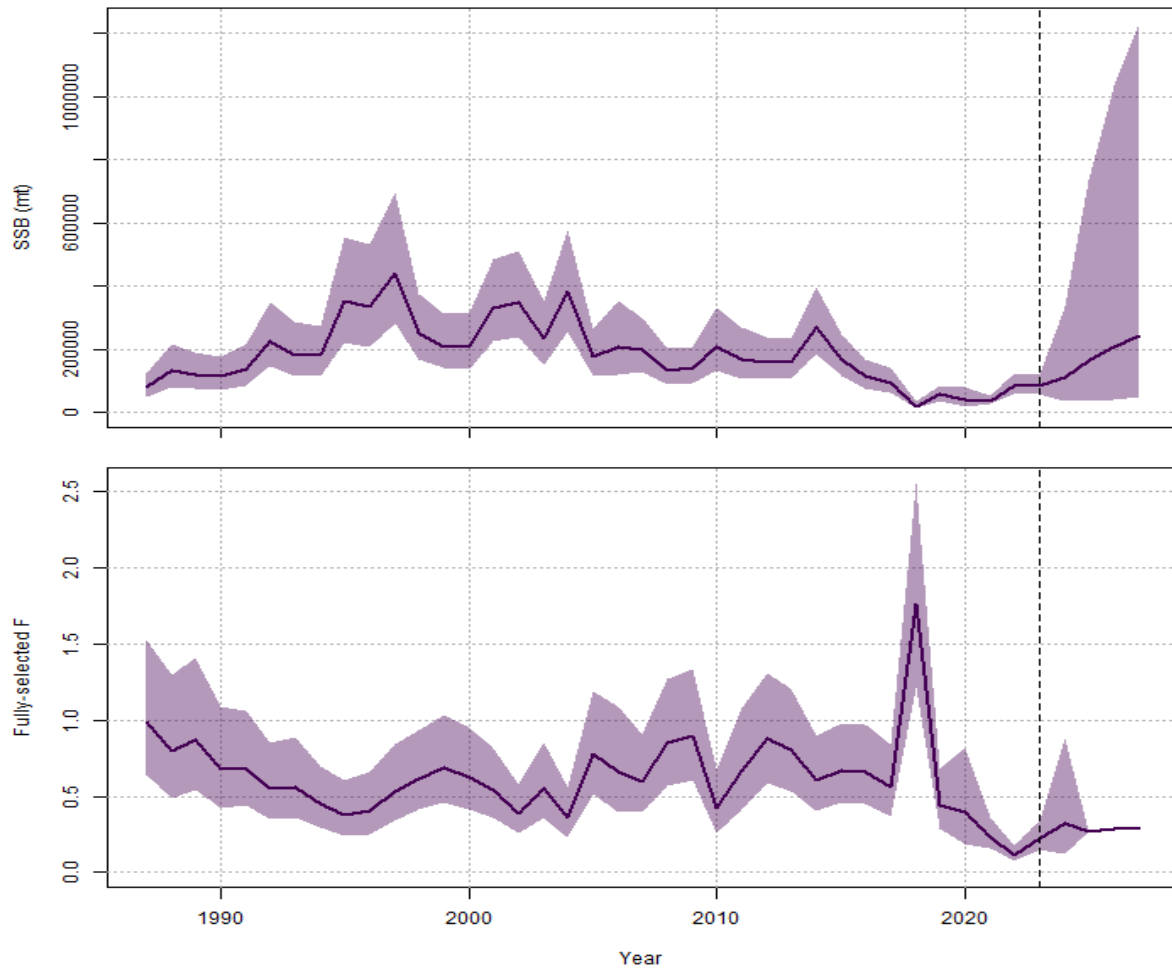


**Figure 43.** SSB (top) and F (bottom) across the years and in the projection. The dashed line indicates the start of the projection, while shading is the 95% confidence limit.

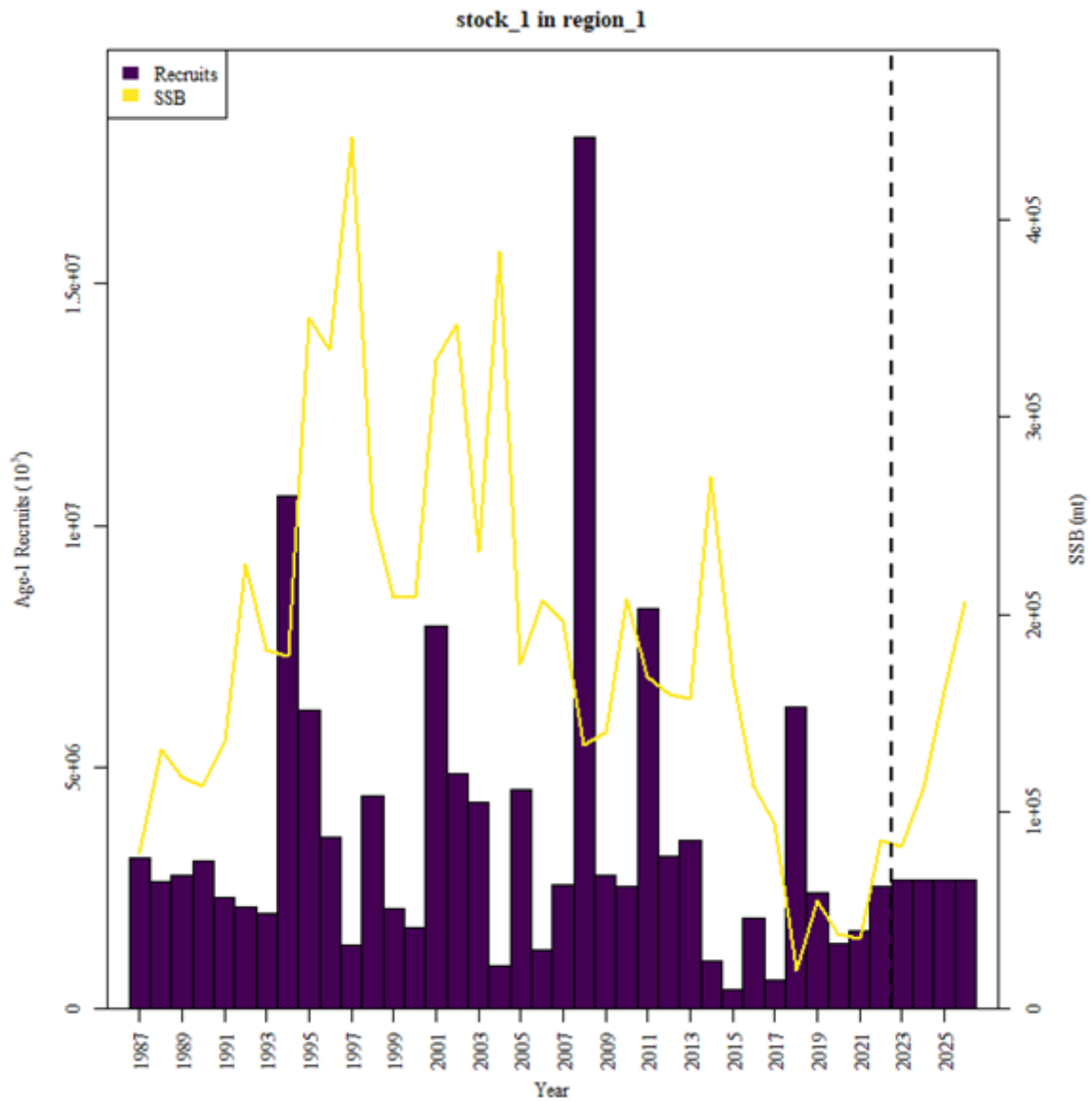


**Figure 44.** Recruitment (bars) and SSB (line) across years. The dash line is the start of the projection period.

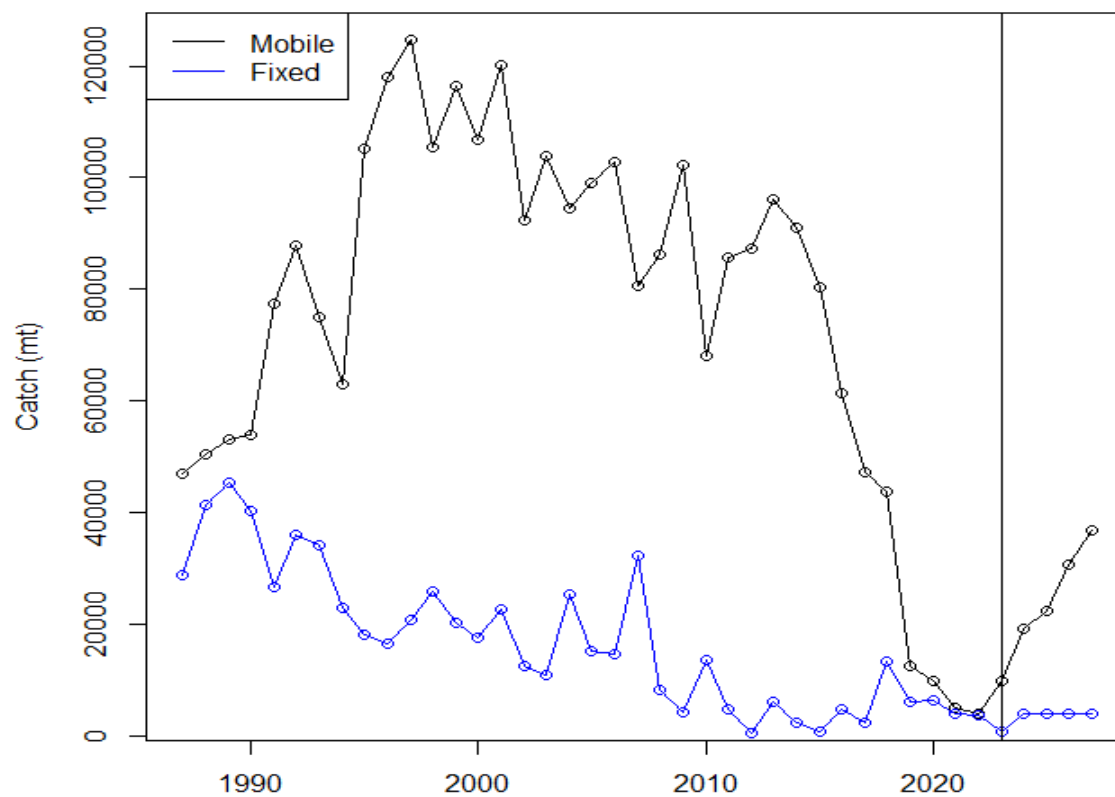


**Figure 45.** Historical and projected catch by fleet and year. Solid vertical line is the start of the projection period.

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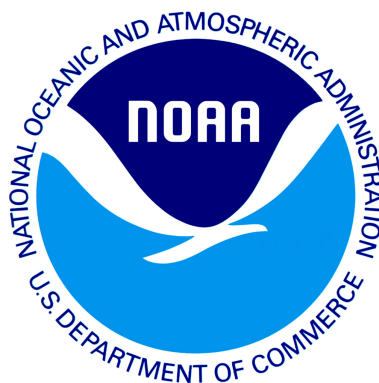
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*draft working paper for peer review only*



## Atlantic Herring

### *2026 Management Track Assessment Report*

U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Northeast Fisheries Science Center  
Woods Hole, Massachusetts

Compiled 06-05-2026

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*This assessment of the Atlantic Herring (*Clupea harengus*) stock is a management track assessment, and is the first application of the WHAM assessment platform following the 2025 research track assessment (NEFSC 2025). The last management track assessment was in 2024 and was conducted using the ASAP model. Based on that assessment, the stock was overfished but overfishing was not occurring. This assessment updated fishery catch data, survey indices, life history parameters (e.g., weights-at-age), and the WHAM assessment model and reference points (BRPs) through 2025. The change in assessment platforms from the 2024 management track makes comparisons among the assessments inappropriate. Several relatively minor changes have been made since the research track. Namely, a revised Canadian catch time series was used, a different approach was used for input effective sample sizes, and spawning stock biomass weight-at-age values were corrected.*

**State of Stock:** Based on this management track assessment, the Atlantic Herring stock is overfished and overfishing is not occurring (Figures 1-2). Retrospective adjustments were not necessary ( $SSB$  Mohn's  $\rho = 0.22$  and  $F$  Mohn's  $\rho = -0.04$ ). Spawning stock biomass ( $SSB$ ) in 2025 was estimated to be 35,258 (mt) which is 19% of the biomass target ( $SSB_{MSY}$  proxy = 188,214; Figure 1). The 2025 average, mobile fleet, fishing mortality for ages 7-8 (fully selected) was estimated to be 0.121 which is 44% of the overfishing threshold proxy ( $F_{MSY}$  proxy = 0.272; Figure 2).

Table 1: Catch and status table for Atlantic Herring. All weights are in mt, recruitment is in 000s, and  $\bar{F}_{7-8}$  is the average, mobile fleet, fishing mortality on ages 7 to 8, which are fully selected. Model results are from the current WHAM assessment and no adjustment for retrospective pattern was necessary.

|                        | 2018    | 2019      | 2020      | 2021    | 2022    | 2023    | 2024    | 2025      |
|------------------------|---------|-----------|-----------|---------|---------|---------|---------|-----------|
| <i>Data</i>            |         |           |           |         |         |         |         |           |
| US Catch               | 45,527  | 12,792    | 9,864     | 5,210   | 4,239   | 10,165  | 10,447  | 3,265     |
| Canadian Catch         | 13,426  | 6,496     | 6,965     | 4,877   | 4,347   | 1,960   | 2,965   | 3,884     |
| Total Catch            | 58,953  | 19,289    | 16,829    | 10,087  | 8,586   | 12,125  | 13,412  | 7,149     |
| <i>Model Results</i>   |         |           |           |         |         |         |         |           |
| Spawning Stock Biomass | 21,075  | 56,484    | 36,912    | 36,983  | 85,973  | 79,843  | 47,877  | 35,258    |
| $\bar{F}_{7-8}$        | 1.656   | 0.4       | 0.445     | 0.199   | 0.109   | 0.222   | 0.315   | 0.121     |
| recruits (age1)        | 559,391 | 4,457,469 | 2,278,256 | 799,145 | 706,515 | 743,734 | 456,155 | 1,966,904 |

Table 2: Reference points from the 2024 ASAP assessment and the current WHAM assessment are incomparable and are provided for information only. A fleet specific, mobile fleet  $F_{40\%}$  proxy was used for the overfishing threshold, and the biomass proxy reference point was estimated using the mean of the recruitment process. 90% CI were reported in parentheses.

|                         | 2024                            | 2026                        |
|-------------------------|---------------------------------|-----------------------------|
| $F_{MSY}$ proxy         | 0.45                            | 0.272                       |
| $SSB_{MSY}$ (mt)        | 186,367 (95,900 - 340,000)      | 188,214 (123,672 - 286,439) |
| MSY mt                  | 78,710 (45,000 - 128,800)       | 55,211 (35,747 - 85,273)    |
| Median recruits (age 1) | 2,493,500 (485,400 - 9,107,300) | 2,324,046                   |
| <i>Overfishing</i>      | No                              | No                          |
| <i>Overfished</i>       | Yes                             | Yes                         |

**Projections:** The projection results included here should be considered preliminary and subject to change based on future assessment and management decisions. This example projection applied the harvest control rule described in Amendment 8 of the hering Fishery Management Plan to the mobile fleet. The fixed gear catches are assumed constant during the projection period and equaled 5,283 mt. This fixed gear catch equals the sum of the ten year (2016-2025) averages of the Canadian (5,130 mt) and US (152 mt) fixed gear catches. The US fixed gear

catches are those from stop seines, weirs, and pound nets. The reported  $\bar{F}_{7-8}$  are those for the mobile fleet. Projected recruitment continued the independent and identically distributed process estimated by WHAM. NAA random effects did not persist into the projection period.

Table 3: Projection results.

| Year | Catch mt | SSB (mt) | $\bar{F}_{7-8}$ |
|------|----------|----------|-----------------|
| 2026 | 13,165   | 26,102   | 0.383           |

| Year | Catch mt | SSB (mt) | $\bar{F}_{7-8}$ |
|------|----------|----------|-----------------|
| 2027 | 6,222    | 77,841   | 0.021           |
| 2028 | 18,297   | 140,644  | 0.171           |
| 2029 | 27,637   | 184,357  | 0.218           |
| 2030 | 32,854   | 214,543  | 0.218           |
| 2031 | 38,169   | 235,978  | 0.218           |

### Special Comments:

- What are the most important sources of uncertainty in this stock assessment? Explain, and describe qualitatively how they affect the assessment results (such as estimates of biomass,  $F$ , recruitment, and population projections).

*A definitive explanation for the continued poor recruitment has not been identified. While identifying a causal mechanism for poor recruitment would be immensely beneficial, finding explanations for patterns in recruitment have been elusive in fisheries science for decades. The research track assessment explored several hypotheses to explain poor recruitment but no definitive answer was reached. The numbers-at-age random effects in this assessment also imply that abundance of older herring is declining at rates faster than fishing and natural mortality alone would suggest. Like recruitment, no definitive explanation is available. Another uncertainty in this assessment is natural mortality. In this assessment, natural mortality was assumed constant among ages and years. The research track assessment explored several options for time- and age-varying natural mortality, but available data did not support such a change. Stock structure, particularly mixing with Nova Scotian or Bay of Fundy herring, is also an uncertainty, but data to inform migration and mixing rates are unavailable.*

- Does this assessment model have a retrospective pattern? If so, is the pattern minor, or major? (A major retrospective pattern occurs when the adjusted SSB or  $\bar{F}_{7-8}$  lies outside of the approximate joint confidence region for SSB and  $\bar{F}_{7-8}$ ).

*This assessment model had a retrospective pattern that could be classified as minor and no adjustments were required.*

- Based on this stock assessment, are population projections well determined or uncertain? If this stock is in a rebuilding plan, how do the projections compare to the rebuilding schedule?

*The projections are uncertain, especially in regards to recruitment and the treatment of numbers-at-age random effects. The data do not currently support autocorrelated recruitment even though recent recruitment has been consistently poor. The projections effectively assume an immediate return to mean recruitment, and if this is not realized, the projections are likely to be overly optimistic. Likewise, the data do not support temporal autocorrelation in the numbers-at-age random effects either, but there seems to be a long-term, negative trend. Numbers-at-age random effects do not continue into the projection period, but if they remain negative in the future, the projections will be overly optimistic. The projections updated for this management track confirm that the projections done for the research track were overly optimistic. The stock is currently in a rebuilding schedule, but that schedule was developed using previous assessments completed in the ASAP model. The methods for reference points and projections in the WHAM model are not comparable to those from ASAP, making a comparison of these projections to the existing rebuilding plan inappropriate.*

- Describe any changes that were made to the current stock assessment, beyond incorporating additional years of data and the effect these changes had on the assessment and stock status.

*Since the previous management track, this assessment transitioned from ASAP to WHAM. While WHAM differs in many ways from ASAP, the general conclusions about reduced productivity (e.g., poor recruitment) and stock status were unaffected. In addition to a switch to WHAM, a revised Canadian catch time series was used, a different approach was used for input effective sample sizes, and spawning stock biomass weight-at-age values were corrected. None of these changes had significant impacts on estimated quantities or stock status.*

- If the stock status has changed a lot since the previous assessment, explain why this occurred.

*The stock status has not changed a lot since the previous assessment.*

- Provide qualitative statements describing the condition of the stock that relate to stock status.

*Continued poor recruitment and negative numbers-at-age random effects (e.g., poor survival) in recent years is the main issue driving stock status. Management decisions that reduced US catches had the effect of avoiding overfishing.*

- Indicate what data or studies are currently lacking and which would be needed most to improve this stock assessment in the future.

*The research track assessment explored several explanations for poor recruitment, and while no definitive answer was reached, continued consideration of various hypotheses (e.g., haddock predation on herring eggs, copepod abundance, temperature) is warranted. Terminal year recruitment estimates are likely to be over estimated without an index of age-1 abundance (or under estimated should recruitment be above average). An age-1 index based on bird diet has been developed, but several challenges remain before it can be included. State (ME/NH, MA) surveys catch age-1 herring, and combining those surveys with NMFS bottom trawl data may be worthwhile. Work to improve projections and address consistently overly optimistic results would be generally beneficial. In particular, studies that quantify projection accuracy and how to treat recruitment and NAA random effects in the projection period would be highly informative.*

- Are there other important issues?

*No other important issues were identified.*

## References:

NEFSC (Northeast Fisheries Science Center) . 2025. Atlantic herring research track assessment report. US Dept. of Commerce, NEFSC Tech Memo. 335; 91p.

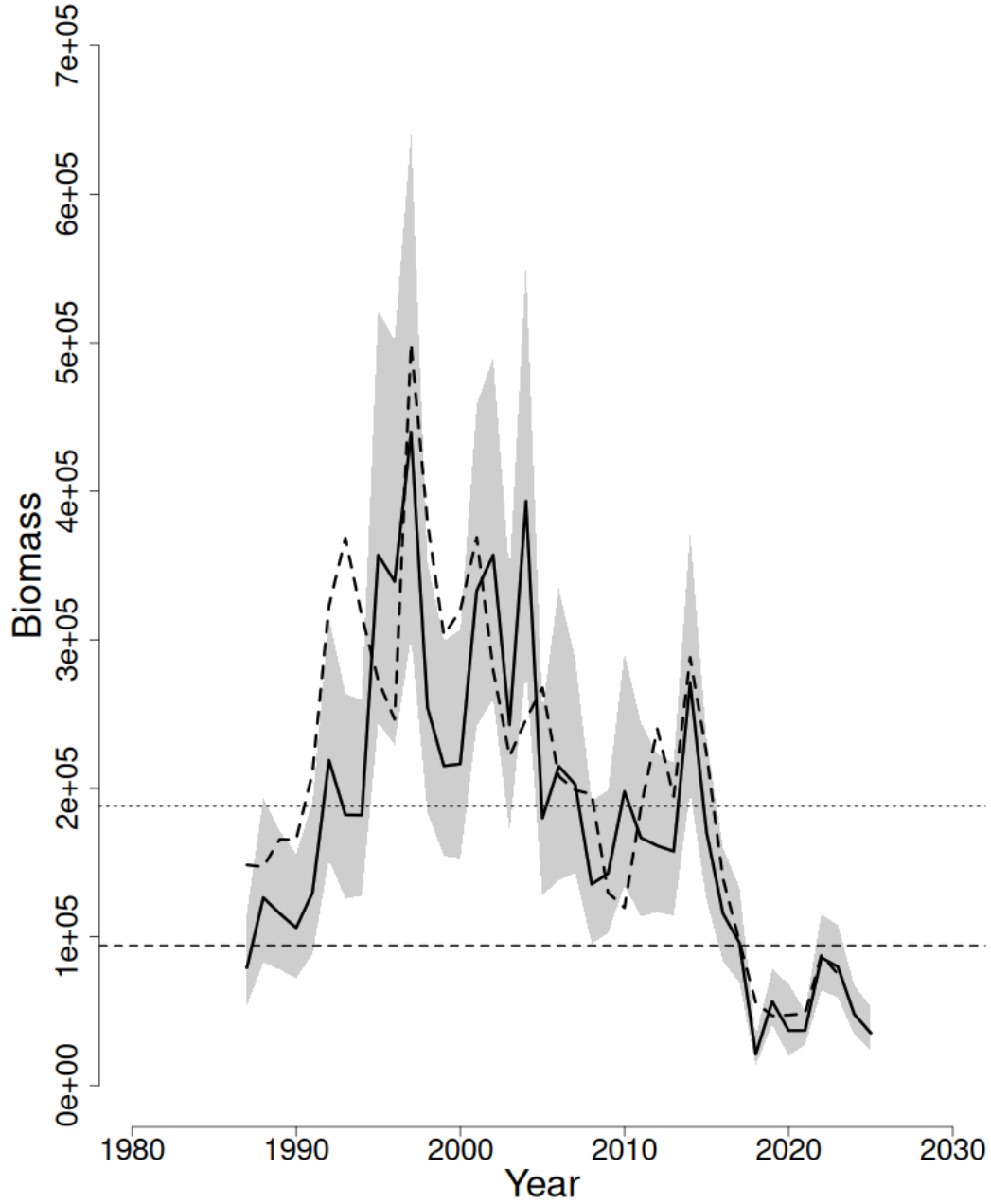


Figure 1: Trends in spawning stock biomass of Atlantic Herring between 1987 and 2025 from the current (solid line) and previous (dashed line) assessment and the corresponding  $SSB_{Threshold}$  ( $\frac{1}{2} SSB_{MSY}$  proxy; horizontal dashed line) as well as  $SSB_{Target}$  ( $SSB_{MSY}$  proxy; horizontal dotted line) based on the 2026 assessment. The approximate 90% confidence intervals are shown.

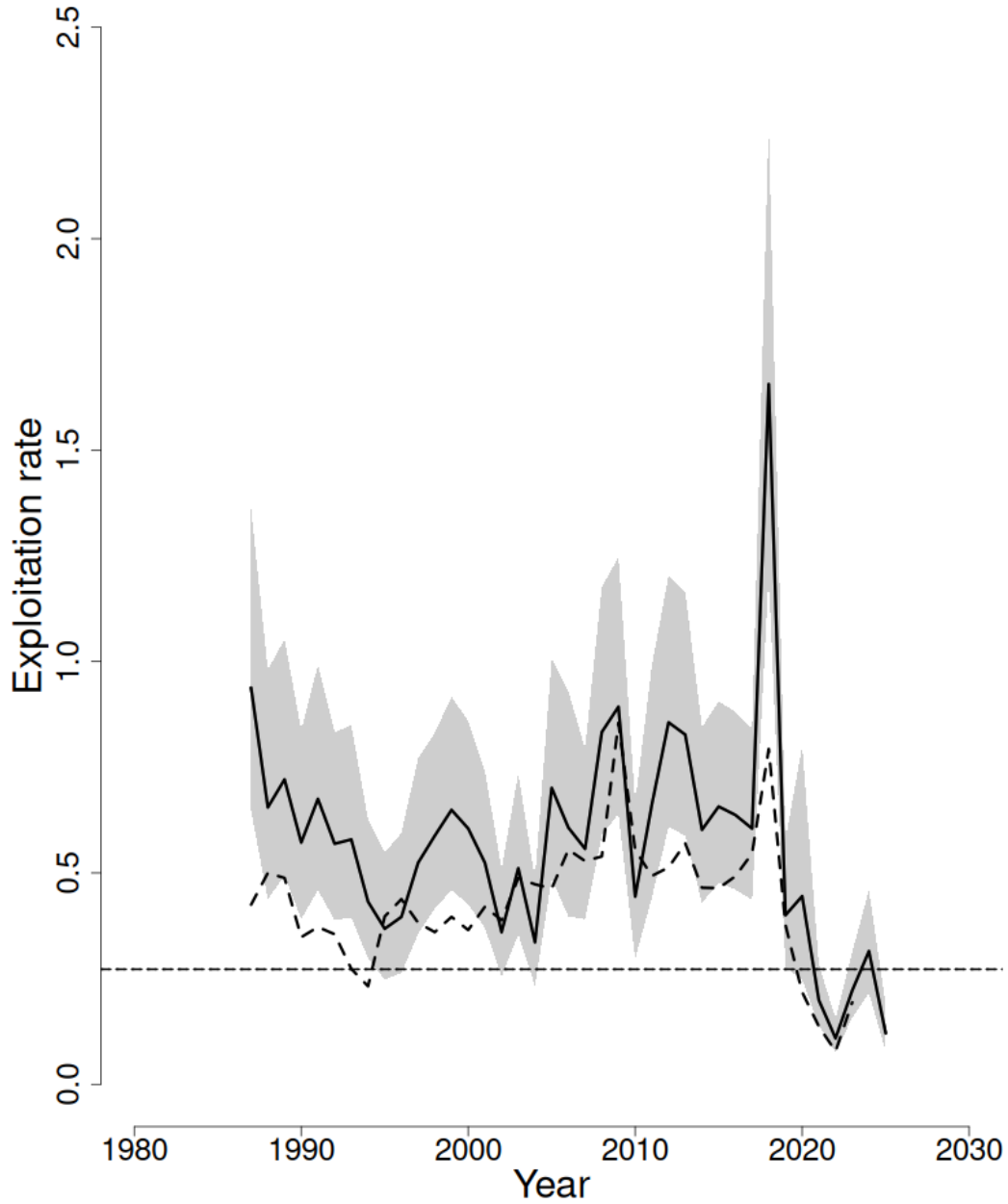


Figure 2: Trends in the average fishing mortality rate for ages 7-8, which are fully selected by the mobile fleet ( $\bar{F}_{7-8}$ ), between 1987 and 2025 from the current (solid line) and previous (dashed line) assessment and the corresponding  $F_{Threshold}$  ( $F_{MSY}$  proxy=0.272; horizontal dashed line). The approximate 90% confidence intervals are shown.

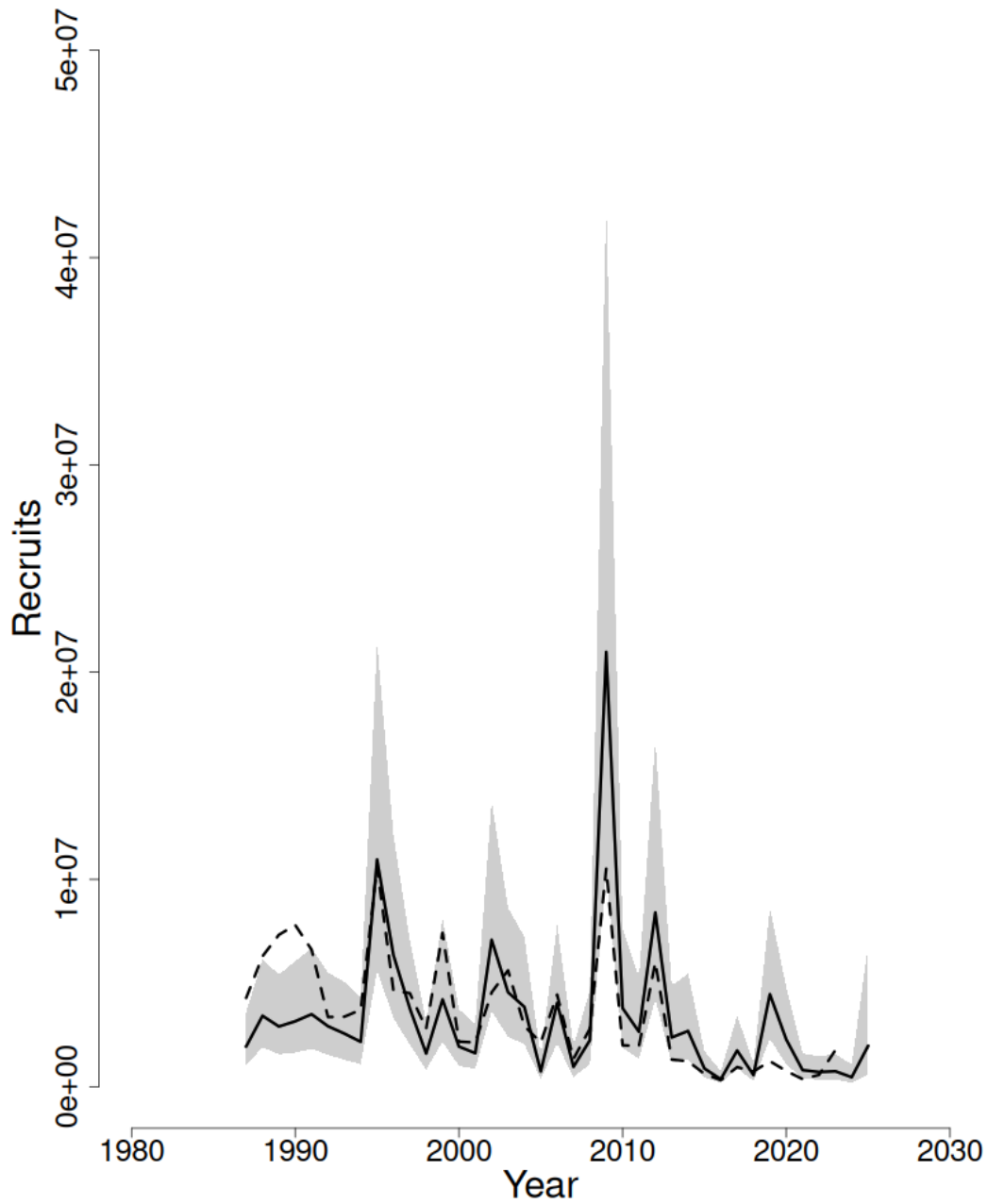


Figure 3: Trends in recruits (age-1)(000s) of Atlantic Herring between 1987 and 2025 from the current (solid line) and previous (dashed line) assessment. The approximate 90% confidence intervals are shown.

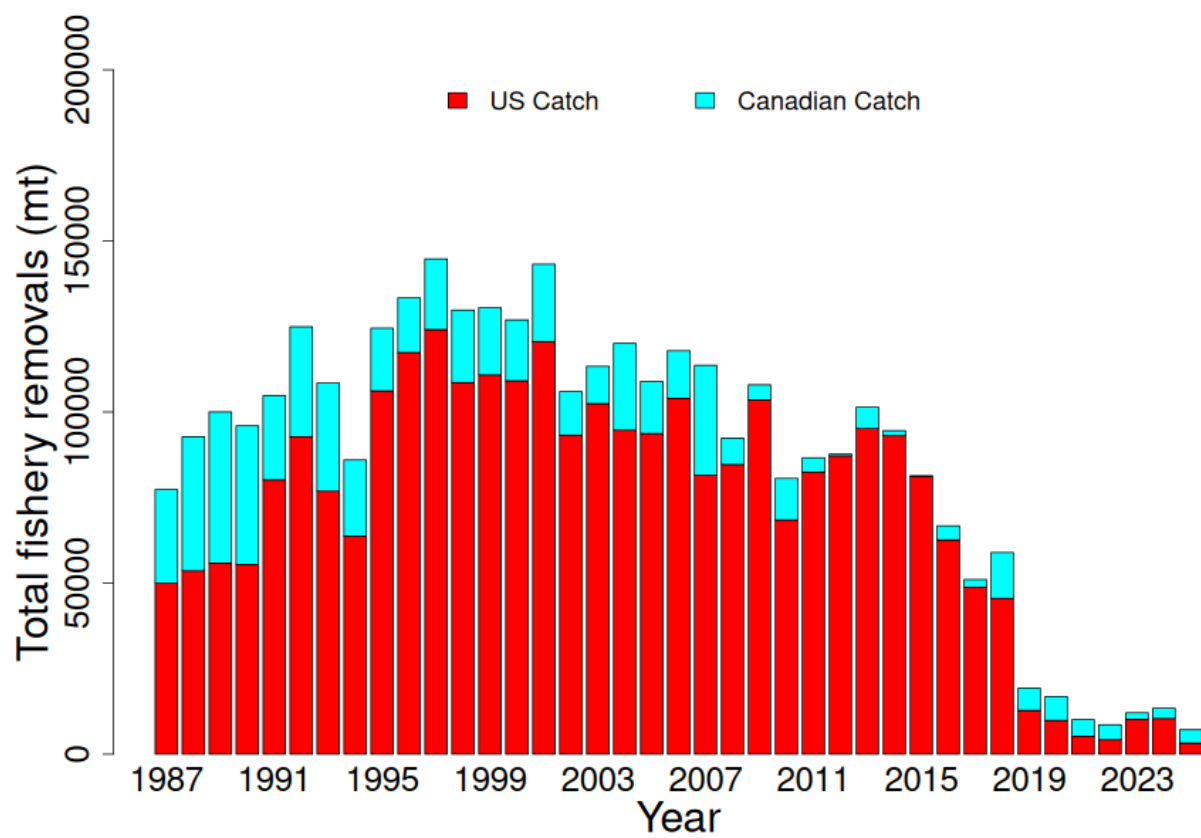


Figure 4: Total catch of Atlantic Herring between 1987 and 2025 by US and Canadian fleets.

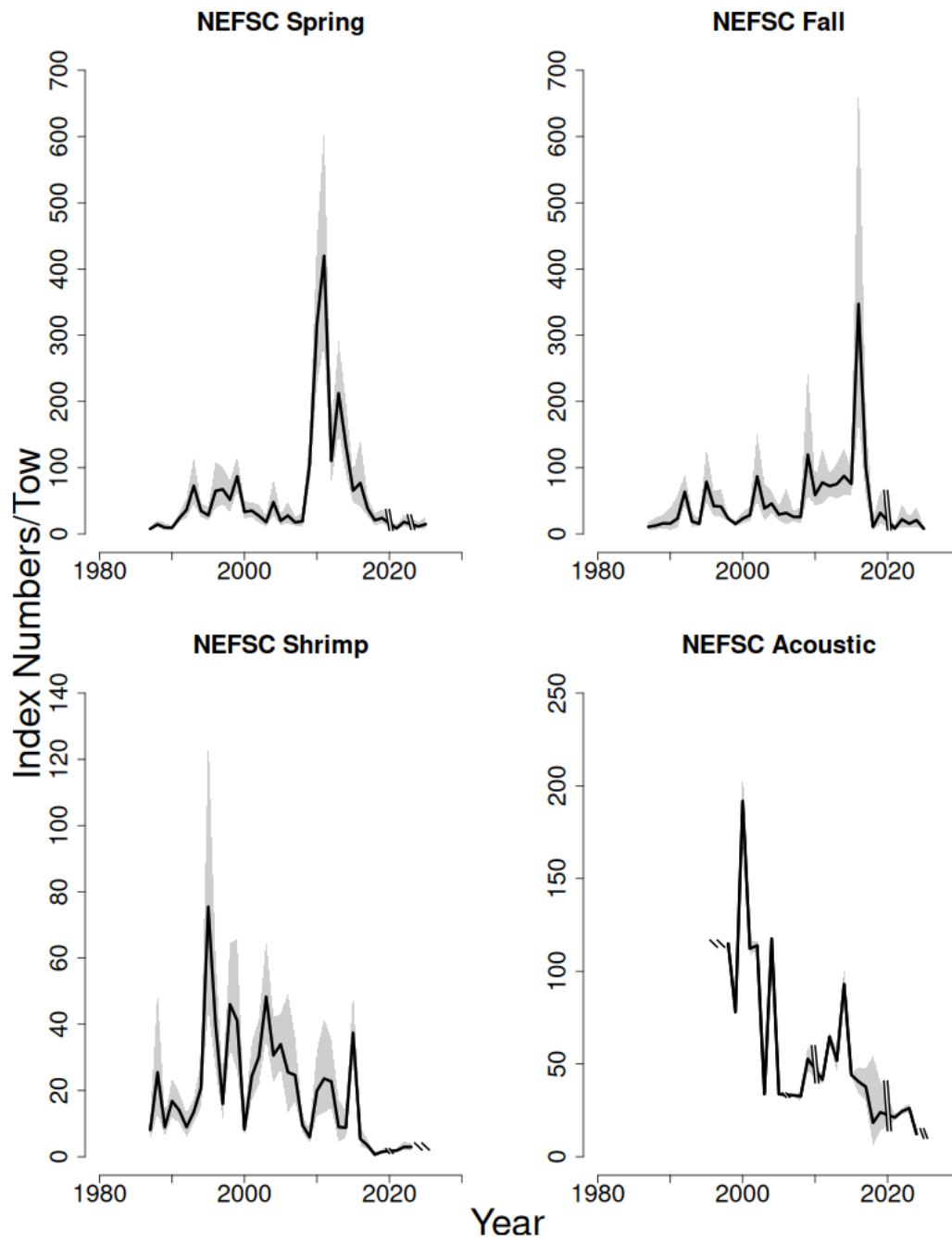


Figure 5: Indices of abundance for Atlantic Herring between 1987 and 2025 for the Northeast Fisheries Science Center (NEFSC) spring, fall, and shrimp bottom trawl surveys. The NEFSC acoustic index is collected during the fall bottom trawl survey and is in units of acoustic backscatter, not absolute numbers. The approximate 90% confidence intervals are shown.



# June 2026 Management Track Peer Review Panel Report

Richard Merrick (Chair)<sup>1</sup>, Tim Barrett<sup>2</sup>, Lisa Kerr<sup>3</sup>, Holly Kindsvater<sup>4</sup>

<sup>1</sup>NOAA Fisheries (retired), <sup>2</sup>Fisheries and Oceans Canada, <sup>3</sup>University of Maine,  
<sup>4</sup>Virginia Polytechnic Institute and State University

## Executive Summary

The June 2026 Management Track (MT) peer review Panel (Panel) reviewed two stock assessments: Georges Bank haddock (*Melanogrammus aeglefinus*) and Atlantic herring (*Clupea harengus*). The Panel met in person in the USGS' Woods Hole Coastal and Marine Science Center in Falmouth, MA with hybrid capabilities on June 29-30, 2026. The Panel was to determine whether each completed MT Assessment was technically sufficient to a) evaluate stock status, b) provide scientific catch advice, and c) successfully address the assessment Terms of Reference (Appendix A).

Attendance at the meeting is provided in Appendix B, and the agenda for the peer review is available in Appendix C. An explanation of the major acronyms used in the report is provided in Appendix D.

Table 1 presents a list of the stocks, name of the assessment lead, and conclusions about stock status. Table 2 presents a summary of recommendations by stock made by the Panel.

We thank Kristan Blackhart (Population Dynamics Branch Chief) and Brian Hopper (Assessment Process Lead, Resource Evaluation and Assessment Division) for their support during the meeting and to Liz Brooks and Jon Deroba of the staff of the Population Dynamics Branch for the open and collaborative spirit with which they engaged the Panel.

Our thanks also extend to numerous NEFSC staff for taking extensive notes during the meeting, and who, along with Jamie Cournane and Robin Frede of the New England Fishery Management Council, provided context and additional background.

## Georges Bank Haddock

***The Panel concluded that the 2026 assessment update for Georges Bank haddock is technically sufficient to evaluate stock status and provide scientific advice and meets most of the Terms of Reference for the stock's assessment except for TORs 5 and 6 which were partially met. The assessment represents Best Scientific Information Available (BSIA) for this stock for management purposes.***

The 2026 assessment of the Georges Bank haddock (*Melanogrammus aeglefinus*) stock is an update of the 2024 management track assessment, which used the Woods Hole Assessment Model (WHAM) framework. Prior to the 2022 research track, the last benchmark for this stock was in 2008 (Brooks et al., 2008).

This assessment updates commercial fishery catch data, research survey indices of abundance, weights- and maturity-at-age, and the WHAM assessment model and reference points through 2025. Based on this assessment, the stock was not overfished and overfishing was not occurring.

Stock projections have been updated through 2031. However, the Panel found that the high uncertainty in the stock's terminal year abundance estimate and the moderately strong retrospective pattern suggest projections beyond one or two years should be considered to be highly uncertain. The Panel feels it is extremely risky to set catch advice that would lead to fishing down the 2020 year class and the 2021 year class without confirming another recruitment year.

## Atlantic Herring

***The Panel concluded that the 2026 assessment update for Atlantic herring is technically sufficient to evaluate stock status and provide scientific advice and meets most of the Terms of Reference for the stock's assessment except for TOR 5 which was partially met. The assessment represents Best Scientific Information Available (BSIA) for this stock for management purposes.***

This 2026 assessment of the Atlantic herring (*Clupea harengus*) stock is the first application of the WHAM assessment platform following the 2025 research track assessment (NEFSC 2025). The last management track assessment was in 2024 and was conducted using the ASAP model. Based on that assessment, the stock was overfished but overfishing was not occurring.

This assessment updated fishery catch data, survey indices, life history parameters (e.g., weights-at-age), and the WHAM assessment model and reference points (BRPs) through 2025. Stock projections have been updated through 2031.

The change in assessment platforms from the 2024 management track makes comparisons among the assessments inappropriate. Several relatively minor changes have been made since the research track. Namely, a revised Canadian catch time

series was used, a different approach was used for input effective sample sizes, and spawning stock biomass weight-at-age values were corrected. The Panel found that the inability to account for the annual variability and downward trend in the numbers-at-age random effect deviations in the projections undermined confidence in the model projections.

*Table 1. Stocks reviewed at June 2026 Management Track Assessment Peer Review meeting.*

| <b>Stock</b>         | <b>Assessment Lead</b> | <b>Peer Review Panel Conclusion on Stock Status</b>      |
|----------------------|------------------------|----------------------------------------------------------|
| Georges Bank haddock | Liz Brooks             | Stock is not overfished and overfishing is not occurring |
| Atlantic herring     | Jonathan Deroba        | Stock is overfished and overfishing is not occurring     |

*Table 2. Summary of Peer Review Panel recommendations by stock from June 2026 Track Assessment Peer Review meeting.*

| <b>Stock</b>         | <b>Peer Review Panel Recommendations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Georges Bank haddock | <ul style="list-style-type: none"> <li>• Evaluate how density dependence, environmental change and other factors produce changes in GB haddock indices used in the assessment</li> <li>• Evaluate the effect of decreasing WAA on selectivity-at-age</li> <li>• Continue investigating retrospective patterns and diagnostics in state-space models</li> <li>• Evaluate whether conditioning on the random effects is influencing the retro observed in self-tests</li> <li>• Evaluate factors that could provide for the stability of SSB estimates in the face of declining survey indices and primarily negative NAA random effect deviations in the last 5 years</li> <li>• Continue evaluation of appropriate methods for scaling recruitment in the calculation of reference points for this stock and development of dynamic BRPs</li> <li>• Continue to conduct studies to evaluate gutted:whole conversion factors and length-weight for commercial landings</li> <li>• Continue to characterize differences in the separate Georges Bank and eastern Georges Bank WHAM models</li> </ul> |

| Stock            | Peer Review Panel Recommendations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Atlantic herring | <ul style="list-style-type: none"> <li>● Conduct sensitivity analysis to evaluate how different CVs (and perhaps misreporting) of the Canadian weir catch influence model estimates</li> <li>● Develop estimates of the portion of catches in the fixed and mobile gears catches that come from US and Canadian stocks</li> <li>● Continue work on the development of the VAST model to integrate state and federal surveys particularly with respect to use of surveys that include information on age-1 fish (ME-NH survey)</li> <li>● Continue exploring use of the seabird diet data as an index of age-1 abundance</li> <li>● Continue exploration of survey data to determine whether Atlantic herring distribution has changed</li> <li>● Investigate the potential for autocorrelation in annual recruitment, as well as explore covariate(s) aliased in the NAA random effects and determine which is having the most effect on interannual patterns.</li> <li>● Continue exploration of recruitment stanzas underlying reference points for Atlantic herring</li> <li>● Reconsider the appropriateness of F40% for an F% more responsive to the changes in productivity that herring are experiencing.</li> <li>● Revisit decisions on random effects as additional years of data are added as model diagnostics may support alternative configurations as new information is added.</li> <li>● Review use of geometric mean recruitment of the full time series to inform projections, rather than more recent conditions.</li> </ul> |

# Georges Bank Haddock

## Summary

***The Panel concluded that the 2026 assessment update for Georges Bank haddock is technically sufficient to evaluate stock status and provide scientific advice and meets most of the Terms of Reference for the stock's assessment except for TORs 5 and 6 which were partially met. The assessment represents Best Scientific Information Available (BSIA) for this stock for management purposes.***

This 2026 assessment of the Georges Bank haddock (*Melanogrammus aeglefinus*) stock is an update of the 2024 management track assessment<sup>1</sup>, which used the Woods Hole Assessment Model (WHAM) framework. Prior to the 2021-22 research track, the last benchmark for this stock was in 2008 (Brooks et al., 2008)<sup>2</sup>. Based on the previous update assessment in 2024, the stock was not overfished and overfishing was not occurring.

This assessment updates commercial fishery catch data, research survey indices of abundance, weights- and maturity-at-age, and the WHAM assessment model and reference points through 2025. Stock projections have been updated through 2031.

### **TOR 1. Estimate catch from all sources including landings and discards.**

#### **This TOR was Met.**

US Commercial discards and landings (from CAMS), Canadian discards and landings, and the associated catch-at-age and weight-at-age (WAA) were all updated through 2025. There are striking patterns of decline in the catch WAA for this stock that warrant further examination to understand these patterns (see recommendations in TOR 2).

The Panel accepted these data as presented.

### **TOR 2. Evaluate indices used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.).**

#### **This TOR was Met.**

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<sup>1</sup> NEFSC. 2024. Georges Bank haddock management track assessment report. Unpubl. rpt; 9 pp. Avail, NEFSC, 166 Water Street, Woods Hole, MA 02540

<sup>2</sup> Brooks, E.N, M.L. Traver, S.J. Sutherland, L. Van Eeckhaute, and L. Col. 2008. In. Northeast Fisheries Science Center. 2008. Assessment of 19 Northeast Groundfish Stocks through 2007: Report of the 3rd Groundfish Assessment Review Meeting (GARM III), Northeast Fisheries Science Center, Woods Hole, Massachusetts, August 4-8, 2008. US Dep Commer, NOAA Fisheries, Northeast Fish Sci Cent Ref Doc. 08-15; 884 p + xvii. <http://www.nefsc.noaa.gov/publications/crd/crd0815/>

Three surveys inform this assessment (NEFSC fall bottom trawl survey (BTS), NEFSC spring BTS, and the DFO BTS). As with the MT24 assessment for the stock, the Spring 2023 BTS was excluded because tows were only conducted in daylight and two strata were not sampled (both of which would bias the results).

Similarly, the appropriateness of including the fall 2025 BTS in the assessment was investigated. Survey sampling was considerably lower than previous years and extended much later in the year. Stratum contributions were also very different compared to recent years and the estimated CV is likely overly precise because some strata had a single tow and a variance could not be calculated for these strata. However, environmental conditions, and both the proportion and location of positive tows were similar to recent survey years, and dropping the terminal year survey could increase uncertainty and model instability. A robust array of analyses and diagnostics were examined for models that included or excluded the Fall BTS 2025 index value. Based on the model diagnostics (CVs, residuals, retrospective pattern, and self-tests) the Analyst recommended the survey be excluded from the assessment. The Panel concluded that this was a reasonable decision.

The Panel recommended additional research on density dependent growth for this stock. There are striking patterns of declining weight-at-age (WAA) for this stock in recent decades that do not appear solely explained by density, as spawning stock biomass (SSB) was high in the last decade, but the decline in WAA began well before this peak in biomass. In addition, the relative stability of growth at early periods of high abundance suggests that there is some interaction between density dependent and independent drivers (e.g., changing ocean conditions) in the recent period. Further research to understand drivers of WAA patterns, and relationship with size-at-age, maturity-at-age, and recruitment is recommended.

Time-varying selectivity patterns may interact with temporal changes in WAA. Additional research is needed to better characterize selectivity across seasons in the bottom trawl survey, as well as age-specific selectivity patterns, to improve understanding of these interactions and their implications for stock assessment.

The Panel made two Research Recommendations:

- Evaluate how density dependence, environmental change and other factors produce changes (as aliased through model parameters/inputs) in the GB haddock fishery independent data that informs the assessment (e.g., indices of relative abundance, recruitment, WAA, age-length data, etc.).
- Evaluate the effect of decreasing WAA on selectivity-at-age.

**TOR 3. Estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) as possible (depending on the assessment method) for the time series using the approved assessment method and estimate their uncertainty. Include retrospective analyses if possible (both historical and within-model) to allow a comparison with previous assessment results and projections, and to examine model fit.**

**a. Include bridge runs to sequentially document each change from the previously accepted model to the updated model proposed for this peer review.**

**b. Prepare a backup assessment approach that would serve as an alternative for providing scientific advice to management if the analytical assessment were to not pass review**

### **This TOR was Met.**

The WHAM model used for MT26 was the same as was used for MT24: age composition likelihood was treated as logistic normal, survey years with 0 catch were treated as missing, natural mortality was set to 0.2 for all years/ages, and process error transitions in NAA were modeled as autocorrelated by age and year (2DAR1). Therefore, no bridge run was necessary. As approved in the 2022 Research Track assessment for the stock, the backup plan is an empirical, index-based approach broadly known as *lsmooth*.

This TOR was the subject of the majority of the discussion by the Panel.

The Panel was concerned that the retrospective pattern in this assessment has strengthened over time, and although the Analyst suggested no retrospective adjustment is currently required, the Mohn's rho-adjusted point estimate is approaching the limit of the model's unadjusted 90% confidence interval. This suggests a strong and persistent retrospective pattern that may warrant correction in future assessments if the trend continues. The positive Mohn's rho indicates a tendency for the model to overestimate SSB and underestimate fishing mortality (F) in terminal years.

In addition, the model incorporates random effects on numbers-at-age (NAA), which can absorb process error. These random effects are predominantly negative in recent years, suggesting systematic adjustments to the model fit at the end of the time series. Further investigation is needed to evaluate the interaction between the NAA random effects and the retrospective pattern to determine how these processes jointly influence model scaling and terminal-year estimates.

The Panel was also concerned about the biological reality of the stability of SSB over the past 5 years while the survey indices, the NAA deviations (downward trends in 2-4 year olds) in terminal years continue to decline and the reliance on “paper fish” in out years.

Additionally, the Panel was interested in whether the difficulty of sampling smaller year classes when there are bumper year classes affects the model, and how changing WAA affects fleet selectivity patterns at age in the model.

Based on this discussion the Panel had several Research Recommendations:

- Continue investigating retrospective patterns and diagnostics in state-space models (e.g., consider the utility of tests other than the 90% CI for the necessity of Mohn's rho adjustments to SSB so as to balance impacts of changes in magnitude vs. statistical precision).
- Evaluate whether conditioning on the random effects is influencing the retro observed in self-tests (e.g., if there is a misspecification in the fleet selectivity then this could be carried forward to the self-tests resulting in the observed retro in the self-tests). An alternative structure of self-tests that doesn't condition on the primary sources of process variation (recruitment deviations, age-2+ NAA deviations, and fleet selectivity) could allow for more robust testing of the hypothesis that the model is unstable due to large year classes.
- Evaluate factors that could provide for the stability of SSB estimates in the face of the last 5 years of declining survey indices and NAA deviations. The NAA deviations act as "sponges" soaking up unaccounted for observation or process error (e.g., survivorship, selectivity, migration, unaccounted for catch). Continued work to diagnose the most likely drivers of patterns in NAA deviations could inform more robust projections.

**TOR 4. Re-estimate or update the BRP's as defined by the management track level and recommend stock status. Also, provide qualitative descriptions of stock status based on simple indicators/metrics (e.g., age- and size-structure, temporal trends in population size or recruitment indices, etc.).**

**This TOR was Met.**

Retrospective adjustments were not made to the model results. Spawning stock biomass (SSB) in 2025 was estimated to be 29,037 mt which is 109% of the biomass target (SSB<sub>MSY</sub> proxy = 26,615). The 2025 average fishing mortality on ages 5-7 was estimated to be 0.21 which is 78% of the overfishing threshold proxy (F<sub>MSY</sub> proxy = 0.27). The F<sub>MSY</sub> proxy is expressed as the average F on ages 5-7.

The Panel accepted this TOR noting that the choice of median recruitment was highly influential on the reference points. The Panel concurred with the Analyst's stock status determination. Nonetheless the Panel provides the following Research Recommendation:

- Continued evaluation of appropriate methods for scaling recruitment in the calculation of reference points for this stock and development of dynamic biological reference points.

The Panel suggests the Analyst provide the dynamic reference points from WHAM for this stock. These would be informative given the substantial changes in WAA and selectivity for this stock.

**Based on this Management Track Assessment, the recommended stock status is not overfished and overfishing is not occurring.**



## **TOR 5. Conduct short-term stock projections when appropriate.**

**This TOR was Partially Met because projections beyond 2028 had such high uncertainty they were not deemed to be useful for management.**

Short-term projections were conducted in WHAM, which propagates uncertainty in the processes of recruitment and transitions between numbers-at-age. For projection specifications, the NEFMC's Plan Development Team supplied an estimate of total catch for 2026, and fishing mortality was set equal to  $F_{40\%SPR}$  for 2027-2031. Annual fishery selectivity and maturity were fixed at a recent 2 year average (2024-2025 values), following analyses and decisions made at the 2021 research track. Weights-at-age for catch and SSB that were predicted from a Gaussian Markov Random Field (GMRF) model, rather than a recent 2 year average, were preferred by the peer reviewers at the 2022 and 2024 management track assessment and were used in the projections submitted here for peer review.

The Panel was concerned about the high uncertainty in the terminal year of the assessment, the retrospective pattern for SSB and recruitment, and that years 3 and beyond relied largely on "paper fish". **As a result, the Panel concluded that while projections for 2027-28 were reasonable, projections beyond this had such high uncertainty as to not be useful for management.**

## **TOR 6. Respond to any review Panel comments or SSC concerns from the most recent prior research or management track assessment.**

**This TOR was Met however the Panel was concerned there was no response to additional Research Recommendations from the 2024 MT and SSC**

The single previous research recommendation discussed was for studies to be conducted evaluating the gutted:whole fish conversion factors and length-weight ratio for commercial landings. A collaborative project between the NEFSC and GARFO was recently funded and is ongoing. Nearly 2 years of data have been collected, but some temporal/spatial gaps remain.

The Panel was concerned that all Research Recommendations from the SSC (4 RR) and 2024 MT peer review (3 RR) were not tabled in this review. While we are grateful that the Analyst provided responses to the SSC RR, we **suggest** that all future MT peer reviews address a complete list of recent Research Recommendations during the meeting.

The Analyst proposed that research continue investigating retrospective patterns and diagnostics in state-space models. The Panel agreed with these recommendations by the Analyst and included them in their list of Research Recommendations.

## **Additional Discussion – US and Canadian Georges Bank haddock assessments**

The Analyst provided a comparison between the NMFS Georges Bank haddock and DFO's eastern Georges Bank assessments through 2024. The table contrasting the US

Georges Bank haddock WHAM and the Canadian DFO eastern Georges Bank haddock WHAM was highly useful, and the Panel recommended this be forwarded (with current result) to the US-Canada Transboundary Management Guidance Committee (TMGC) for their consideration and understanding of the differences between the two assessment models results. Presently the two WHAMs are similar but differ in several important aspects (e.g., the US model has process error on the numbers-at-age transitions and the Canadian model estimates an age-invariant natural mortality rate in the time block beginning in 2010; the Canadian model uses the DFO survey in recent years; The US model estimates recruitment as random deviations from a mean with the log normal adjustment off and the Canadian model estimates recruitment as fixed effects and projects recruitment as random samples from the historical distribution of recruitment estimates (mean and variance) with estimated autocorrelation) suggesting there could be some scaling differences introduced by the current models.

The comparison of SSB estimates from 2002-2021 of US and Canadian was highly informative, in that it indicated that the EGB assessment typically accounted for 50% or more of the stock size the US model estimated for the entire Bank.

The Panel suggested the Analysts continue to pursue characterization of differences in the GB/EGB models, as they provide multiple realizations of stock status and provide additional advice to managers for their decision making.

### **Research Recommendations from the Panel**

The Panel recommended that between now and the next MT assessment, the NEFSC should:

1. Evaluate how density dependence, environmental change and other factors produce changes (as aliased through model parameters/inputs) in GB haddock indices used in the assessment (e.g., indices of relative or absolute abundance, recruitment, age-length data, etc.).
2. Evaluate the effect of decreasing WAA on selectivity-at-age.
3. Continue investigating retrospective patterns and diagnostics in state-space models (e.g., consider the utility of tests other than the 90% CI for the necessity of Mohn's rho adjustments to SSB so as to balance impacts of changes in magnitude vs. statistical precision)
4. Evaluate whether conditioning on the random effects is influencing the retro observed in self-tests (e.g., if there is a misspecification in the fleet selectivity then this could be carried forward to the self-tests resulting in the observed retro in the self-tests). An alternative structure of self-tests that doesn't condition on the primary sources of process variation (recruitment deviations, age-2+ NAA deviations, and fleet selectivity) could allow for more robust testing of the hypothesis that the model is unstable due to large year classes.
5. Evaluate factors that could provide for the stability of SSB estimates in the face of the last 5 years of declining survey indices and NAA deviations. The NAA deviations act as "sponges" soaking up unaccounted for observation or process

error (e.g., survivorship, selectivity, migration, unaccounted for catch). Continued work to diagnose the most likely drivers of patterns in NAA deviations could inform more robust projections.

6. Continue evaluation of appropriate methods for scaling recruitment in the calculation of reference points for this stock and development of dynamic biological reference points.
7. Continue to conduct studies to evaluate gutted:whole conversion factors and length-weight for commercial landings.
8. Continue to characterize differences in the separate Georges Bank and eastern Georges Bank WHAM models, such that their multiple realizations of stock status may provide additional advice to managers (TMGC) for their decision making.

# Atlantic Herring

## Summary

***The Panel concluded that the 2026 assessment update for Atlantic herring is technically sufficient to evaluate stock status and provide scientific advice and meets most of the Terms of Reference for the stock's assessment except for TORs 5 which was partially met. The assessment represents Best Scientific Information Available (BSIA) for this stock for management purposes.***

This 2026 assessment of the Atlantic herring (*Clupea harengus*) stock is the first application of the WHAM assessment platform following the 2025 research track assessment (NEFSC 2025)<sup>3</sup>. The last management track assessment was in 2024 and was conducted using the ASAP model<sup>4</sup>.

This assessment updated fishery catch data, survey indices, and some life history parameters (e.g., weights-at-age), and the WHAM assessment model and reference points (BRPs) through 2025. Stock projections have been updated through 2031. Based on this assessment, the stock is overfished but overfishing is not occurring.

The change in assessment platforms from the 2024 management track makes comparisons with past assessments inappropriate. Several relatively minor changes have been made since the research track. A revised Canadian catch time series was used, a different approach was used for input effective sample sizes, and spawning stock biomass weight-at-age values were corrected.

### **TOR 1. Estimate catch from all sources including landings and discards.**

#### **This TOR was Met.**

US and Canadian commercial discards, landings, and age composition were updated through 2025. US landings data were drawn from CAMS since 2020. Discards have only been available since 1996 but generally constitute <1% of landings. Note that the time series of Canadian landings has been revised since previous assessments.

While the Panel agreed the TOR was met there was concern regarding the Canadian catch data. First, the fixed gear (weir) catch data is of unknown quality (i.e., there is no estimate of variance and there is some evidence of misreporting). Secondly, there is an assumption that the only catch of the US stock in Canadian waters is in the fixed gear fishery, when it is likely there is also catch (of unknown scale) in the larger mobile gear (purse seine) fishery. Fish from the Canadian Atlantic herring stock may also be caught

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<sup>3</sup> NEFSC. 2025. Atlantic herring research track assessment report. US Dept. of Commerce, NEFSC Tech Memo. 335; 91pp.

<sup>4</sup> NEFSC. 2024. Atlantic herring management track assessment report. Unpubl. rpt; 9 pp. Avail. NEFSC, 166 Water Street, Woods Hole, MA.

in the US fisheries. Underlying these concerns is a high uncertainty regarding mixing of US and Canadian herring fisheries and the extent to which these are mixed-stock fisheries.

Revisiting treatment of Canadian catch in this stock assessment could improve its quality. In particular, the stock identification information that underlies the assumption that these are US fish warrants an update to identify source population of these catches. Consequently, the Panel provided two Research Recommendations:

- Conduct sensitivity analysis to evaluate how different CVs (and perhaps misreporting) of the Canadian weir catch influence model estimates
- Develop estimates of the portion of catches in the fixed and mobile gear catches that come from the US and Canadian stocks.

**TOR 2. Evaluate indices used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.).**

This TOR was Met

The four surveys currently used in the 2026 assessment model included the NEFSC Spring (1968-2025) and Fall (1963-2025) Bottom Trawl surveys (BTS), the Summer (Shrimp) survey (1980s-2023) and the Acoustic survey (1998-2025) conducted as part of the Fall BT survey. The former three surveys focus on the near-bottom distribution and abundance of herring, while the latter quantifies fish throughout the water column.

These surveys have shown consistent cohort tracking even as they have declined since 2009, reflecting broader declines in abundance. They drive the indices necessary for the assessment - age composition, abundance, and spatial distribution.

The Panel was concerned that none of the current trawl surveys provide data on age-1 abundance, which is problematic for such a short-lived stock. Not incorporating the ME-NH survey (which samples small herring better than the NEFSC bottom trawl surveys) or the seabird diet index contributes to the loss of this information.

There was also concern that there may have been shifts in distribution. Comments from the Community Engagement session and Industry testimony in this review indicated that herring are being caught at different times, in different areas, in deeper water, and in smaller aggregations. All of this suggests the potential for time-varying catchability that could introduce sampling bias in the trawl surveys between years.

The Panel Recommended the following actions:

- Continue work on the development of the VAST model to integrate state and federal surveys particularly with respect to use of surveys that include information on age-1 fish (ME-NH survey). Development of model-based indices for this stock could also address potential for time varying catchability.

- Continue exploring use of the seabird diet data as an index of age-1 abundance (the Panel acknowledges the preceding RR is a more fruitful use of Analyst's time)
- Continue exploration of survey data to determine whether Atlantic herring distribution has changed

The Panel considered the first of these Recommendations to be a priority to address before the next Management Track assessment.

**TOR 3. Estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) as possible (depending on the assessment method) for the time series using the approved assessment method and estimate their uncertainty. Include retrospective analyses if possible (both historical and within-model) to allow a comparison with previous assessment results and projections, and to examine model fit.**

**a. Include bridge runs to sequentially document each change from the previously accepted model to the updated model proposed for this peer review.**

**b. Prepare a backup assessment approach that would serve as an alternative for providing scientific advice to management if the analytical assessment were to not pass review**

**This TOR was Met but the underlying patterns in the NAA random effects require further investigation to improve attribution of process error and that the structural assumptions (e.g., no correlation across years) be revisited before the next MT assessment.**

The Panel recognized that continued poor recruitment and negative numbers-at-age random effects (e.g., poor survival) in recent years is the main issue driving stock abundance. The challenge in attributing the process that is being accounted for in NAA deviations undermined confidence in the results of the model regarding current abundance and projections. The high CV on recruitment and results of self-test indicate high uncertainty in estimates.

Key concerns are the pattern observed in the numbers-at-age (NAA) random effects (i.e., strong correlation among ages) and lack of support for a correlation among years. The unusual highly correlated negative NAAs for ages 2-7 could be related to the spike in recruitment in 2019 identified by WHAM, which was not present in the 2024 MT assessment in ASAP. The Panel discussed that these NAA deviations could be artefacts that are highly influential on scaling of population estimates and may warrant re-evaluation. Specifically the underlying annual variability shown in the NAA deviations suggest there could be a covariate being aliased that has a significant effect on interannual patterns of the NAA deviations or that a signal in the input data (e.g., age-composition data or survey index data) is leading to strong annual signal that is lost in

subsequent years. This uncertainty is compounded by the recent gaps in data due to missing Spring 2023 BTS data and 2024-2025 shrimp surveys, on top of recent changes in the catch reporting (switch to CAMS) and the sparse port sampling of weight-at-age. These gaps contribute to the challenge of not being able to attribute the negative NAA deviations to a process. The 2025 RT had similar concerns and the Panel hopes to see progress on the treatment of NAAs after this MT assessment.

The Panel recommends that in the future Analysts revisit the assumption of no temporal autocorrelation in recruitment deviations across years. Because the projected population dynamics are sensitive to these assumptions, revisiting the treatment of NAA random effects and the temporal structure of recruitment as additional data are added to the assessment could have substantial implications for stock assessment results and projections. Currently, the panel discussed that this uncertainty could lead to issues with scaling of population abundance in the assessment (TOR4) and in projections (TOR5).

More work is needed to correctly attribute the uncertainty that is being captured by the NAA process error. Consequently, the Panel provided a second Major Research Recommendation for herring to address before the next Management Track assessment:

- Investigate the potential for autocorrelation in annual recruitment, as well as explore covariate(s) aliased in the NAA random effects and determine which is having the most effect on interannual patterns. Further exploration of the possible drivers of process error patterns in numbers-at-age random effects that suggest poor survival across ages.

The Panel understands from the Analyst that exploring longer lags is currently not available in WHAM; nonetheless, this remains an issue with assessment which ultimately needs to be addressed.

**TOR 4. Re-estimate or update the BRP's as defined by the management track level and recommend stock status. Also, provide qualitative descriptions of stock status based on simple indicators/metrics (e.g., age- and size-structure, temporal trends in population size or recruitment indices, etc.).**

#### **This TOR was Met**

Retrospective adjustments were not necessary (SSB Mohn's  $\rho = 0.22$  and F Mohn's  $\rho = -0.04$ ). Spawning stock biomass (SSB) in 2025 was estimated to be 35,258 (mt) which is 19% of the biomass target (SSB<sub>MSY</sub> proxy = 188,214). The 2025 average mobile fleet fishing mortality for ages 7-8 (fully selected) was estimated to be 0.121 which is 44% of the overfishing threshold proxy (F<sub>MSY</sub> proxy = 0.272).

Reference points were calculated using the spawning potential ratio (SPR) 40% proxy approach, with F<sub>40%</sub> used as a proxy for F<sub>MSY</sub> and SSB<sub>F40%</sub> as a proxy for SSB<sub>MSY</sub>. A key concern is the scaling of these reference points for herring, particularly the recruitment assumptions underlying the estimation. It is unclear whether the resulting SSB<sub>MSY</sub> proxy

appropriately reflects the stock's productivity and whether  $F_{40\%}$  remains a good proxy for  $F_{MSY}$  given the evidence for a regime change for many of the stocks in this region.

The Panel highlighted that decisions made in model fitting (TOR 3) have large implications for reference points. Prevailing conditions are negative in recent years for herring, as indicated by negative NAA deviations and recruitment deviations, but with no year effect selected for in the model this means these conditions do not propagate into reference point calculations. While this is consistent with decisions made at the research track, this may not be representative of prevailing conditions for this stock.

Though the Panel accepted the Analyst's results, they provided the following Research Recommendations:

- Investigate dynamic reference points for Atlantic herring, including work on fitting dynamic stock-recruit relationships, alternative specification of random effects or inclusion of covariates in the model, or short-term approaches to revise recruitment assumptions (e.g., truncation of time series).
- Reconsider the appropriateness of  $F_{40\%}$  for an  $F\%$  more responsive to the changes in productivity that herring are experiencing.

Note that this recommendation may apply to a number of assessed stocks using the default  $F_{40\%}$  proxy.

**Based on this Management Track Assessment, the recommended stock status is overfished but overfishing is not occurring.**

**TOR 5. Conduct short-term stock projections when appropriate.**

**This TOR was Partially Met as the Panel considered the OFLs (or  $F_{msy}$ ) and ABC projections based on the RT methodology to be useful but likely to be overly optimistic especially in light of the sensitivity analyses**

The projection results applied the harvest (ABC) control rule described in Amendment 8 of the herring Fishery Management Plan to the mobile fleet. The fixed gear catches are assumed constant during the projection period and equaled 5,283 mt/year. This fixed gear catch equals the sum of the ten year (2016-2025) averages of the Canadian (5,130 mt) and US (152 mt) fixed gear catches. The US fixed gear includes catches from stop seines, weirs, and pound nets. The reported  $F_{7-8}$  are averaged over ages 7-8, which are fully selected by the mobile fleet (trawls and purse seine) fleet. Projected recruitment continued the independent and identically distributed process estimated by WHAM. NAA random effects were not carried forward into the projection period due to lack of an autocorrelation across years in the model.

These projections indicate rapid increases in SSB and catch given the reduction in fishing with the application of the control rule. This pattern is driven by several factors, including the use of the geometric mean recruitment of the full time series and the absence of autocorrelation across years, such that recent negative NAA deviations and



recruitment deviations do not inform projections. Both the RT Panel and this MT Panel believe the SSB estimates and catch projections are likely overestimated.

Estimated negative random effects on numbers-at-age (NAA), which represent additional fish losses beyond those accounted for by fishing and natural mortality, are not assumed to be autocorrelated across years and do not continue into the projection period. As a result, recent cohorts experience higher projected survival than is evident in WHAM outputs and thus contribute substantially to future SSB in the projections.

This TOR was particularly affected by the structure of the NAA random effects expressed under TOR 3. The Analyst presented a sensitivity analysis using the average of the NAA deviations estimated for the most recent 5 years that provided an alternative scenario with significant impact on projections. The Panel saw this analysis as useful and agreed both projections should be provided for management decisions. The Panel considered the OFLs (or  $F_{msy}$ ) and ABC projections based on the RT methodology likely to be overly optimistic especially in light of the sensitivity analysis which better reflects prevailing conditions for the NAA deviations. The Panel also noted issues with the approach used in the sensitivity analysis (e.g., not consistent with the model, the 5-year average of the NAA deviations does not propagate the high interannual variability in the deviations). **After considerable discussion, the Panel concluded that the PDT and SSC should view the projections and sensitivity analysis as context for catch advice setting but that each has challenges that limit their utility.**

The Panel provided the following Research Recommendations:

- Revisit decisions on random effects (TOR 3) as additional years of data are added as model diagnostics may support alternative configurations as new information is added.
- Revisit use of the geometric mean recruitment of the full time series to inform projections, rather than more recent conditions.

**TOR 6. Respond to any review Panel comments or SSC concerns from the most recent prior research or management track assessment.**

**This TOR was Met.**

The Analyst reviewed the status of a dozen Research Recommendations from the 2025 Atlantic herring Research Track. Little progress had been made to date in part because of the short time since the RT was concluded but also because of the lack of resources to conduct the research. The Panel encourages the NEFSC to continue working on these items.

The Analyst also reviewed and responded to comments provided as part of the 2025 Community engagement session on Atlantic herring. Issues raised there included changes in herring migration timing, interactions between the distribution/abundance of menhaden, mackerel, and herring, herring stock structure and the treatment of

Canadian catches. Again research for many of these topics was in progress. The Panel commended the Analyst for bringing these items forward in the peer review.

### **Additional Discussion - Public Comments**

The Panel received public comments from six representatives of the herring fishing fleet. Industry concerns about the status of the Atlantic herring stock and this assessment generally focused on changes in the distribution of herring and the impact that a further reduction in the catch advice would have on industry. With respect to the former, commenters felt that herring had moved deeper offshore (but lots of small fish inshore) and may not have been accessible to the NEFSC BT survey as in previous year's surveys. The second set of comments on the impact of the assessment suggested the reduced catch advice that would arise from the assessment's proposed 2027 OFL/ABC would severely limit fleet activities. At least two of the speakers suggested that the SSC consider averaging catch advice over the five projection years.

A full description of the comments are provided to the NEFSC via the rapporteurs' notes.

### **Research Recommendations from the Panel**

The Panel recommended that between now and the next MT assessment, the NEFSC should:

1. Conduct sensitivity analysis to evaluate how different CVs (and perhaps misreporting) of the Canadian weir catch influence model estimates
2. Develop estimates of the portion of catches in the fixed and mobile gears catches that come from the US and Canadian stocks
3. Continue work on the development of the VAST model to integrate state and federal surveys particularly with respect to use of surveys that include information on age-1 fish (ME-NH survey). Development of model-based indices for this stock could also address potential for time varying catchability.
4. Continue exploring use of the seabird diet data as an index of age-1 abundance (the Panel acknowledges that RR3 is a more fruitful use of Analyst's time)
5. Continue exploration of survey data to determine whether Atlantic herring distribution has changed
6. Investigate the potential for autocorrelation in annual recruitment, as well as explore covariate(s) aliased in the NAA random effects and determine which is having the most effect on interannual patterns.
7. Investigate dynamic reference points for Atlantic herring, including work on fitting dynamic stock-recruit relationships, alternative specification of random effects or inclusion of covariates in model, or short-term approaches to revise recruitment assumptions (e.g., truncation of time series)
8. Reconsider the appropriateness of  $F_{40\%}$  for an  $F\%$  more responsive to the changes in productivity that herring are experiencing.

9. Revisit decisions on random effects (TOR 3) as additional years of data are added as model diagnostics may support alternative configurations as new information is added.
10. Revisit use of the geometric mean recruitment of the full time series to inform projections, rather than more recent conditions.

Recommendations 3, and 6 were considered by the Panel to be the most important and should be addressed prior to the next Management Track assessment for the stock.

Additionally, the Panel suggested this stock be prioritized for consideration in the upcoming Research Track on projection methodologies.

# Appendix A.

## Management Track Assessment Terms of Reference

1. Estimate catch from all sources including landings and discards.
2. Evaluate indices used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.).
3. Estimate annual fishing mortality, recruitment, and stock biomass (both total and spawning stock) as possible (depending on the assessment method) for the time series using the approved assessment method and estimate their uncertainty. Include retrospective analyses if possible (both historical and within-model) to allow a comparison with previous assessment results and projections, and to examine model fit.
  - a. Include bridge runs to sequentially document each change from the previously accepted model to the updated model proposed for this peer review.
  - b. Prepare a backup assessment approach that would serve as an alternative for providing scientific advice to management if the analytical assessment were to not pass review.
4. Re-estimate or update the BRP's as defined by the management track level and recommend stock status. Also, provide qualitative descriptions of stock status based on simple indicators/metrics (e.g., age- and size-structure, temporal trends in population size or recruitment indices, etc.).
5. Conduct short-term stock projections when appropriate.
6. Respond to any review Panel comments or SSC concerns from the most recent prior research or management track assessment.

## Appendix B.

### June Management Track Peer Review Meeting Attendance June 29-30, 2026

ASMFC - Atlantic States Marine Fisheries Commission  
GARFO - Greater Atlantic Regional Fisheries Office  
MAFMC - Mid-Atlantic Fisheries Management Council  
NEFMC - New England Fisheries Management Council  
NEFSC - Northeast Fisheries Science Center

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Richard Merrick - Chair, NOAA Fisheries (retired), NEFMC Scientific and Statistical Committee
Tim Barrett - Panel, Fisheries and Oceans Canada, ASFMC appointee
Lisa Kerr - Panel, University of Maine, NEFMC Scientific and Statistical Committee
Holly Kindsvater - Panel, Virginia Polytechnic Institute and State University, MAFMC Scientific and Statistical Committee

Larry Alade, NEFSC
Melanie Barrett, Fisheries and Oceans Canada
David Benson
Kristan Blackhart, NEFSC
Jessica Blaylock, NEFSC
Jason Boucher, NEFSC
Emily Bodell, NEFMC
Bonnie Brady, New England Fishermen's Stewardship Association
Liz Brooks, NEFSC
Carly Burns, NOAA Affiliate
Steve Cadrin, University of Massachusetts Dartmouth
Patrick Campfield, ASMFC
Jui-Han Chang, NEFSC
Ethan Chase, fisherman
Matt Cieri, Maine Department of Marine Resources
Jamie Cournane, NEFMC
Kiersten Curti, NEFSC
Jess Daniels, New England Fish Company
Micah Dean, Massachusetts Division of Marine Fisheries
Dustin Delano, fisherman
Jonathan Deroba, NEFSC
Jason Didden, MAFMC
Tara Dolan, Massachusetts Division of Marine Fisheries

Alex Dunn, NEFMC
Corrin Flora, North Carolina Division of Marine Fisheries
Robin Frede, NEFMC
Mark Grant, NEFMC
Melanie Griffin, Massachusetts Division of Marine Fisheries
Alex Hansell, NEFSC
Amanda Hart, NEFSC
Daniel Hennen, NEFSC
Nathan Hebert, Fisheries and Oceans Canada
Daniel Hocking, GARFO
Cameron Hodgdon, NEFSC
Brian Hooper, NEFSC
Andrew Joyce, F/V Providian
Jeff Kaelin, Lund's Fisheries
Raymond Kane, Cape Cod Fishermen's Alliance
Rick Kasten
Zack Klyver, NEFMC Atlantic Herring Advisory Panel
Chris Legault, NEFSC
Brian Linton, NEFSC
Andy Lipsky, NEFSC
Bill Lucy, Long Island Soundkeeper
Declan McCormick, Maine Department of Marine Resources
Kathryn MacDonald, Fisheries and Oceans Canada
Mitch McDonald, NOAA Office of General Counsel
Tara McIntyre, Fisheries and Oceans Canada
Conor McManus, NEFSC
Timothy Miller, NEFSC
Allison Murphy, GARFO
Paul Nitschke, NEFSC
Carrie Nordeen, GARFO
Jackie O'Dell, Northeast Seafood Coalition
Cate O'Keefe, NEFMC
Danilee Palmer, GARFO
Charles Perretti, NEFSC
Michelle Raber, F/V Providian
Suzannah Raber, F/V Providian
Ryan Raber, Ocean Spray
Marianne Randell, GARFO
Kaitlin Rogers, NEFSC
Elizabeth Roros, University of Massachusetts Dartmouth
Melissa Smith, Maine Department of Marine Resources
Liz Sullivan, GARFO
Spencer Talmage, GARFO
Mary Beth Tooley, O'Hara Corporation
Samuel Truesdell, NEFSC
Kaitlynn Wade, University of North Carolina

Megan Ware, Maine Department of Marine Resources
Peter Whelan, fisherman
Kelly Whitmore, Massachusetts Division of Marine Fisheries
Antony Wood, NEFSC

Appendix C.

June 2026 Management Track Peer Review Agenda

**All times are approximate and may be changed at the discretion of the Peer Review Panel chair.
The meeting is open to the public.*

Monday, June 29, 2026

Time	Stock	Subject	Presenter
9:00 a.m.		Welcome/Logistics Conduct of Meeting	Brian Hooper Kristan Blackhart Panel Chair
9:15 a.m.	Georges Bank Haddock	Terms of Reference (TOR) Review & Panel Questions	Liz Brooks Panel
10:30 a.m.		Break	
10:45 a.m.	Georges Bank Haddock	TOR Review & Panel Questions, continued	
11:45 a.m.	Georges Bank Haddock	Public Comment	Public
12:00 p.m.		Lunch	
1:00 p.m.	Georges Bank Haddock	Panel Deliberations	Panel
2:15 p.m.	Georges Bank Haddock	Panel Conclusions / Recommendations and Final Stock Wrap Up	Panel
3:00 p.m.		Closed Panel Writing Session	
5:00 p.m.		Adjourn	

Tuesday, June 30, 2026

Time	Stock	Subject	Presenter
9:00 a.m.		Welcome/Logistics	Brian Hooper Panel Chair
9:05 a.m.	Atlantic Herring	TOR Review & Panel Questions	Jonathan Deroba Panel
10:30 a.m.	Atlantic Herring	Public Comment	Public
10:45 a.m.		<i>Break</i>	
11:00 a.m.	Atlantic Herring	Panel Deliberations	Panel
11:30 a.m.	Atlantic Herring	Panel Conclusions / Recommendations and Final Stock Wrap Up	Panel
12:00 p.m.		<i>Lunch</i>	
1:00 p.m.	All stocks	Final Meeting Wrap Up, if needed (else closed Panel writing session)	Panel
3:00 p.m.		Closed Panel Writing Session	
5:00 p.m.		<i>Adjourn</i>	

Appendix D.

Acronyms Used in This Report

ABC - acceptable biological catch
ASAP - Age Structured Assessment Program
AWG - Assessment Working Group
BLLS - Bottom Long Line Survey
BRP - biological reference point
BTS - bottom trawl survey
CAMS - Catch Accounting and Monitoring System
CI - confidence interval
CV - coefficient of variation
DFO - (Department of) Fisheries and Oceans Canada
EGB - eastern Georges Bank
F - Fishing mortality
GARFO - Greater Atlantic Regional Fisheries Office
GB - Georges Bank
GMRF - Gaussian Markov Random Field
M - natural mortality
ME - Maine
MT - Management Track
NAA - numbers-at-age
NEFSC - Northeast Fisheries Science Center
NEFMC - New England Fishery Management Council
NH - New Hampshire
NRCC - Northeast Region Coordinating Council
OFL - Overfishing Limit
PDT - Plan Development Team
RE - random effects
RR - research recommendation
RT - Research Track
RTSC - Research Track Steering Committee
SSB - spawning stock biomass
SSC - Scientific and Statistical Committee
SSRT - State Space Research Track
TMGC - Transboundary Management Guidance Committee
USGS - United States Geological Survey
VAST - Vector Autoregressive Spatio-Temporal
WAA - weight-at-age
WHAM - Woods Hole Assessment Model



FOR IMMEDIATE RELEASE

June 29, 2026

PRESS CONTACT: Alex Dunn

978-465-0492 ext. 112; adunn@nefmc.org

Council Focuses on Timely Implementation of Fishery Specifications; Recommends Changes to Habitat Research Area

The New England Fishery Management Council met from June 23-25, 2026, in Mystic Connecticut. The following is a summary of actions taken and issues considered affecting several Fishery Management Plans (FMPs). Meeting materials, motions, and the meeting [audio recordings](#) are available on the Council's [June 2026](#) meeting page.

HERRING INDUSTRY-FUNDED MONITORING TO BE REVISITED

The Council decided to consider rescinding the Atlantic herring Industry Funded Monitoring (IFM) program as a possible 2027 priority, to be further discussed at its December 2026 meeting. The discussion was sparked by a [letter from NOAA](#) requesting the Council rescind the Herring IFM program in response to Executive Order 14276 and ongoing litigation. Multiple Council members spoke about the importance of completing current [Herring priorities](#) as planned. The Council and NOAA partners noted that other existing IFM programs for scallops and groundfish would not be affected. The Council plans to respond to NOAA in a letter following the June meeting. More information can be found [here](#).

HERRING SPECIFICATIONS PRIORITIZED; SEPARATED FROM OTHER MANAGEMENT MEASURES

The Council voted unanimously to separate Atlantic herring specifications for fishing years (FY) 2027-2031 into a standalone action distinct from ongoing work to modify river herring and shad (RHS) management measures. The Council plans to take final action on the specifications at its [September 2026](#) meeting. In a separate action, the Council directed the Plan Development Team (PDT) to continue working on (1) time-area closures for RHS with and without existing catch cap methodology; (2) an updated specifications process; (3) carryover provision modifications, with final action targeted for April 2027. The full herring report can be found [here](#).

SCALLOPS SHOW STRONG LANDINGS; COUNCIL ENSURES TIMELY IMPLEMENTATION OF SPECIFICATIONS

The 2026 scallop fishing year (FY) is seeing strong early season landings, driven by high catch rates of over 2,000 pounds per day in the Mid-Atlantic. FY2026 specifications allocated 36 Days-at-Sea to full-time Limited Access vessels and did not allocate any access area trips.

Scallop Framework 42 (FW42): The Council voted unanimously to prioritize fishery specifications for FY2027 by splitting specs from FW42. Splitting the actions reduces the risk of specifications being delayed past the start of the fishing year on April 1, 2027. Continued development of FW42 includes region-specific Limited Access Day-at-Sea management, as well as sub-management areas within the Northern Gulf of Maine management area. FW42 is scheduled for implementation in FY2028. Scallop meeting information can be found [here](#).

Research Set Aside (RSA) NOAA staff reported a record-setting 40 applications for the 2026-2027 RSA Announcement. Over a dozen proposals have been selected with an announcement expected from NOAA Grants in the coming weeks; check [NOAA's RSA](#) webpage for updates. All 2026 RSA Set-Aside pounds and nearly all 2027 pounds will be awarded, and there is not an expected award cycle in 2027. The Council also voted unanimously on the [FY2027-2028](#) RSA Priorities.

GROUNDFISH FRAMEWORK 74 INITIATED; UPDATES ON FRAMEWORK 68 AND AMENDMENT 23

Framework Adjustment 74 (FW74): The Council voted unanimously to initiate Framework Adjustment FW74, which would set specifications for FY2027–2031 and include targeted management measures. These proposed measures include simplifying Southern windowpane flounder Accountability Measure triggers and exploring alternative methods for setting Atlantic halibut catch limits.

Framework Adjustment 68 (FW68): The Council agreed to extend the timeline for FW68 with work continuing through the summer and potential final action in April 2027. FW68 aims to modify or replace existing groundfish Acceptable Biological Catch (ABC) Control Rules to incorporate the Council's new Risk Policy.

The revised control rules are intended to provide catch advice that minimizes large fluctuations in catch limits when appropriate. In addition to revised control rules, potential management approaches under consideration include:

- Phased-in ABCs to promote industry stability
- ABC carryover provisions to support safety and market stability
- Rules for the use of constant ABCs to improve consistency

Amendment 23 (A23): The Council received an update on ongoing evaluation work for the Groundfish Monitoring Program established under A23. The program is designed to improve catch accounting and enhance the quality of fisheries data. Initial evaluation results indicate that the program has strengthened monitoring efforts, mitigated the effects of bias, improved overall data quality, and increased the effectiveness of coverage. All groundfish report documentation can be found [here](#).

SMALL MESH MULTISPECIES 2026 ACTION

The Council approved a 2026 Small Mesh Multispecies action that includes specifications, application of the new risk policy in the catch-setting process, and targeted possession limit adjustments. The Council deferred potential changes to exemption area boundaries and seasonal provisions to allow for broader coordination across all existing exemption areas. The Whiting Committee Report can be found [here](#).

RECOMMENDED CHANGES TO HABITAT RESEARCH AREAS

The Council passed three motions during the [habitat report](#). The first action approved the scope of a Clam Dredge Exemption Program Review while the other motions affected Dedicated Habitat Research Areas (DHRA). They also received an update on the 2026 Essential Fish Habitat Framework (EFH) to designate EFH for groundfish, small mesh, and Atlantic scallop management plans.

Clam Dredge Exemption: The Council agreed on the scope of a report evaluating the surfclam dredge exemption program in the Great South Channel Habitat Management Area (HMA). The report will examine the effectiveness of three exemption areas implemented in 2018 from a habitat conservation and fishery management perspective. The review will incorporate updated scientific models, fishing effects analyses, vessel monitoring and catch accounting data, fishery performance information, and Experimental Fishing Permit-based (EFP) research. It will compare pre- and post-implementation conditions. The report is scheduled for completion ahead of the September Council meeting.

DHRA decisions hinged on whether active or planned research meeting the Council's objectives existed in each area. The Council recommendations to the Regional Administrator were to sunset the [Georges Bank DHRA](#), as they saw no qualifying planned research, and retain the Stellwagen Bank DHRA which does have active and planned research. **WHAT IS A DHRA?** Dedicated Habitat Research Areas (DHRA) are areas closed to certain bottom-tending gears to allow scientific study of seafloor habitats in a controlled environment. These year-round closures are re-examined every three years, after which time GARFO consults with the Council and the public on whether to maintain the designation.

MONKFISH AND SKATE LISTENING SESSIONS INFORM REQUEST TO NOAA

The Council received a [summary](#) of the Monkfish and Skate Listening Sessions that took place this spring. The summary highlighted industry concerns related to individual fishing quotas, area-specific management, effort controls, market conditions, latent effort, monkfish and skate interactions, protected resource regulations, and offshore wind development. The Council acknowledged these concerns and approved a motion to develop a joint letter to GARFO with the Mid-Atlantic Fishery Management Council (MAFMC) to request information on the effectiveness of current Harbor Porpoise Take Reduction Plan measures. The Councils seek an assessment of whether modifications to the plan could reduce negative socioeconomic impacts on affected fisheries, consistent with concerns raised during the Listening Sessions. The MAFMC supported this work in a [motion](#) at their June meeting and will provide an update at a future meeting.



Atlantic States Marine Fisheries Commission

American Lobster Management Board

August 4, 2026

11:15 a.m. – 12:15 p.m.

Draft Agenda

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

1. Welcome/Call to Order (<i>R. Zobel</i>)	11:15 a.m.
2. Board Consent	11:15 a.m.
• Approval of Agenda	
• Approval of Proceedings from May 2026	
3. Public Comment	11:20 a.m.
4. Update on Management Objectives Process Steering Committee Progress (<i>C. Starks</i>)	11:30 a.m.
5. Consider Lobster Conservation Management Team 5 Proposal to Modify Season Closure (<i>J. Clark</i>) Action	11:40 a.m.
6. Reports from Gulf of Maine States on Industry Surveys and Meetings (<i>C. Wilson, R. Zobel, R. Glenn</i>)	12:00 p.m.
7. Update on Request for Information for Alternative Gear Marking Framework (<i>A. Murphy</i>)	12:05 p.m.
8. Other Business/Adjourn	12:15 p.m.

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details.

MEETING OVERVIEW

American Lobster Management Board

August 4, 2026

11:15 a.m. – 12:15 p.m.

Chair: Renee Zobel (NH) Assumed Chairmanship: 03/25	Lobster Technical Committee Chair: Tracy Pugh (MA) Jonah Crab Technical Committee Chair: Corinne Truesdale (RI)	Law Enforcement Committee Rep: Rob Beal (ME)
Vice Chair: John Maniscalco (NY)	Lobster Advisory Panel Chair: Grant Moore (MA) Jonah Crab Advisory Panel Chair: Sonny Gwin (MD)	Previous Board Meeting: May 4, 2026
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 May 2026

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

4. Update on Management Objectives Process Steering Committee Progress (11:30-11:40 a.m.) Possible Action

Background

- The Board agreed to form a steering committee (SC) to 1) review existing management objectives, as outlined in Amendment #3 and subsequent addenda, relative to the current GOM/GBK stock status, and social/economic conditions facing the fishery today, and 2) develop a process that would clearly identify new management objectives (across all stakeholders), to better understand socioeconomic status and concerns, and to identify potential management tools. SC membership was approved in May 2026. The SC includes representation from the Board, TC, Commission staff, the Commission's Committee on Economics and Social Sciences, industry stakeholders, and the Commission's Assessment and Science Committee or Management and Science Committee with past experience in MSE.
- The SC met in June for initial discussions on the assigned tasks **(Briefing Materials)**.

Presentations

- Management Objectives Process Steering Committee Progress by C. Starks

5. Consider Lobster Conservation Management Team 5 Proposal to Modify Season Closure (11:40-12:00 p.m.) Action
Background • The Lobster Conservation Management Team (LCMT) for Area 5 submitted a proposal to modify the lobster fishery season closure in LCMA 5. • The TC met earlier this year to discuss this proposal and provide input to the management Board at the May 2026 meeting. • LCMT 5 proposes that the LCMA 5 season be revised to allow black sea bass pots to be set beginning on March 9 instead of March 24 while maintaining the current American lobster harvest closure (February 1 through March 31) (Briefing Materials). This is consistent with the American Lobster Technical Committee recommendation in its April 20, 2026 memo to the Board.
Presentations • LCMT 5 Proposal to Modify Season Closure by J. Clark
Board Actions for Consideration at the Meeting • Consider approval of LCMT 5 proposal and recommendation to NOAA Fisheries to modify regulations

6. Reports from Gulf of Maine States on Industry Surveys and Meetings (12:00-12:05 p.m.)
Background • Concurrent with the implementation of Addendum XXXII, the Gulf of Maine states agreed to work with the lobster industry to develop management strategies to ensure the long-term health of the resource and the coastal communities it supports. • The Board requested Maine and New Hampshire provide updates on industry meetings and possible alternative management measures to those of Addendum XXVII at each quarterly meeting. • Maine, New Hampshire, and Massachusetts have completed industry meetings and surveys to gather input on management approaches.
Presentations • Update from Gulf of Maine States on Industry Meetings by C. Wilson, R. Zobel, and B. Glenn

7. Update on Request for Information on Alternative Gear Marking Framework (12:05-12:15 p.m.)
Background • The New England and Mid-Atlantic Fishery Management Council (Councils) are developing a joint alternative gear marking framework adjustment to provide alternative fixed gear surface marking requirements in all New England and Mid-Atlantic Fishery Management Council fishery management plans. This regulatory modification would allow for the use of fixed gears without a persistent buoy line (i.e., on-demand gear). • The Councils met in September and October 2025 and each agreed to postpone further action on the Framework until additional information on ropeless gear and visualization technology, as solicited through a NMFS Request for Information (RFI), is available to inform stakeholder input and Council decision-making. • An RFI on ropeless fishing was published in the federal register on July 16, 2026 (Briefing Materials).

Presentations

- Update on Request for Information for Alternative Gear Marking Framework by A. Murphy

8. Other Business/Adjourn (12:15 p.m.)

DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
AMERICAN LOBSTER MANAGEMENT BOARD

The Westin Crystal City
Arlington, Virginia
Hybrid Meeting

May 4, 2026

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

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Adjournment	18

INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of October 2025** by consent (Page 1).
3. **Move to approve the nominations to the Steering Committee on Lobster MSE** (Page 15). Motion by Carl Wilson; second by Jay McNamee. Motion passed by unanimous consent (Page 16).
4. **Move to approve the nomination of Chris Townsend from Massachusetts to the Lobster Advisory Panel to replace Eric Lorentzen** (Page 18). Motion by Bob Glenn; second by Joe Cimino. Motion passed by unanimous consent (Page 18).
5. **Move to adjourn** by consent (Page 18).

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

ATTENDANCE

Board Members

Carl Wilson, ME (AA)	Robert LaFrance, CT, proxy for J. Gresko (LA)
Steve Train, ME (GA)	Bill Hyatt, CT (GA)
Rep. Allison Hepler, ME (LA)	John Maniscalco, NY, proxy for M. Gary (AA)
Renee Zobel, NH (AA)	Emerson Hasbrouck, NY (GA)
Doug Grout, NH (GA)	Monica Martinez, NY (LA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)	Joe Cimino, NJ (AA)
Bob Glenn, MA, proxy for D. McKiernan (AA)	John Clark, DE (AA)
Raymond Kane, ME (GA)	Roy Miller, DE (GA)
Sarah Peake, MA, proxy for Rep. Armini (LA)	Craig Pugh, DE, proxy for Rep. Carson (LA)
Jason McNamee, RI (AA)	Michael Luisi, MD, proxy for k. Charbonneau (AA)
David Borden, RI (GA)	Joe Grist, VA (Acting AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Allison Murphy, NMFS
Shanna Madsen, CT (AA)	

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

Ex-Officio Members

Tracy Pugh, Technical Committee Chair	Rob Beal, Law Enforcement Committee Rep.

Staff

Bob Beal	Caitlin Starks	Katie Drew
Toni Kerns	Tracey Bauer	Jainita Patel
Tina Berger	James Boyle	Jeff Kipp
Madeline Musante	Chelsea Tuohy	Samara Nehemiah

The American Lobster Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Monday, February 4, 2026, and was called to order at 10:45 a.m. by Chair Renee Zobel.

CALL TO ORDER

CHAIR RENEE ZOBEL: Okay, I'm going to call the Lobster Board to order, good morning. It feels a little bit strange. Usually, I'm the one to welcome us and open up the meeting, so I appreciate a slightly southern species doing that this morning, giving us a minute here. Welcome to the Lobster Board, look forward to the discussions today. I'm first going to go to Toni Kerns, if we have any Commissioners online.

MS. TONI KERNS: Oh yes, hopefully I'll do a little better this time than last time. We have John Maniscalco and Monica Martinez from New York, and Rob LaFrance is on from Connecticut. I think that is everybody.

CHAIR ZOBEL: Toni is testing me, Rob LaFrance is in the room, I could have sworn I saw him earlier, so thank you. We're going to jump right into our consent items this morning.

APPROVAL OF AGENDA

CHAIR ZOBEL: The first item is the approval of the agenda. Does anyone have any changes to the agenda as we have in front of us today? Seeing no changes; the agenda is approved.

APPROVAL OF PROCEEDINGS

CHAIR ZOBEL: Moving on to the approval of the proceedings from our last meeting, our February meeting. Does anybody have any edits, comments on the meeting proceedings from February. Seeing none; we'll consider the proceedings approved.

PUBLIC COMMENT

The next item on the agenda is public comment for items that are not on the agenda this morning. Do we have any public comment for items not on the agenda? I'll first look to the room. Seeing none in the room, do we have anyone online? No hands online, we're moving right along.

TECHNICAL COMMITTEE REPORT ON BOARD TASKS

CHAIR ZOBEL: The next item is a Technical Committee Report on Board Tasks. We have Tracy Pugh online. Tracy, are you all set?

DR. TRACY PUGH: Yes, I am all set. Thanks everybody. We are going to go over two tasks from the Board.

GULF OF MAINE/GEORGES BANK FISHERY PROJECTIONS WITH ORIGINAL ADDENDUM XXVII GAUGE INCREASES

DR. TRACY PUGH: The first is the larger one, and the task essentially from the Board was to estimate the benefits to the Gulf of Maine/Georges Bank fishery that would have resulted from implementing the minimum gauge size increases under Addendum XXVII that were ultimately repealed. As a reminder, those gauge changes in Year 1 would have been an increase in the minimum gauge size from 3-1/4 inches to 3-5/16 of an inch for Year 1. In Year 3 there would have been a minimum legal-size increase from 3-5/16 to 3-3/8 of an inch, again Area 1. Year 4 there would have been an increase in the vent sizes in Area 1, so going to slightly larger rectangular vents then slightly larger circular vents. Then in Year 5 there would have been a decrease in the maximum gauge size for Area 3 and Area OCC from 6-3/4 down to 6-1/2 inch.

The challenge with the task as originally worded was that the scheduled implementation that originally had started in 2024, so the very original schedule. That first gauge change would have happened in 2024, but the second gauge would have happened in 2026. This kind of left us with a little bit of a challenge, in terms of the data that we would use to do these analyses.

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We would have had pretty uncertain data from the terminal year of the stock assessment, so the 2024 data with the terminal year relatively uncertain. Then there is a significant amount of uncertainty in the projection of recruitment moving forward. To try to move forward with analysis from the original implementation schedule, the TC felt like there was a pretty high degree of uncertainty that would not really have provided a very useful analysis.

What we decided to do was essentially to work with an earlier implementation schedule, so that we would have data to work with. This would let us use recruitment in fishing mortality estimates coming out of the 2025 assessment. The focus with this is really to provide short term estimate of impacts of these management measures.

Just as a note, we did not attempt to model any kind of a relationship between the lobsters that would be newly protected with these, and any resulting egg production or young-of-year settlement success. There is no stock recruit relationship in these analyses.

The approach that we used is again this earlier implementation schedule, so the Year 1 of the minimum gauge increase would happen in 2019. Year 3 then would happen in 2021. The vent size increase in Year 4 would be 2022, and then the Year 5 maximum gauge decrease would happen in 2023.

For these analyses we used a simulation model, and we started this model out with the model estimated size structure coming out of the stock assessment for Quarter 1 in 2018. To do this we had to modify the model size bins. If you remember from the stock assessment, the size bins we normally use are 5mm increments. In order to do this analysis, we needed to make modifications to get those size bins down to 1mm increments.

This was a little bit of a lift, got it done, and this is going to let us capture those small changes in

the gauge size. To capture the changes in gauge size and vent size we did the commercial selectivities, and again then we used recruitment in fishing mortality estimates for 2018 through 2023 coming from the stock assessment.

Then for recruitment going forward we used the equivalent of the smooth trend that was developed for the stock assessment projections. That was the trend that the TC and the SAS felt was the most appropriate for projection recruitment forward. For fishing mortality from 2024 to 2030 we averaged quarterly fishing mortality from the time series. Essentially what we did was compare the results of two scenarios here. The first scenario, the Unchanged Scenario, and in this we didn't make any changes to existing gauge or vent sizes. Then the Change Scenario essentially implements those changes in the earlier implementation schedule I just showed you, starting in 2019. Most of the results are focused on 2018 through 2023, but we could carry some of them forward through 2030.

Essentially, we're trying to look at what the catch composition is going to look like if these changes had occurred. We also then looked at the relative change in catch by numbers, so by number of lobsters landed and by weight of those lobsters landed through 2030. We looked at the results from the Changed Scenario over Unchanged Scenario for reference abundance in spawning stock biomass.

Then we also take a look at how it affects exploitation from 2018 through 2030. In addition to the simulation work, Maine DMR did an analysis using their sea sampling data, so a more straightforward analysis with the sea sampling data, to try to understand what the first decline in the gauge change would do with the decline in landings by quarter and Maine fishing zone. We'll show those results also.

I've just sort of selectively pulled a couple of representative graphs and tables out of the report, I'm not showing all of them. For all of it you will have to go to the report. This first one is looking at change in landings by weight. The graph on the

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right, if you look it is showing essentially the percent of the landings by weight by size. The X axis is size in millimeters, and the Y axis is percent of landings by weight.

The dark coloring of the curve in here is the Unchanged scenario, and then the orangish gold color is the Change scenario. Then there are little stars for 2019 to 2021, those are Years 1 and 3 of the gauge change, 2022 that is the vent change year, and then 2023 is the maximum change year. Essentially what we're seeing here is that for each year of the Change the landings lose those smallest previously legal-size lobsters.

You can see the orange curve essentially shifted to the right relative to the Unchanged gray curve. The weight of the landings increased as they shift to larger sizes compared to the Unchanged scenario. This sort of stabilizes after, about Year 4, so we start to see the same outcome after Year 4 of the implementation schedule.

This table is showing for Years 2018 through 2030. The first column there is the difference in number and then the right-hand column is the difference in weight. Again, these percentages, these numbers are all in comparison to the Unchanged scenario value for that year. Again, I've highlighted the gauge changes event using the max size change happens.

What we're seeing here, each year of that Change the catch decreases in both the numbers and the weight relative to the Unchanged. But then there is a little bit of a recoup in the alternate years. In 2019, the first year of the Change you can see that drop in catch numbers and in catch weight, 2020 it is not as big of a difference, so they've recouped a little bit.

This happens more in the weight than in the numbers, because those lobsters are growing into the newly harvestable size range they really weigh more. You can see essentially as the

implementation schedule plays out that the values tend to stabilize after Year 4, after that vent change year. Ultimately, what we're seeing here is about a 4 to 5% fewer in numbers in the catch, but 6% higher in weight in the catch. Again, that is in comparison to the Unchanged scenario.

This slide shows the market categories. We thought it would be useful to have a look at what this does to the different market categories. The graphic on the right, Chicks are in the yellow color, Quarters are in the green, Halves are in the blue, Selects in orange and then Jumbos in the black. On the bottom the X axis is here, so this is only showing 2018 through 2025.

The left-hand side of the graph is the Unchanged scenario; the right-hand side of the graph is the Changed scenario. What we're seeing here is that the impact to the market category is happening mostly in the Chicks, Quarters and Halves. We see the percent of the landings that would be considered Chicks decreases from around 50% in the Unchanged scenario to around about 33% in that Changed scenario.

Then the Quarters increases about 27% of the composition to about 35% of the composition. The Halves increases from around 11% to around 16%. You see a little bit of change in the Selects and the Jumbos are mostly unchanged. Essentially, you lose a little bit out of the Chicks and then essentially you catch them back as they've grown into the Quarters and the Halves categories.

This is reference abundance and spawning stock biomass. The table on the left is the change in reference abundance, the table on the right is the change in spawning stock biomass. Again, the values in the table are in comparison to the Unchanged scenario. Essentially what we're seeing again, you are protecting the smaller individuals. Essentially, that is keeping them in that reference abundance, so reference abundance starts to increase after the first year of Change relative to the Unchanged scenario.

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Once that implementation schedule has sort of played out, ultimately what we see is about a 16% increase in the reference abundance, and then about a 46% increase in spawning stock biomass compared to the Unchanged scenario. Reference abundance, it's mostly sizes from minimum legal size to around 90 millimeters that are being impacted in the reference abundance.

In the spawning stock biomass, it is a broader size range that is affected, up to about 120 millimeters, and this is essentially a combination of the size change along with increasing maturity at minimum sizes, and then the females were able to egg out and get v-notched, and so they gain those extra protections from the egg bearing and the v-notch status.

Then just again as a reminder, there is no stock recruit feedback relationship here so we are not trying to model any kind of supplements, egg production and young-of-year settlement, and then ultimately recruitment based on these new projections. Looking at exploitation.

The graph essentially is showing in the black line that is the Unchanged scenario, and then the orange line is the Changed scenario. This is for years 2018 through 2030, and it is just the exploitation, which is landings and by reference abundance. You can see the newest individuals here are no longer being landed, but they remain in Reference Abundance, so essentially these results decrease expectations compared to the Unchanged scenario. The results of simulation suggest that implementation of the management changes would decrease exploitation below the overfishing threshold.

This table essentially shows a comparison in 2021 the TC did an analysis, I think in support of developing Addendum XXVII, and we were asked to provide values for what happens to the catch in numbers, catch in weight, what happened to the spawning stock biomass, so pretty similar request.

There were pretty big differences, but there were definite differences between what we did in '21 and what we've done with this current analysis, in terms of the parameters that we used. Things like the size resolution. I mentioned earlier that we had to go to a 1-millimeter resolution in our size bins in order to pull this off.

The 2021 analysis we did not do that; we stuck with the 5-millimeter size bins. The other things that are different are, we've got differences in growth, maturity, selectivities and recruitment, all of these things coming from the updated 2025 stock assessment. Then in the 2021 analysis we did not include any escape vent aspect with that.

If you look at the table, essentially this gives the estimated ultimate impact. Again, this is once that implementation schedule has sort of played out. This is where we end up. You can see they are pretty similar. The eventual results are really similar in directionality as what we did in the past, and you see a decrease in the catch by numbers but ultimately an increase in catch by weight.

The difference in scale is not very big at all. The two analyses essentially told a very similar story. Maine DMR, what they did here is to look at just the impact of the very first gauge change, so that first year of implementation going from 3-1/4 to 3-5/16 of an inch or from 83mm to 84mm.

The data they used was from 2016 to 2021; this is from again the Maine Sea Sampling Data. The graph on the right shows along the X axis is the fishing zone going from Zone G all the way up to Zone A. The different shades of green are different Quarters, so light green is January through March, the darkest is October to December.

Then the value of the percent decrease in the trip catch weight. You can see it by Quarter and then the black line with the numbers above it 7.48, 7.7 et cetera, those are the Quarter combined estimates of decrease. Again, so this is very much focused on that first-year impact. What you can see here with the impact in that first year did vary by quarter and by Maine fishing zone.

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Essentially the range of estimates was from about 7.4% to about 8.9% decrease in trip catch weight. This is actually pretty similar, it is just slightly higher of an impact estimated than what we got with the simulation exercise that I just showed you for that first year of Change. The simulation analysis estimated about a 6.6 decrease in weight in Year 1. That is just a little bit below what the Maine DMR analysis is giving us here.

In summary, the simulation studies that we've run here show that implementation of management changes ultimately resulted in an increase in reference abundance and in spawning stock biomass compared to the Unchanged scenario. Nearly all of these estimated impacts were driven by increases in minimum legal size, not the decreases in max size, and this is primarily because the vast majority of the Gulf of Maine/Georges Bank stock are smaller than the sizes that are impacted by the maximum size changes.

The impacts are more pronounced in spawning stock biomass than in abundance, because at their sizes that are impacted at minimum legal size, the proportion of females that are mature is rapidly increasing, so little changes in the legal size get you really big changes in the proportion of females that are mature.

This allows many more mature females to spawn prior to harvest, and then those mature females gain the additional protections by becoming egg bearing and for those that are v-notched they get that v-notch protection. Ultimately, landings numbers decrease, but the weight of these increases relative to the Unchanged scenario.

Catch does decrease in the implementation years, but once the changes have completed, so once the implementation schedule has played out, the protected lobsters grow into the larger harvestable size range and you harvest them at bigger weights. The market category, Chicks are

to some extent replaced by Quarters and Halves.

Then we did see an exploitation estimated to decline below the overfishing threshold. Now on this last point I do want to make a note here. If you remember, gauge change was, so the real gauge change with Addendum XXVII was delayed until 2025. The implementation was ultimately not going to happen until 2025.

The assessment terminal year was 2023. If the gauge change had ultimately not been revoked and had played out, that would have happened after the assessment had already been finished. The outcome of the assessment would not have been effective had the gauge changes actually gone through as originally planned. It just the gauge changes sort of started us in the right direction, in terms of decreasing exploitation. That's all I have; I can take questions.

CHAIR ZOBEL: Thank you, Tracy, and thank you for the response to the Board's request. That was a lot of hard work and I appreciate the document and all the analyses. I am going to open it up to the Board for questions. First, I see Jason McNamee.

DR. JASON McNAMEE: Thanks, Tracy, and also Happy Star Wars Day, Tracy.

DR. PUGH: May the 4th be with you!

DR. McNAMEE: This was just amazing work. This was like so fun to read and kind of think about. Thanks to the Technical Committee and all the folks who worked on this, really, really appreciate it. This is just maybe kind of digging into the weeds. It just wasn't clear to me. The question that I kind of was left with was, and you mentioned this.

You didn't model recruitment, but I think I read in the documentation that you could make an assumption that recruitment would see a benefit. The part that I was having a little trouble making that connection to was, so you expand your spawning stock biomass, and that would be a benefit. You would conceivably get more recruitment, all of the other environmental things

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going on notwithstanding. But the part that I was struggling with was, you kind of shift the harvest into larger size classes.

Like you showed that in that stacked bar plot there, you know the harvest goes down in the Chick category but goes up in the bigger ones, except for Jumbos. Do you still get that expansion in SSB, or is there some offset because you've shifted the harvest to the bigger sizes? Hopefully there is a question in there that you can make sense of.

DR. PUGH: Yes, I think so. I think if we want to flip back to that market category slide it might be useful. It's essentially these are, so the catch in numbers goes down a little bit. You are not landing as much individuals, and those individuals that you are landing are bigger, they are heavier. I'm trying to wrap my brain around how to express what I think you're asking about and the answer to it, Jay.

Like spawning stock biomass goes up. The harvest here is switching, so those animals that you do land end up being a little bit larger. The market category definitions don't change, it's just you don't land as many in the Chicks category, because now more of them have gotten bigger before you land them. There is more distributed in Quarters and Halves.

The SSB going up essentially will put more eggs and larvae in the water. Then like you said, then the environmental things kind of come along and play out as to how many of those actually successfully settle into young lobsters and live to grow up, which is what we did not model? I think I wandered all around the question, Jay. I'm not entirely sure I actually answered it.

DR. McNAMEE: Yes, maybe just a quick follow. Is it your sense that the SSB increase outpaces kind of the harvest? The harvest goes down as you guys showed overall, but you do get, you know this expansion and the weight of harvest. I guess that was, I am trying to figure out if the

expansion of the population outpaces that kind of shift onto the older lobsters, I guess. Maybe it's not answerable and that's the problem.

DR. PUGH: I mean I think we're using the F estimates from the assessment timeline, so we're not... Jeff, if you've got a clear answer to this to help me with my struggles, it would be appreciated.

MR. JEFF J. KIPP: Yes, what I can add to that is, I think if you look at the SSB increases in that table it will stabilize. After a number of years as these changes go in and things change in the exploitation of lobsters at different size categories, you'll see those fluctuations in SSB. But as you get a year or two beyond the implementation of these changes, the SSB stabilizes.

I would interpret that as things sort of level out, not necessarily that the population is outpacing the growth and the weight of the population is outpacing the weight removed by the fishery. I think it all kind of finds its way, works its way out and then stabilizes. That is why you see that in the longer-term projections of SSB.

DR. PUGH: Thank you, Jeff.

MS. ZOBEL: Next up I have David Borden.

MR. DAVID V.D. BORDEN: I have some general comments, but I'm going to stick with the questions, because that is what you asked for. Basically, the question Tracy is since it shifts the size structure of a population, did the Technical Committee look at any of the marketing implications of that at all, any of the economics? Jeff is shaking his head no.

MS. PUGH: No, we did not. I think that marketing and economic exploitations are a little bit outside of our wheelhouse. I think that would be something that would be a next stage, but no, we did not look at that.

MR. BORDEN: That's my only question, but I've got some comments when you're ready.

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MS. ZOBEL: Roy Miller.

MR. ROY W. MILLER: David covered my question, thanks.

MS. ZOBEL: Next, to Carl Wilson.

MR. CARL WILSON: Good morning, and thanks again for a very informative report. My question is around the changes in spawning stock biomass with the weight 6 % increase over the 7 years of the simulation. Do you have off the top of your head, or could we get what the loss in spawning stock biomass was during the last assessment period? I know we concentrate a lot on abundance, but how much if this had gone forward, would we have offset the natural declines in the population that we've seen?

DR. PUGH: I don't have those numbers right off. Spawning stock biomass did come down, the assessment results showed. Again, it is important to remember, Carl, the implementation schedule here. If it had gone through, I think it would have been like July 1st would have been when the gauge-change actually went through. That would not have made any changes to the outcome of the stock assessment.

But yes, I mean you see here that relative to the Unchanged scenario you do see a pretty dramatic increase to spawning stock biomass here. Whether that would have been enough to sort of either stabilizes or offset declines that we did see with the assessment, I'm not sure this analysis doesn't really ask that question. Jeff, do you have anything to add to that?

MR. KIPP: One of the things we did here is we kind of adjusted the timeline, so the timeline doesn't necessarily match what the reality of the implications schedule would have been. That is because of our uncertainty in recruitment and those reasons. If I'm thinking through your question, it would be, basically, if this had played out in real time, what would we

have seen the SSB do? I think to answer that question we would probably have to move that implementation timeline to say, in reality if we had kind of put in these regulation changes. Go ahead.

MR. WILSON: I guess I was just looking at the simulation where it's going from 2018 through 2023, which is roughly the timeframe of the last assessment. During that last assessment we saw a change in spawning stock biomass. Just wondering what that delta was.

DR. PUGH: I don't know what the delta was. I am getting a little bit of feedback here from Burton, who did the bulk of these analyses. With this analysis starting in 2018 as the start point. If you think of the Unchanged scenario as being sort of status quo, and the Change scenario being, okay if we had made these changes starting in 2018, then yes, we might have been a little bit above. We wouldn't have not seen the decreases in spawning stock biomass that we did.

MR. WILSON: Thank you.

DR. PUGH: I think that is my understanding of what Burton was trying to tell me via text here. Thank you, Burton. This is a team sport.

CHAIR ZOBEL: Go to Bob Glenn.

MR. BOB GLENN: Tracy, question for you. Did the TC assume that fishing effort remained constant in this analysis?

DR. PUGH: Yes, I think so. We used essentially the average quarterly F from the entire time series. The whole time series, going back to 1982. From what I understand is, that F, once we got that averaged by quarter, that F was applied to each quarter in the simulation constantly.

MR. GLENN: Just a quick follow up. Based on that, would you expect that any type of compensatory response in fishing effort in response to the gauge increases would impact the results? I guess my concern is that your results may be a little bit overoptimistic in the spawning stock biomass,

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because in response to the initial reduction in landings if the industry were to ramp up effort to compensate for that, I suspect that some of those increases would be ameliorated.

DR. PUGH: I think that's plausible. It is really difficult to try to understand how the industry would react to changes, and to what extent they can recoup. But yes, I think that anytime we do these simulation analyses and we have to make assumptions and hold things. It is important to remember that these are estimates, and these are estimates making a fair amount of assumptions around both the environmental conditions that are sort of behind this that we're kind of holding stable in this instance, or fishing behavior.

MS. ZOBEL: I'm going to go to Burton online who has his hand up; I assume in relation to some of these questions we've been having.

DR. PUGH: Oh, great.

MR. BURTON SHANK: Bob, in response to your question. The time series mean for fishing mortality is 2.65, which equates to an exploitation rate of about 90%. There really isn't anywhere for industry to ramp up to. I mean that would take a lot to significantly increase that exploitation rate. Understanding that that is an exploitation rate that is defined differently than the way we use it in the stock assessment.

CHAIR ZOBEL: Steve Train.

MR. STEPHEN TRAIN: Dr. Pugh, I'm going to ask you to do a little forward thinking, if you don't mind, because it's where I'm looking at this. We didn't do any of this. This is what would have happened, it's where we would be theoretically. Is there any other tool in our tool box, the term we like to use so much, that could increase spawning stock biomass on a species that quickly with so little economic impact to the fishery? I'm just wondering if this continues a downturn where we go.

DR. PUGH: I think that is a reasonable question. I'm not sure that I can answer it, which is unsatisfactory for you guys, I'm sure. The TC is very focused on our analyses in relation to the resource itself. The economics are a challenge. We are not socioeconomic experts, so it is really outside of our wheelhouse.

But when you think about the tools that you do have in your toolbox, this is a quick and easy, and they do grow into harvestable range. I would say these are short term, relatively painful, but then the following years after the animals have grown into it then you recoup that in the weight. The other tools that you have to do this, you know I'm not sure, Steve, sorry.

I don't have a good response for that one. Cuts in traps would probably have to be extremely significant to start to see these kinds of gains, especially since with spawning stock biomass you're really getting these gains in increasing maturity in the size range. The middle legal size right now for Area 1 is right in the steepest part of that maturity ogive.

Like I said, little changes in the middle legal size right now gets you really big changes in the proportion of females that are mature as you go up that. That is why you see this rapid increase in spawning stock biomass, more so than you see it in reference then.

CHAIR ZOBEL: Any other questions at the moment from the Board? Jason, go ahead.

DR. McNAMEE: This is probably more of a comment than a question. I think I really appreciated this analysis. I think we've got some really good insights from it. Now I was just kind of thinking forward to the application, you know of this information. I guess it's on the agenda, so I won't jump ahead too far.

But I see this type of analysis in the work has been really helpful to potentially set some future management strategy evaluation. You know you

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are kind of looking at these tradeoffs indirectly. It feels like a good sort of start to that type of analysis. I guess I take from this that some of the machinery to do this sort of thing is built already, which would be helpful.

I guess maybe the question part could be, if any of what I just said isn't accurate, I could be corrected. But I'll just offer that as a comment, seems like a nice step towards a management strategy evaluation, where we could look at tradeoffs between different management strategies that we might look at. It kind of gets back to the question that Steve just asked a moment ago too. You can sort of see, like catch that question that we ask.

DR. PUGH: Yes, just really quickly. I think that the work that Burton put into the really the growth, and dealing with getting from a 5-millimeter size to a 1-millimeter size then is a big step forward. I think that the TC was thinking about this exercise with the future in mind, in terms of being able to set ourselves up to answer questions like this moving forward.

CHAIR ZOBEL: Carl Wilson.

MR. WILSON: Just continuing on Jason's theme of how this can fold into our ongoing conversations and MSE evaluations in the future. But I think we do have a pretty significant economic question out there on what these analyses would do, whether it be for the market categories, as we've already talked about trade issues within the United States, trade issues between U.S. and Canada and abroad.

I guess a question for the Board is, I wasn't particularly planning on this but it seems relevant. Is there a group that we can pull together that might address some of the economic and market implications of this work, but also kind of in support of the MSE discussions, or is that the Subcommittee?

CHAIR ZOBEL: Yes, Carl let's say let's hold your question for right now, or that question back to

the Board, finish with the questions for Tracy and then we'll circle back, and I'll circle back to you, David, as well for comments. Are there any other questions for Tracy right not for the Board? I do want to go out to the public for a few questions, if there are any members of the public that have a question for Tracy around this report back to the Board. Okay, seeing no questions I'm going to go back to David for your comment, and then maybe Carl, we can have a brief discussion on that.

MR. BORDEN: I didn't want to do this before, but I would like to complement the Technical Committee on the fine work. I would say without a doubt this is the best work that I've seen done on this subject ever, and I don't think that is an exaggeration. I really think they have excelled at it.

I particularly like the fact that they tested it against a prior analysis and considered some parameters that were very different than had been considered in the prior analysis, and yet the results were basically validated in my own mind, the prior strategy. Now, I think that those of us around the table that have been at this for a long period of time can agree to disagree on the increments of change for regulations.

I think that was kind of fair game, but I particularly like the fact that the technical people standardized this based on a millimeter, which I think is a really reasonable way to affect change on a regulation of this order. I really take my hat off to the technical folks, outstanding work. I think we can take it a step further, as Carl Wilson indicated. I think we should look at some of the market implications of it. As Jason already said, maybe we can do that as part of an MSE or pull together a separate committee. Off the top of my head, I cannot think of another management measure that we could implement, especially if you implement it over gradually, two or three years a millimeter.

How you can implement a change that is going to increase the SSB to this extent with this little pain for the industry. Keep in mind, I think, and this goes back to the point that Carl raised. The SSB is

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changing and egg viability is changing. There was a paper that came out here recently about ocean acidification and the potential impacts that has on egg viability.

There are a lot of good reasons to have larger size animals, we get their eggs and potentially increasing viability in a changing environment. I think ought to factor those types of points into the deliberation, and eventually figure out a strategy on how to move something ahead.

The last point is, if this had not gone out to the LCMTs I would request it be sent out to the LCMT members. I'm sure Carl has sent it out to his own council members, but if not then it should go to the Zone Council members at a minimum.

CHAIR ZOBEL: Carl Wilson.

MR. WILSON: Just a comment of kind of pulling us a little bit out of simulation and results into just a little bit of introducing some reality of, if we had implemented the gauge increase last year, as was proposed. As it was in 2025, we had approximately about a 10% decline in landings and a 20% decline in value.

If we had introduced another 5 to 10% decline in weight or numbers, we have an industry that is now in a point where the economics are very much stressing this fishery. The resource is declining, and without our understanding of the economic implications of some of these changes.

I think that we're asking and why I feel like we had such a pushback from industry is, we're asking them to make major changes without a good understanding of what those applications will be to their bottom line. That is a tough place for us to all be in at this point. We've seen it in other fisheries; we've seen it in other lobster fisheries. But that is just the reality we're in right now.

CHAIR ZOBEL: David.

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MR. BORDEN: Just an added take off one of Carl's points, and I'm not disagreeing with that. I mean we really need the economic information on the impacts on the fishery, in terms of changing the size structure. I mean at least down our way we still have some dealers, particularly in New Bedford that grade and pay based on size.

You talk about shifting the catch from Chickens, which they don't pay much for, up into Halves and two-pound lobsters. If the price goes up like two dollars a pound, then it's going to buffer some of the negative impacts. We're going to need that type of guidance if we're going to consider this. I would also like to add to that that I think the question that Steve Train asked about what are the other mechanisms that we could utilize to manage the resource here, where we basically get equivalent benefits. I would love the technical people to talk about that some time on an agenda, to see what they could come up with for another strategy. I think that would feed into the process also.

CHAIR ZOBEL: Any other comments from the Board? With that, thank you, Tracy.

CHANGE IN LOBSTER CONSERVATION MANAGEMENT AREA 5 SEASON CLOSURE DATES

CHAIR ZOBEL: We can move on to the LMA5.

DR. PUGH: The second task that the Board asked us to look into was to review a proposal from LMA5 about shifting the timing of their seasonal closure. As a reminder, their current closure essentially is no lobster retention from February 1st through March 31st. There is a two-week grace period from February 1 through 14 to finish getting all the traps out of the water. Then there is a one-week period on March 4 through March 31 to set the traps.

Those traps can't be rehailed until April 1, but they can start getting the gear in the water. The proposal is essentially to shift their window so there is no lobster retention is from January 16 through March 15, and this proposal is all focused around

the increasing access to black sea bass. With that shift then the proposal would like to allow traps to be set and rehailed starting on March 9, and this is a set and rehaul, unlike the current.

This is 15 days early, and again this is to target black sea bass. This effectively shifts the timing of that lobster closure window earlier by two weeks. The TC, we don't have any landing or relevant time period in order to do analysis here. There is a little bit of landings data from January, but not really in March, in terms of what would come in March had we made this shift.

We had to focus on sort of a qualitative evaluation in discussion here. What we talked about is primarily a concern that shifting the timing could increase exploitation a little bit. The thought here is that catchability in March is likely higher than it would be in January, due to warming waters and increased activity of lobsters.

We recognize that this change in exploitation would likely be very small, but it is there nonetheless. Essentially what we came to suggest to the Board was that because this proposal is based on increasing access to black sea bass, we suggest that maybe the Board would monitor by the timing of the setting here to accommodate this request for black sea bass access.

Allow setting starting March 9, allow those traps to be rehailed for black sea bass harvest, but the lobsters have to be discarded. Maintain the current prohibition on lobster possession from February 1 through March 31, and we think that any bycatch in hauling for black sea bass, we're not really afraid that this is going to cause any discard related mortality to lobsters in this time of year. You know the animals should be all hard shelled, they are not molting during this time window. Trap discard for lobsters is assumed to be negligible or zero.

We don't think that this would have a big impact to lobster exploitation, but would allow the access for black sea bass as is driving this request. Yes, again, this may change the actions requested, but it also maintains the intended purpose of the seasonal closure to reduce lobster exploitation, which is coming from Addendum XVII. That is where we're at with this one, so anyone have any questions?

CHAIR ZOBEL: Thank you, Tracy, questions for Tracy. David Borden.

MR. BORDEN: I'm not sure this is a question for Tracy, but I'll try. Is there any reason they can't, these individuals can't set black sea bass pots in this area? In other words, they want to get access to said lobster pots so that they can catch these black sea bass, is the way I understand the situation. But they are not prohibited from setting black sea bass pots, as long as they don't possess lobsters, is that correct, Caitlin?

MS. CAITLIN STARKS: There is a period where the pots, that are also tagged for lobster, cannot be set during that closure period.

MS. ZOBEL: Go ahead, John Clark.

MR. JOHN CLARK: Thanks to the TC for analyzing this. Do you need a motion for us to move ahead with this?

CHAIR ZOBEL: It depends what the Board wants to do. If you want to move forward with some sort of management action then yes, I do believe you would need a motion. Caitlin.

MS. STARKS: I guess just to provide some context or options. The LMA5 Plan was approved as a conservation equivalency plan by the Board from Addendum XVII. If you wanted to make a change to the rules for LMA5 you could do it without an addendum.

That process would probably be you would want to task or maybe have the LCMT for Area 5 meet and provide a proposal to be evaluated as a conservation equivalency, which with the TC

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suggestion we could kind of do a conservation equivalency there, because there isn't an expected change in mortality from the discards. But it would have to be evaluated by the TC, approved by the Board and brought back at a future meeting as an official conservation equivalency.

Then the other option is to initiate a management action if you wanted to expand it outside of that. That said, any of these things would have to then go through a federal rulemaking process with NOAA. You could make a change to our state waters rules, but it would also have to be made in the federal regulations.

MR. CLARK: Well then with the fastest method, I mean they sound pretty lengthy if we went through all that. If the Board did decide to push forward with this, because I know in Delaware I spoke to our fishery, or at least half of it. Mike, you probably did the same in Maryland. The fishery is onboard with this, so is there a way we could move to start this process going now, rather than going through the Team Meeting?

CHAIR ZOBEL: Toni, go ahead.

MS. KERNS: John, we strongly advise you to have an LCMT meeting before you bring us a conservation equivalency plan, because we would want to make sure that all of the states have spoken to their industry. If indeed the process is that you just want to not be able to possess lobster during this time, as the conservation equivalency then that is fine.

We would still need, and the reason why we're saying have your LCMT meetings, is because there are guidelines in terms of when we do conservation equivalency it is like who needs to meet, when they need to meet, when those conservation equivalencies need to be put forward so the Board can consider them.

One of them is the Advisory Panel, but in this case, I would suggest it just be the LCMT since it

is this very one specific issue for Area 5, and then we would move forward in that way. But again, this process will take a longer period of time, because it has to go to federal rulemaking.

MR. CLARK: How do we then start this process? Who convenes LCMT for 5 to meet?

MS. KERNS: The states do.

MR. CLARK: Okay, so we could set up a meeting anytime.

MS. KERNS: Correct, and just be cognizant of, and I can send you or Rich, whoever, and Joe the Conservation Equivalency Guidelines, which has all the timings that you need to meet in order to get the issue before the Board at the August meeting.

MS. ZOBEL: Sounds like the action there is for those states to get together, have a discussion and convene the LCMT for Lobster Management Area 5.

MS. KERNS: Correct, and remember it is the states that hold the list of the LCMTs, the Commission does not hold that list, so you all decide who sits on the LCMTs not the Commission.

MS. ZOBEL: Mike Luisi.

MR. MICHAEL LUISI: Since we're at the Lobster Board talking about black sea bass, I wonder how does this get communicated to the Black Sea Bass Board, Black Sea Bass, Scup, Summer Flounder Board, and does that Board need to be involved in any way, shape or form?

MS. KERNS: I don't believe so, Mike, because it's the subject of the permit, which is through NOAA, the Area 5 waiver permit, which makes these traps lobster traps.

CHAIR ZOBEL: Eric Reid.

MR. ERIC REID: Since we are talking about black sea bass and now fluke and everything else on the Lobster Board. My only concern, and I don't have an answer is, if those pots are there two weeks

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earlier, what does that do with gear conflict in the trawl fishery, which may be in that area at the same time? If you're going to think about opening the area a little earlier, you're going to have to consider that.

CHAIR ZOBEL: I know we run into that plenty of times in other fisheries, where there is a change made and somebody has established a fishery during that season. Very good point. Any other questions? Doug Grout.

MR. DOUGLAS E. GROUT: Not so much a question, but I just hope when the states pull together their LCMT 5 that they bring forward both the original proposal and then what the suggested easier fix that the TC put forward, so they can look at both and see which would be easiest to implement.

CHAIR ZOBEL: Noted, thanks. Any other questions? Toni, go ahead.

MS. KERNS: It's not a question, but I don't know how important it is for these individuals to retain lobster or not, but I believe we can drop that permit in selection for a year, and they could just fish for their sea bass. But if they want to continue to retain lobster then they wouldn't want to drop that permit. But if I'm speaking out of turn, Alli, please.

CHAIR ZOBEL: Alli Murphy, go ahead.

MS. ALLISON MURPHY: Yes, the lobster permit is limited access, so you do have to renew it or you're going to lose that eligibility. You know someone, I think there are ways and that industry could not renew it until later in the year, potentially. I think there is a 45-day window to make changes to your federal permit. I think there is some flexibility there. But I think if folks pursue that they should be aware that if you don't renew your federal permit for a year, you would lose that.

CHAIR ZOBEL: Any other questions or comments? Since I did it with the last one, I will

go out and see if there are any public questions or comments on this. Seeing none in the room and none online. Thank you, Tracy, very much, echoing everybody's comments about the good work that the TC has done.

We tasked you with many, many things over the last few years, and the TC has always answered far above what we've requested, so thank you.

CONSIDER MANAGEMENT STRATEGY EVALUATION STEERING COMMITTEE NOMINATIONS

CHAIR ZOBEL: The next item on our agenda is to Consider Management Strategy Evaluation Steering Committee nominations. Go to Caitlin Starks for this.

MS. STARKS: I just want to remind everyone why we're discussing this today. But this stemmed from when the Board reviewed the 2025 benchmark stock assessment last fall, and the stock status for the Gulf of Maine/Georges Bank stock is not depleted, but the assessment did indicate that abundance had declined by 34% from that time series high that was seen in the 2020 assessment.

At that meeting the Board tasked the Technical Committee with updating its previous guidance on the process for initiating a management strategy evaluation or MSE for the Gulf of Maine/Georges Bank stock, which the Board reviewed at the last meeting this winter. As first steps toward the development of a Gulf of Maine/Georges Bank Lobster MSE, the Technical Committee provided two recommendations. The first one was to form a Steering Committee for scoping and coordinating the development of an MSE process, which would include the process to illicit management objectives from a variety of stakeholders as a first step.

The recommended representation on such a Steering Committee would include Board members, TC members, Commission staff, members of the Commission Committee on Economics and Social Sciences or CESS, industry, stakeholders, preferably with experience participating in the fisheries management process, and members of the

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Commission's Assessment and Science Committee or Management and Science Committee with past experience in MSE.

The Technical Committee also noted that the number of people on the Steering Committee that they recommended was about a dozen members to keep the group effective, and that it could be populated through a call for nominations and approved via Board action. The second piece of the Technical Committee recommendation is to begin a formal process to develop management goals and objectives for the future of the Gulf of Maine/Georges Bank lobster fisheries.

The TC recommended that the Steering Committee would be responsible for designing and developing this process, and that it would likely include a series of meetings, both at local scales, like state management zones or LCMAs and at a regional stock wide scale. The Steering Committee would provide guidance on the spatial scale and the number and content of the stakeholder meetings.

The Technical Committee also emphasized that while this type of management objective process is a necessary precursor to starting an MSE process, it wouldn't commit the Board to pursuing an MSE. The outcomes of this type of process could be beneficial no matter what direction the Board goes ultimately with MSE for lobster.

Taking all of that into consideration, the Board did agree to form a Steering Committee and these are the individuals that have been nominated to serve on this Steering Committee, and I'll just read them out so they are on the record. From the Board we have Carl Wilson, Renee Zobel, Jason McNamee and Bob Glenn.

Then from the TC, Kathleen Reardon, Tracy Pugh, and Burton Shank, Todd Guilfoos from the CESS, industry stakeholders are John Drouin, Richard Howland, John Jordan Jr., Michael Flannigan, Beth Casoni, Brendan

Adams, and Hank Soule, and then from ASMFC staff, Jeff Kipp and myself.

A couple of notes on the proposed membership. First, there are more than 12 nominees here, so just noting that. However, the states as they were providing recommendations for Steering Committee members agreed that it would be important to have industry representation from the beginning of this whole process, and noted the need to include representation from these different geographic areas that are represented here.

Then second, this Steering Committee would specifically be focused on developing a plan or a process for identifying the management objectives via industry meetings. If the Board were to pursue this process of meetings and holding get-togethers with industry, and then later move forward with a full MSE process, at that point it may be beneficial to reevaluate and possibly change the membership of the Steering Committee for that different purpose. Then this is a proposed, albeit probably over ambitious timeline for the work of the Steering Committee, assuming the Board approves the nominations today.

Staff thinks three meetings would be needed at a minimum and that they could be done virtually. The first of these meetings could occur maybe mid-June to review the existing management objectives, identify gaps given the current social and economic conditions facing the fishery, and discuss how to incorporate the existing management objectives into a new process.

Then a second meeting could occur to discuss the management objectives process, including a review of other examples that have been done, identifying the universe of stakeholders that would need to be involved, and outlining the structure, schedule and participants and objectives of each of the stakeholder meetings, and determining the role of a facilitator.

Then in the later meeting, possibly September, the Steering Committee could meet to discuss the cost estimates, given the other details that have been

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put together and recommended and develop the final report back to the Board. This proposed timeline would get that report out to the Board on the recommended management objectives process at the annual meeting. But that said, I will be up front, that it will likely be difficult to schedule meetings with this number of people, especially during the fishing season. This might be a challenging timeline and it might not be best to impose it as a strict timeline. That said, these are the actions for the Board to consider on this item, which are to approve the Steering Committee nominations and to provide guidance on that proposed timeline and objectives for that Steering Committee.

CHAIR ZOBEL: Does anyone have any questions for Caitlin before I entertain a motion. Carl, go ahead.

MR. WILSON: Just a question on the nature of the Subcommittee meetings, are they public? Can people listen in?

CHAIR ZOBEL: Yes, I think unless the Board were to specify that they wouldn't be public they would be public. That is our general policy. Jason McNamee.

DR. McNAMEE: Everything looks good. One question I had there, and I'm probably not understanding the way that you are kind of structuring the committee meetings. But I guess it is the June meeting in particular. I'm just wondering what you thought about sort of combining that into like the July meeting, for instance.

The reason is, I can see, so just kind of a review of existing objectives can potentially flow nicely into the subsequent process of adding to or modifying of something like that. Maybe I'm missing something else that is happening in the June meeting, but just wondering if we could combine those two.

CHAIR ZOBEL: Jeff Kipp.

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MR. KIPP: Jay, I can take a shot at answering your question. I think the thought process there was, in addition to reviewing what is already on the books, what management objectives, identifying what the holes are. We also wanted to include some case studies of where this has been done for other species, to give this group some idea on path forward.

Then I think the thought process too was, when that group identifies what those gaps are, it would be good to have some time between that call and the next call to kind of brainstorm and think about those gaps, and bring those to the next call, we could more collectively over existing management objectives and more modern in future management objectives, sort of having a better idea of what those gaps are.

DR. McNAMEE: That makes perfect sense, thank you.

CHAIR ZOBEL: Eric Reid.

MR. REID: It's just a simple question, I think, which means it's probably complicated, right? You have one economist social scientist in the makeup of that committee, is that enough?

CHAIR ZOBEL: Jeff.

MR. KIPP: Yes, we think that is appropriate for the scope work for this group, which is essentially to identify what the landscape of these workshops looks like. When are they going to occur, what is the spatial scale, et cetera. We recognize that there is going to be a much broader universe of people that are going to have to be actually involved in those workshops.

That is one of the tasks of this Steering Committee, is to identify who all those folks are that need to be incorporated and included in these workshops that occur. We would plan to address a lot more economic experience and background at that point.

CHAIR ZOBEL: Any other questions? I would love to entertain a motion to kick us off here, if anybody has a motion to bring forward. Carl Wilson.

MR. WILSON: I **move to approve the nomination to the Steering Committee on Lobster MSE.**

CHAIR ZOBEL: Seconded by Jason McNamee, any rationale for either of you? It's pretty straightforward.

MR. WILSON: No direct rationale, other than I do appreciate the expanded membership to reflect some of the spatial variation within the fishery.

CHAIR ZOBEL: Okay, so any discussion on the motion from the Board? No discussion from the Board. I do see a member of the public with their hand up, so I am going to go ahead and take comment/question. Hank Soule.

MR. HANK SOULE: Thanks, Hank Soule; Atlantic Offshore Lobstermen's Association. Just a process question. If one of the nominees is unable to serve what happens then?

CHAIR ZOBEL: Bob, go ahead.

EXECUTIVE DIRECTOR BEAL: The nominees came through the state, so I think if there is somebody that can't serve, the state has the ability to nominate a new individual and the Board can approve it.

CHAIR ZOBEL: Yes, and Hank, if you're looking for a meeting-by-meeting type situation. This is a very small workgroup, so we're really looking for a commitment from whoever is going to serve. It wouldn't make sense to switch people out in the middle of a 3-meeting process. All right, **is there any objection to the motion on the board? Seeing no objection the motion carries by consent.** Next up is a report from the Gulf of Maine states on industry surveys and

meetings. Let's go north to south this time, so Carl Wilson, you are up first.

MR. WILSON: Well, we once again have had another round or are in the middle of another round of Lobster Zone Council meetings, where the topic of the day continues to be around how the fishery is performing and what the status of the resource is. Within our Lobster Advisory Council, we also had a subcommittee formed, or a portion of the Lobster Advisory Council started to work up a series of initiatives that would be commonsense or relatively kind of easy wins, is how they were described.

Our technical staff within the department is going back and trying to provide some evaluation of what those might be. As an example, we're trying to use similar to what the TC report today was, where we're using potential gauge size increases as kind of a reference point for what these smaller measures might be, a small part of what that increase would have been.

We're looking at kind of shifting the harvest window, with kind of a shift in that size window. We're also looking at what a spun-up lobster hatchery supplementation program would be, and what the contributions of purchasing lobsters, v-notching them and release would be as well. These are programs that we've done in the past, but at relatively small scale.

Then we're also looking at the size, location and number of vents, and also the size and location of bio panels that allow lobsters to escape if the trap is lost. Like I said, we have another Lobster Management Council mid-May, and we hope to be presenting some technical analysis on those small measures. Conversation continues in Maine.

CHAIR ZOBEL: Thanks, Carl, I'll be extremely brief. Right after the February meeting we had the opportunity to present back to our industry association the results of our lobster industry survey, which were all presented to the Board, very

similar amongst the three states, and so we continue to have dialogue. Go ahead to Bob Glenn.

MR. ROBERT GLENN: Thank you, Madame Chair, I'll be even briefer. I have nothing new to report at this time to the Board.

CHAIR ZOBEL: Okay, does anyone have any burning questions for the three of us on our updates? Seeing no questions.

CHAIR ZOBEL: We are moving on to an Update on a Request for Information or RFI for Alternative Gear Marking Framework, Alli Murphy.

UPDATE ON REQUEST FOR INFORMATION FOR ALTERNATIVE GEAR MARKING FRAMEWORK

MS. MURPHY: I also just have a brief update for you all. The request for information notice, last time I think I reported that we were drafting it, is now in review. Again, like I said at the last meeting, I'm hoping that at your summer meeting we'll have a more detailed update to give to you all.

CONSIDER OUTSTANDING MANAGEMENT CHANGES

CHAIR ZOBEL: We will now consider Outstanding Management Changes. Caitlin, go ahead.

MS. STARKS: I'll try to remind everyone what this is about, since it is kind of a confusing title. But at the last meeting there was a request for staff to provide the Board with a summary of any management changes that had been recommended in previous discussions as a Board, or with the Lobster Conservation Management Team, so that the Board could be aware of those and consider them for a future management action.

I went through the meeting minutes and LCMT summaries from the past several years and

pulled together a list of those. For LCMA 2 and 3, these recommendations came from the LCMT meetings that were held a few years ago to provide input on the NOAA Fisheries rulemaking on Area 2 and 3 Ownership path and trap cap reductions, which was responding to the Commission Lobster Addenda XXI and XXII. That rulemaking has since been withdrawn so, in federal waters the caps were not implemented.

The recommended measures for Area 2 were to allow harvesters to maintain a maximum of 2 permits with 800 traps each for a total of 1600 traps, rather than an ownership cap of 800 traps, and this would allow the possibility of banking up to 800 traps in addition to the cap of 800 active traps. There was also a suggestion at the LCMT 2 meeting to allow the transfer of traps between permits owned by a single entity, without the 10% conservation tax.

Then for Area 3 the LCMT recommended not raising the active trap cap as described in Addendum XXI, and that would mean maintaining an active trap cap of 2,000 traps. They also recommended not reducing the ownership cap as described in Addendum XXII, and the maximum ownership cap is 5 times the individual permit cap. Then lastly of course there is the management change for Area 5 that was discussed earlier today to change the lobster fishery closure dates. But that is the list of items that I was able to pull.

CHAIR ZOBEL: Thanks for the report back to us on that. Any questions for Caitlin on that? Dave Borden.

MR. BORDEN: I would just like to thank Caitlin and Toni for doing that. I was the one that asked the question at the last Board meeting, and Caitlin and I have already had this exchange. There are a number of other ideas that have been circulating both within Area 3 and Area 2, and I'm sure that other areas will come forward in the future with other suggestions. I just look at this as a living document. I don't think we need to do anything. You can stick it on the shelf, and as additional ideas come forward from the industry, I think we should

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add to it, so that at some point we can do a comprehensive addendum, so thank you very much.

CHAIR ZOBEL: Any other Board members? Okay, seeing none.

REVIEW AND POPULATE ADVISORY PANEL MEMBERSHIP

CHAIR ZOBEL: We are going to go to Tina to review and populate the Advisory Panel membership.

MS. TINA L. BERGER: For the Board's consideration I offer the appointment of Christopher Townsend, a professional pot fisherman from Massachusetts. He replaces Eric Lorentzen, who was previously on the panel.

CHAIR ZOBEL: Do we have a motion to do so? Bob Glenn.

MR. GLENN: I **move to approve the nomination of Chris Townsend from Massachusetts to the Lobster Advisory Panel to replace Eric Lorentzen.**

CHAIR ZOBEL: Do we have a second? Seconded by Joe Cimino. Anything else to add? Good, okay. Any discussion on the motion. **Is there any objection to the motion on the board? Seeing no objection the motion carries by consent.** All right, one final item. Do we have any other business to come before the Board today? Dennis Abbott.

MR. DENNIS ABBOTT: We had a lot of discussion about moving forward with lobster management and maybe increasing gauge sizes et cetera, and during the last iteration of this there was considerable discussion about the Canadian involvement. Are we going to ignore that as we move along, are we going to inform them at a much later date that we've done something or are doing something, or should

there be some sort of parallel path working with the Canadians?

In my own mind I can see with the relationships between the two countries, that I don't know how they will be amenable to anything we do. It seems like that should be part of our considerations, because it was in the past. I didn't know where to bring that up earlier, but that has been on my mind.

CHAIR ZOBEL: We'll just say we're not taking off any actions right now, we have these work groups that are kind of the precursor to a potential Management Strategy Evaluation. The economic piece, a number of people have already, and I agree is an important component for analysis, as well as kind of these market components, including the relationship of Canada.

I perceive before anything would move forward that we need to move forward with a number of those things, but we don't have anything before us right now that drives that direct conversation. But Toni, you had your hand up. Was there anything you wanted to add? No, okay. That is my understanding and kind of how I see it. If anyone disagrees with me, kind of raise your hand on that.

ADJOURNMENT

Thank you for bringing it up, Dennis. Any other business to come before the Board? We are adjourned, thank you.

(Whereupon the meeting adjourned at 12:10 p.m. on Monday, May 4, 2026)

Atlantic States Marine Fisheries Commission

American Lobster Management Objectives Process Steering Committee Meeting 1 Summary

Monday, June 8, 2026

2:00 - 5:00 p.m.

The American Lobster Management Objectives Process (MOP) Steering Committee (SC) met for its first meeting to begin addressing the items tasked by the American Lobster Management Board in its February 2026 motion:

Move to form a Steering Committee (SC) to:

1. Review existing management objectives, as outlined in Amendment #3 and subsequent addenda, relative to the current GOMGBK stock status, and social/economic conditions facing the fishery today.

2. Develop a process that would clearly identify new management objectives (across all stakeholders), to better understand socioeconomic status and concerns, and to identify potential management tools.

Representation on the SC shall follow recommendations outlined in the January 20, 2026, Technical Committee memo. The SC will recommend a process for both tasks for the August 2026 Lobster Management Board.

The meeting discussions are summarized below in the order of the agenda:

1. Welcome & Introductions

To start the meeting the members of the SC introduced themselves to the group. Staff provided guidelines for participating in the virtual meeting. All SC members were in attendance for the meeting, along with several other attendees (Appendix 1).

2. Steering Committee Purpose and Expected Products

Jeff Kipp provided an overview of the purpose and objectives of the SC, as outlined in the Board motion, along with expected products to be developed for the Board. The presentation also described the typical process for a Management Strategy Evaluation (MSE), which includes three general steps: 1) definition of management objectives; 2) conducting an MSE to determine relative performance of possible management strategies; 3) possibility for subsequent iterative process(es) to refine objectives. It was emphasized that the scope of work for this SC is to recommend a process for the completion of step 1, but not to provide recommendations or perform work related to the subsequent steps. The SC tasks are to review the existing management objectives, as outlined in Amendment 3 to the Lobster Fishery Management Plan (FMP), and to develop a process that would clearly identify new management objectives. It was clarified that this process is focused on the Gulf of

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Maine/Georges Bank (GOMGBK) stock region and will not include the Southern New England region.

The SC discussed that the present task will not address the identification of management strategies, but the SC may recommend the timing during the MOP for discussing possible management approaches and getting stakeholder input.

3. Review Existing American Lobster Fishery Management Objectives

Caitlin Starks presented the management goal and objectives currently in Amendment 3 to the FMP. The SC discussed whether the recommended MOP should aim for the same level of specificity of these objectives. It was noted that objectives could be classified as “conceptual” or “means” objectives, with conceptual objectives being overarching objectives and means objectives being more specific and quantifiable statements of how conceptual objectives will be achieved. It was agreed that examples could be provided during the next meeting to provide the group with a better sense of the goal for this process, but that the SC should strive to address both of these objective types through this process to streamline a potential MSE later on. Jason McNamee noted it could be beneficial to separate objectives that can be quantifiably tested in an MSE and those that cannot. Bob Glen noted that some of the existing objectives conflict, and there is a lack of socioeconomic context in existing objectives that would need to be addressed.

4. Review of Other Management Objectives Process Examples

Ecosystem Management Objectives Workshop (EMOW)

Shanna Madsen presented on the EMOW that was conducted for Atlantic Menhaden in 2015. This process included convening stakeholders to define management objectives and associated measures of performance. The stakeholders met for an in-person workshop and provided input on fundamental (i.e., conceptual) and means objectives, as well as the performance measures that should be used to evaluate whether the objectives are achieved by management strategies. She noted that there has not been a full MSE for menhaden, but the objectives developed were helpful for guiding management.

Lessons learned from this process that could be helpful for the SC to consider included:

- The group size should be limited to a number that a facilitator can manage in a workshop, but there needs to be representation of important groups and perspectives.
- It can be challenging for the group to understand the purpose and scope of the workshop and stay focused on that.
- In advance of the workshop, the facilitator met with the stakeholders specifically to clearly identify goals and expected outcomes of workshop, which was very helpful.
- Meeting in-person versus over webinar is critical.
- It was very valuable to establish a strong timeline for project milestones and deliverables.

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Additional materials from the EMOW process and development will be shared with the SC for reference after the call.

Horseshoe Crab Management Objectives Workshop

Caitlin Starks presented on recent stakeholder engagement processes carried out by the Horseshoe Crab Management Board: 1) a management objectives workshop in July 2024, and 2) a longer engagement process from September 2025 to May 2026, which was focused on developing recommendations to revise the values-based components of the Adaptive Resource Management model to better align with current stakeholder values.

Lessons learned from this process that could be helpful for the SC to consider were:

- It was beneficial to have the participants, as part of the application to be involved, sign an agreement to commit to participation guidelines, including attending all meetings and reviewing all background materials.
- Third-party facilitators bring fresh perspectives and could build trust with stakeholders when they do not have historical involvement with fishery and associated biases.
- Meeting location(s) and timing should consider accessibility for all stakeholders and accommodate their availability as much as possible.
- Trade-offs between group size and depth of discussion must be considered and weighed based on the goals of the meeting. Larger groups are very difficult to bring to consensus.
- It was beneficial for the facilitator to meet with some participants in small groups or individually before the workshop to better understand their specific perspectives and concerns.
- Establishing clear meeting objectives and preparing the participants in advance for the discussions and goals of the workshop was critical to success.

It was noted that the format and structure of this process for lobster management objectives may be very different from the menhaden and horseshoe crab examples. The Lobster Technical Committee suggestion for this process was to start with a series of meetings at smaller localized scales (e.g., state management zones) to capture as much input as possible, then have meetings with smaller groups of representatives across larger areas to refine that input.

Jason McNamee noted that in the Atlantic herring MSE process, he observed that there was a lack of continuity in participants across meetings, which created challenges for merging different ideas that emerged from each meeting.

Several SC members noted that it would be important to get input and guidance from a facilitator on developing the framework for this process.

5. Discussion: Identifying gaps in existing management objectives given social and economic conditions facing the fishery today

Atlantic States Marine Fisheries Commission

The SC discussed the current management objectives and noted several gaps that are not addressed. Below are the main topic areas identified by the SC as current gaps in the objectives:

- Socioeconomic vision for the fishery, including an improved understanding of baseline, current, and ideal conditions, and differences at local scales.
- Economics of the fishery
- Understanding relationships between the US and Canadian fisheries and trade, and how this should be addressed in objectives
- Consideration of trade-offs between uniformity and flexibility in management measures across areas.
- Fishery effort, including mechanisms for controlling it and current levels
- Consideration of different spatial scales for management (i.e., smaller scales than stock or LCMA)
- Objectives around communities (e.g., thinking about how whole communities are impacted by management, considering fishery reliance, equity, stability, etc.)

The SC suggested that objectives could be categorized into groups based on the focus and what they are intended to achieve, such as effort, fishing mortality, economics, etc. The SC noted that it seems like there is a critical need for individuals with expertise in lobster trade (e.g., dealers, wholesalers, etc.) and an understanding of trade impacts and interactions with Canada to be part of this process. It was suggested that the SC could look into other examples of fishery management in the US where Canada is involved, such as Pacific halibut and northeast groundfish.

6. Discussion: How to incorporate existing management objectives into current management objectives process

The SC discussed possible approaches for incorporating the current management objectives into a process to identify new objectives for management. Two approaches were suggested, but it was noted there may be other options: 1) a “blank slate” approach where the current management objectives are not presented, and stakeholders provide new objectives, or 2) presenting the current management objectives as a starting point and discussing how they should be modified.

Several SC members supported the blank slate approach and felt that it would allow for more valuable input and fresh ideas. The SC generally agreed that it would prefer to determine the best approach with guidance from a facilitator. It was noted that the SC providing a facilitator with a vision of where we are and where we want to get to would help support a facilitator get us to our end goal.

One SC member suggested using the results of the recent industry survey in Maine to frame discussions. It was also noted that it seems like the timeframe for this process could overlap with the timeframe for the upcoming Atlantic Large Whale Take Reduction Team (ALWTRT) process, and that it may create challenges if these two processes are happening simultaneously.

7. Next Steps and Other Business

Atlantic States Marine Fisheries Commission

The SC discussed agenda items for next meeting, including a deeper dive into the difference between fundamental and means objectives with examples, and how to involve LCMTs in this process. Several SC members felt strongly that the LCMTs need to be reconstituted and involved early on in the MOP.

The SC also reviewed a draft list of questions to guide the development of its recommendations (Appendix 2). These questions are meant to identify the information the SC should gather and provide to the Board in its report. The group added additional questions to the list related to appropriate meeting duration for participant learning curves, LCMT involvement, participant preparation, and ways to get input before meetings.

Before the next meeting, ASMFC staff will provide draft meeting minutes to the SC, create a Sharefile account for sharing meeting materials, and poll for the next meeting date.



LOBSTER CONSERVATION MANAGEMENT AREA 5

Lobster Conservation Management Team

MEMORANDUM

TO: American Lobster Management Board

FROM: LCMA 5 Lobster Conservation Management Team

DATE: July 22, 2026

SUBJECT: Recommendation to the American Lobster Management Board to change the starting date for setting black sea bass pots in LCMA 5 from March 24 to March 9

The newly reconstituted Lobster Conservation Management Team (LCMT) for Lobster Conservation Management Area (LCMA) 5 met remotely on July 21, 2026 to discuss advancing the starting date for setting black sea bass pots in LCMA 5 from March 24 to March 9. The LCMT members proposed this change because the availability of black sea bass LCMA 5 is now much earlier than the March 24 date set over ten years ago, so allowing black sea bass pots to be set earlier than March 24 will enable LCMA 5 permit holders more days to pot black sea bass. This black sea bass pot season change will not change the February 1 to March 31 lobster closure required by the FMP.

After a brief discussion, the LCMT approved the following motion for consideration by the American Lobster Management Board:

The LCMA 5 LCMT recommends that the American Lobster Management Board (Board) request that the NOAA Fisheries Greater Atlantic Regional Fisheries Office revise the LCMA 5 season to allow black sea bass pots to be set beginning on March 9 instead of March 24 while maintaining the current American lobster harvest closure (February 1 through March 31), as proposed by the American Lobster Technical Committee in its April 20, 2026 memo to the Board.

Motion by Mr. Townsend, seconded by Mr. Conti. The LCMT approved the motion by consent.

The LCMT urges the Board to approve this recommendation at its August 4, 2026 meeting so the recommendation can be forwarded to the NOAA Fisheries Greater Atlantic Regional Fisheries Office immediately, thus allowing as much time as possible for rulemaking before the 2027 season. Thank you.

Attachments:

Meeting Agenda

Meeting Minutes



LOBSTER CONSERVATION MANAGEMENT AREA 5

Lobster Conservation Management Team

AGENDA

1. Approval of Agenda
2. (Optional) Elect Chair and Vice Chair. This is a LCMT decision.
3. Discuss recommendation/proposal (term used in Amendment 3 to the Interstate Fishery Management Plan for American Lobster, 1997) to change the starting date for setting black sea bass pots and approve a motion to send to Board.

‘The LCMA 5 LCMT recommends that the American Lobster Management Board (Board) request that the NOAA Fisheries Greater Atlantic Regional Fisheries Office revise the LCMA 5 season to allow black sea bass pots to be set beginning on March 9 instead of March 24 while maintaining the current American lobster harvest closure (February 1 through March 31), as proposed by the American Lobster Technical Committee in its April 20, 2026 memo to the Board’.

4. Other issues/new business
5. Adjourn



LOBSTER CONSERVATION MANAGEMENT AREA 5

Lobster Conservation Management Team

Minutes of the July 21, 2026 Remote Meeting

LCMT Attendees

Carmen Conti, NJ
Wes Townsend, DE
Sonny Gwin, MD
Corey Gwin, MD

State Support Staff

Jeff Brust and Chad Power, NJ
John Clark and Rich Wong, DE
Mike Luisi and Matt Jagowsky, MD

ASMFC Staff

Caitlin Starks

The meeting was called to order at 6:05 PM.

The agenda was approved by consent.

The LCMT decided not to elect a Chair and Vice Chair since this was the first LCMT meeting in over 10 years and there was only one issue to discuss.

The LCMT discussed Agenda Item 3, the recommendation/proposal (term used in Amendment 3 to the Interstate Fishery Management Plan for American Lobster, 1997) to change the starting date for setting black sea bass pots and approve a motion to send to Board. One LCMT member stated that black sea bass arrive even earlier than March 9 so it would be better to recommend an earlier starting date than March 9, but the LCMT members then agreed that the March 9 date was the original request to the American Lobster Management Board and it had been reviewed by the American Lobster Technical Committee and thus had the best probability of being approved by the Board.

Mr. Townsend then made the following motion:

‘The LCMA 5 LCMT recommends that the American Lobster Management Board (Board) request that the NOAA Fisheries Greater Atlantic Regional Fisheries Office revise the LCMA 5 season to allow black sea bass pots to be set beginning on March 9 instead of March 24 while maintaining the current American lobster harvest closure (February 1 through March 31), as proposed by the American Lobster Technical Committee in its April 20, 2026 memo to the Board’

The motion was seconded by Mr. Conti. There was no further discussion of the motion and the motion was approved by consent.

The LCMT had no further business and adjourned at 6:25 PM.

Dated: July 9, 2026.

Christopher Abbott,

Deputy Assistant Secretary for Policy and Negotiations, performing the non-exclusive functions and duties of the Assistant Secretary for Enforcement and Compliance.

[FR Doc. 2026–14291 Filed 7–15–26; 8:45 am]

BILLING CODE 3510–DS–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XF749]

Request for Information on Ropeless Fishing; Fisheries of the Northeastern United States and Atlantic Coastal Fisheries Cooperative Management

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

ACTION: Notice; request for information.

SUMMARY: NMFS is requesting information from fishery participants and others with specialized knowledge on the potential use of ropeless fishing gear, which includes on-demand fishing gear and other fixed gear that does not use persistent buoy lines. This information will inform any potential future use, development, and management of these systems in fisheries in the Greater Atlantic Region. NMFS intends to summarize the responses to this request for information and share that summary publicly.

DATES: Responses are due on or before October 14, 2026.

ADDRESSES: You may submit comments on this document, identified by NOAA–NMFS–2026–2080, by the following method:

- *Electronic Submission:* Submit all electronic public comments via the Federal e-Rulemaking Portal. Visit <https://www.regulations.gov> and type NOAA–NMFS–2026–2080 in the Search box. Click on the “Comment” icon, complete the required fields, and enter or attach your comments.

Instructions: When responding to this request for information, please label your response with the corresponding question number to which your input is directed. Comments sent by any other method than the one listed above, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on <https://www.regulations.gov> without change. All personal identifying information (e.g., name, address, etc.), confidential

business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter “N/A” in the required fields if you wish to remain anonymous).

Copies of supporting documentation to this request for information are available online. The technical report *Evaluation of On-Demand Gear Acoustic Interoperability Approaches in the Northeast U.S.* by the MITRE Corporation, is available at https://library.oarcloud.noaa.gov/noaa_documents.lib/NMFS/On-Demand_Gear_Interoperability_Report.pdf. The Northeast Fisheries Science Center report *A Proposal for Functional Data Specifications of On-Demand Fishing Gear, Version 2* (Galvez, 2026) is available at https://repository.library.noaa.gov/view/noaa/73583/noaa_73583_DS1.pdf.

FOR FURTHER INFORMATION CONTACT:

Caroline Potter, Fisheries Resource Management Specialist, (978) 281–9325; caroline.potter@noaa.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

Under the Consolidated Appropriations Act, 2023, NMFS is required to, “in consultation with affected States and fishing industry participants, promote the innovation and adoption of gear technologies” (Division JJ, Title I, Section 101(a)(1)). The Act mandates this effort to implement “new regulations for the American lobster and Jonah crab fisheries consistent with the [Marine Mammal Protection Act (MMPA) and Endangered Species Act] that take effect by December 31, 2028, utilizing existing and innovative gear technologies, as appropriate” (Division JJ, Title I, Section 101(a)(2)).

Accordingly, NMFS is providing resources to support the development of ropeless fishing gear as a potential voluntary alternative for fixed-gear fishermen to operate in areas with persistent buoy line restrictions while minimizing risks to large marine mammals. NMFS continues to collaborate with fishermen, technology manufacturers, state agencies, fishery management organizations, and other partners to explore the benefits and limitations of these technologies. This request for information (RFI) is a key step of this ongoing effort to comply with the mandates of the Consolidated Appropriations Act, 2023. This RFI does not limit NMFS’ ability to consider other innovative gear or management

activities and various management options are being considered.

Buoy lines connecting physical surface markers with fixed fishing gear—such as traps, pots, and gillnets—can become entangled with large whales, leading to the serious injury or death of the whale. Restricting the use of persistent buoy lines is one way to reduce the risk of entanglement for protected species, including North Atlantic right whales. Ropeless fishing gear substantially reduces entanglement risk and, if approved, could be used in areas with persistent buoy line restrictions.

In 2021, to comply with the requirements of the MMPA and respond to high rates of incidental deaths and serious injuries exceeding allowable limits, NMFS amended the Atlantic Large Whale Take Reduction Plan (86 FR 51970, September 17, 2021). This rule restricted the use of persistent buoy lines in particularly high-risk entanglement hotspot areas during times of the year when North Atlantic right whales and persistent buoy lines are most likely to co-occur.

The Consolidated Appropriations Act, 2023, requires NMFS to implement “additional whale protection measures by December 31, 2028,” (Division JJ, Title I, Section 101(a)(1)). If the best available scientific data shows that U.S. commercial fixed-gear fisheries continue to exceed the MMPA’s legal thresholds, new or modified times and areas where persistent buoy lines are restricted may be considered, including during right whale aggregations. However, if authorized by NMFS, fixed-gear fishermen could use ropeless gear to continue fishing in new or modified areas, as well as the previously restricted areas.

Currently, the regulations governing the operation of federal waters fisheries in the Greater Atlantic Region require all fixed fishing gear to have physical surface markers (buoy/high flyer with radar reflector/pennant) (e.g., 50 CFR 648 for Council-managed fisheries and part 697 for the lobster/Jonah crab fisheries). As a result of these gear marking requirements, any area that prohibits persistent buoy lines, but would otherwise allow fishing without those buoy lines, remains an area closed to fixed-gear fishing.

In 2025, the New England and Mid-Atlantic Fishery Management Councils initiated the Joint Omnibus Alternative Gear-Marking Framework Adjustment to consider whether to recommend that NMFS allow the use of fixed gear without physical surface markers in Council-managed fisheries if an equivalent alternative marking method

is used. NMFS is also considering whether to similarly modify the Federal American lobster/Jonah crab gear-marking regulations. If NMFS authorizes the use of gear-marking alternatives, such as digital gear markings, lobstermen could regain fishing access to current and any potential future restricted areas by using authorized ropeless fishing gear. Similarly, with these alternatives, fishermen could respond to sudden aggregations of large whales in an area by removing one or both endline(s), thereby reducing the likelihood of entanglement for the period of time the whales remain in an area. However, the Councils' action was postponed, pending additional input from stakeholders including the fishing industry. NMFS has, likewise, postponed action with respect to the lobster and Jonah crab fisheries to gather additional input and ensure consistency among the actions.

This RFI requests information specific to the program design, utility, limitations, and technical capability of ropeless fishing. It contains questions and associated context that were developed with a focus on Greater Atlantic Region operational and management considerations. However, NMFS also welcomes feedback informed by experiences where these gear alternatives are being used outside the Greater Atlantic Region. This RFI does not request comment on the number, size, location, or seasonality of any existing or future whale protection areas. The public will be notified if and when NMFS requests comment on those topics, which will occur through a different process and at a later time.

Description of Ropeless Fishing Gear

In this RFI, the term "ropeless" is used to describe all types of fixed-gear fishing that does not use persistent buoy lines. Therefore, ropeless fishing gear includes fixed gear rigged with an on-demand device or timed-retrieval device that triggers a retrieval mechanism. While gear rigged with these devices can still have ropes that are used to retrieve the gear, any buoy lines are only intended to remain in the water column for a short time during gear retrieval. Because ropeless gear refers to all fixed gear without any persistent buoy lines, it also encompasses fixed gear without one of these devices that can be retrieved by grappling. A string or trawl of fixed gear that uses a traditional, persistent buoy line on only one end is referred to as "one-end ropeless." The end without the persistent buoy line may or may not be rigged with an on-demand or timed-retrieval device and retrieval mechanism.

Both trap/pot and gillnet gear, as well as other fixed gear types, can be fished in a ropeless configuration. For on-demand and timed-retrieval devices, the line can be stowed on the ocean floor rather than vertically in the water column between the bottom gear and the surface marker. An on-demand device uses acoustic communication to activate a retrieval mechanism such as a pop-up buoy, inflatable lift bag, or buoyant-rope spool. Timed-retrieval devices are designed to function similarly, except they use a timer or galvanic link to activate a retrieval mechanism. All of these types of ropeless fishing gear can be marked using alternative gear-markings such as digital markings.

Section III of this RFI provides definitions of the terms used in this RFI.

Ropeless Fishing Gear's Functional Equivalence to Traditional Gear

Ropeless fishing gear that does not use persistent buoy lines and surface markers should reproduce the functions served by surface markers. Such functions may include, but are not limited to: Allowing ocean users to visually detect the location of the gear; conveying set direction; allowing the gear to be retrieved; conveying identifying information that is required by the relevant fishery (e.g., permit number); and allowing law enforcement to locate, retrieve, and redeploy the gear. Reproducing these functions allows fishermen and other ocean users to continue to operate in close proximity to the fixed gear while minimizing gear conflict. To achieve these functions, in part, ropeless fishing gear can be marked and visualized digitally. This RFI requests comment on how this should most effectively be accomplished.

II. Topics for Comment

1.0 Authorization of Ropeless Fishing Gear

Context

Through the Alternative Gear-Marking Framework Adjustment action, the New England and Mid-Atlantic Councils are considering when and where digitally marked gear could be allowed in its fixed gear fisheries. NMFS is concurrently considering whether to modify Federal lobster gear-marking regulations to relieve surface marking restrictions. During this process, the Councils received feedback highlighting the diversity of the fixed-gear industry, suggesting that regulatory changes must account for regional differences in fishing practices. In addition, other solutions such as grappling or removing

one endline have been suggested as potential solutions to reduce large whale entanglement risk. Therefore, NMFS requests comments on information that will help inform decision making.

Questions

1. What experience do you have with ropeless fishing gear?
2. Ropeless fishing gear: Under what specific environmental, seasonal, or operational circumstances should NMFS authorize the use of ropeless fishing gear? Conversely, under what circumstances should its use be denied?
3. One-end ropeless gear: Under what specific circumstances should NMFS authorize the use of one-end ropeless gear? When should it be explicitly denied?
4. Do you support the use of grappling-only ropeless fishing gear? What limitations or guidelines should accompany its use?

2.0 Safety and Performance of On-Demand and Timed-Retrieval Fishing Gear

Context

NMFS is working to develop standards that ropeless systems would need to meet to be approved for use in regular commercial fishing operations in the Greater Atlantic Region. Establishing these standards will help ensure that fishermen have a range of safe, reliable, and effective system options from which to choose.

Safety

Ensuring that ropeless systems are safe to use is of paramount importance. Ropeless fishing gear eliminates the persistent endlines that could otherwise entangle a crewmember during deployment. However, because there is no persistent buoy line immediately available, recovering a crewmember who becomes entangled in a groundline could be more difficult. Thus, while some note that ropeless gear reduces the initial risk of crewmember entanglement by eliminating the endline that can entangle the crew, others caution that it could decrease the chances of a successful recovery if a "man overboard" incident occurs from groundline entanglement.

Stakeholders have also raised operational safety concerns regarding the gear itself. These include the physical weight of the systems, the use of compressed air tanks, the hauling process, mechanical or digital failures, and premature releases. Additionally, safety concerns related to potential gear conflicts have been noted.

While there have been no documented safety incidents during on-demand research and trials conducted by the Northeast Fisheries Science Center, developers are actively working on a “man overboard” feature that would immediately trigger the gear’s retrieval mechanism. One developer has implemented this feature with its on-demand gear. However, gear rigged with a timed-retrieval device or gear that requires grappling would not necessarily support this function, potentially limiting this safety option for those gear types. Concerns have also been raised about the safety of grappling for ropeless gear.

Questions

5. What are the human safety-related concerns with and benefits of on-demand fishing? How do these concerns and benefits compare with traditional fishing gear?

6. What safety requirements or standards should be considered as part of approving a ropeless system for use?

7. Is “man overboard” functionality helpful for improving safety? If so, should it be a mandatory requirement for some or all types of ropeless gear? Are there other features that could increase safety of ropeless gear?

8. How could timed-retrieval devices or grappling methods be modified to increase safety?

Successful Retrievals

Ensuring that on-demand or timed-retrieval devices function as intended is necessary for the safe and continued operation of the gear. When retrieving on-demand fishing gear, “success” is measured by the ability to acoustically communicate with the device on the seafloor, trigger the release mechanism, and retrieve the gear at the surface. The overall success rate is over 91 percent for trials conducted under an EFP by the Northeast Fisheries Science Center. Nearly every unsuccessful haul was retrieved by other means, such as grappling. Based on anecdotes from fishermen using traditional fixed gear—which is subject to loss from storms, vessel traffic, gear conflict, and other losses—this 91-percent retrieval rate of on-demand gear is at least as good as, if not better than, fishing with traditional fixed gear. For the EFP trials from summer 2020 to early 2026, fewer than 1 in 600 hauls have led to the loss of an on-demand device, a recovery rate of 99.8 percent. While the Northeast Fisheries Science Center is not currently testing timed-retrieval devices, a similar measure of success, such as retrieval rate, could be developed for that gear type. However, determining the

reliability of grappling may prove more difficult.

Questions

9. Should individual makes and models of ropeless fishing gear be subject to minimum reliability standards prior to approval for use? If so, how would you approach implementing this? Specifically, which components of a ropeless system (e.g., the release mechanism, the on-demand/timed-retrieval device, other) should be subject to minimum reliability standards? What success criteria and testing parameters (e.g., duration of deployment, depth, specific fishery conditions) should be used to evaluate reliability?

10. If a ropeless system no longer meets a reliability standard, what should the process be for re-approval?

11. Should fishermen be allowed to design and use their own rope containment systems to pair with approved on-demand or timed-retrieval release mechanisms or should complete-only designs be approved (with all or some modifications prohibited)?

12. Should there be a periodic inspection requirement to ensure gear safety or viability?

Premature Releases

On-demand or timed-retrieval systems have the potential to prematurely release. Tracking and reporting these premature releases is critical for at least two reasons: (1) It is important to know when and where buoy lines are present in the water column, especially if the area prohibits persistent vertical buoy lines; and (2) if a particular make and model of on-demand or timed-retrieval gear repeatedly releases prematurely, that information would be important for decision making, including device approval by NMFS.

Questions

13. Should fishermen be required to report premature releases of on-demand or timed-retrieval fishing gear?

14. Should premature release notifications be automatically sent to the gear owner and/or NMFS? Currently, this requires an additional device and increases the price of each ropeless system.

3.0 Alternative Gear Marking

Context

Currently, most vessel operators testing ropeless systems manually mark the gear’s location by a button-push using a gear manufacturer-provided digital application using a tablet or smartphone. This creates a digital mark of the gear’s position. However manual

entry is prone to error; an operator may forget to mark gear during deployment, resulting in missing or inaccurate location data. Additionally, an operator could intentionally log a digital marker without actually deploying gear, creating a false mark. Both of these scenarios decrease the reliability of data that other ocean users would rely on to operate near ropeless fishing gear and avoid gear conflicts.

Ropeless gear can be marked automatically. For example, surface markings can be automatically created when the gear is deployed into the water. In addition, some on-demand systems automatically mark the gear’s location on the seafloor via acoustic localization if the vessel is equipped with a through-hull transducer (although there may be other methods by which this functionality could be achieved). However, most systems do not currently have this capability and might only adopt it if it becomes a regulatory requirement. Furthermore, for fixed gear with physical surface markers, fishermen must estimate the location of gear on the seafloor based on the location of the buoys at the surface. Alternatively, acoustic communication can detect and mark the gear’s position on the seafloor. This method may provide more accurate and precise gear location markings than using a global positioning system (GPS) to mark the gear’s deployment location at the surface; however, it increases cost and technological complexity. Because gear density and the potential for gear conflict vary by region, it may be necessary to require the use of more precise location marking technology in certain areas. NMFS sponsored the technical report *Evaluation of On-Demand Gear Acoustic Interoperability Approaches in the Northeast U.S.* by the MITRE Corporation (see **ADDRESSES**), which, in part, examines localization accuracy requirements of ropeless gear.

Questions

15. How precisely do you need to know the geographic location of ropeless fishing gear to ensure safe operations and prevent gear conflicts (e.g., within 25 feet of the true location)? In what specific areas, depths, or fishery conditions do you need to have this level of location precision? Are there other areas, depths, or fishery conditions where you would need more or less precision?

16. Should ropeless systems be required to automatically mark their deployment locations to eliminate human error, or is manual input (e.g., via a mobile app or chartplotter) sufficient?

17. If manual marking is permitted, what measures or penalties should be considered to deter the creation of false marks or the failure to mark deployed gear?

18. How should NMFS balance the high cost and complexity of reliance on through-hull transducers for automatic acoustic marking against the need for highly reliable spatial data?

19. How desirable is it to be able to mark ropeless gear and trigger release mechanisms with a chartplotter as opposed to using a manufacturer's mobile application?

4.0 Gear Viewing

Context

Ocean users (e.g., mobile fishing vessels, other fixed-gear vessels, vessels transiting nearby) must be able to detect ropeless fishing gear. This is a fundamental element of functional equivalence to physical surface markers (discussed in Section I. Introduction). Currently, in the Greater Atlantic Region, other ocean users can access location information from every ropeless system, regardless of manufacturer, on a unified platform that alleviates the potential need to monitor multiple applications or devices. This is accomplished through a data aggregator that compiles the location information for ropeless gear (generated by individual fixed-gear fishing vessels and ropeless gear manufacturers) and disseminates the information to other user groups. NMFS has developed partnerships and prototype data aggregation systems with independent organizations to facilitate the exchange of ropeless gear location information. For more discussion about data aggregators, see Section 9.0.

Option for Sharing Ropeless Gear Location Data

Decision-makers should establish rules regarding what information a data aggregator shares and with whom. For example, in an extreme case, a data aggregator could allow the precise location and identification information of digitally marked gear to be viewable to anyone and from shore. Alternatively, shoreside viewing could be restricted to displaying only areas of high gear density (without identifying information). As another option, viewing could be restricted to users within a specific physical distance from the gear comparable to visual sighting of traditional gear.

Determining how digital gear-marking data are shared requires balancing three key factors: Data transmission costs; the privacy of a vessel's location; and the

privacy of the fishing gear's location. It should also be noted that sending and receiving ropeless gear information to and from a data aggregator in near real-time would require access to the internet or cellular data. However, there may be specific circumstances where information is not needed in near-real time, such as in areas with low fishing effort.

There are at least four possible options for sharing gear location information with vessels at sea:

Option 1: Curated by a Data Aggregator

- *Process*: A vessel actively shares its current location with a data aggregator. The data aggregator transmits location data of ropeless gear within a pre-specified radius of the vessel.

- *Priorities/trade offs*: This prioritizes ropeless gear location privacy and lower data transmission costs, but it requires vessels to anonymously provide their physical location to the aggregator.

Option 2: GPS Filtered on Vessel

- *Process*: A data aggregator sends all ropeless gear location data to a vessel (or all locations within a certain range of where the vessel is taking its trip). The vessel's integrated GPS technology then filters the information locally, displaying only the gear within a specified radius.

- *Priorities/trade offs*: Compared to option 1, this would increase vessel location privacy, but could increase data transmission costs and may create data security vulnerabilities that could expose ropeless gear information beyond the specified radius if the GPS-filtering technology was hacked.

Option 3: Criteria-Based Access

- *Process*: This refines Options 1 or 2 by restricting the aggregator to only send data to vessels that meet specific criteria (e.g., vessels actively permitted to fish in certain areas or fisheries).

- *Priorities/trade offs*: This alleviates some data security concerns, but significantly increases management and administrative complexity.

Option 4: Fully Public

- *Process*: The data aggregator publicly shares all ropeless gear location data.

- *Priorities/trade offs*: This places the highest priority on vessel location privacy. However, it essentially eliminates on-demand gear location privacy and has a comparatively high data transmission cost.

Some of these options require a data aggregator to temporarily know the location of the vessels to which it is sharing gear location data. This is

similar to how you need to allow a mapping/navigational app to know your location while traveling for it to provide directions, traffic, or road conditions in real-time. A data governance plan (discussed in Section 9) could specify how long a data aggregator may retain vessel location data.

While NMFS has implemented location data collection programs, such as vessel monitoring systems, and states have implemented electronic tracking of Federal lobster vessels, these programs were created for specific purposes and mandate specifically what information must be shared when and with whom. Moreover, these programs do not include all vessels that operate near fixed gear. Thus, these programs, and similar state programs, are not sufficient as a comprehensive solution if vessel location needs to be shared with a data aggregator for the purposes of disseminating ropeless gear location information.

Questions

20. Which of the four data-sharing options (or combination thereof) is preferable, and why? How should data transmission costs, privacy of a vessel's location, and privacy of the fishing gear's location be prioritized against each other?

21. Under what circumstances is it necessary or desirable that ropeless fishing gear markings be viewable and updated in near real-time? Under what circumstances is it unnecessary?

22. At what specific distance from deployed ropeless gear should its location become visible on a vessel's display? Should this distance vary for specific fisheries, users, or circumstances?

23. Should digitally marked gear be viewable from shore? If so, which specific user groups (e.g., law enforcement, researchers, the general public) should have shoreside access? Would you support shoreside viewability if it only provided aggregated and anonymized information (e.g., a heat map)?

24. Should there be a tiered-distance threshold where *only* the gear's location is viewable from a certain distance away, but detailed identifying information (e.g., permit or ownership details, as appropriate) becomes visible only when the vessel is in very-close proximity?

25. Should vessel location data be shared with a data aggregator so it may curate and provide only the gear data within a specific radius (Option 1; akin to sharing your location with a mapping application for driving directions)? If

not, what are your concerns regarding this option?

5.0 Gear Conflict

Context

Gear conflict avoidance relies on vessel operators adequately marking their gear, maintaining a vigilant watch, and taking necessary steps to avoid marked gear. Generally, all fishermen have equal access to fish in Federal waters in the manner specified by law. Fishermen are prohibited from causing a gear conflict by negligently and without authorization removing, damaging, or tampering with another person's fishing gear. These obligations and requirements apply whether the fisherman is utilizing traditional or ropeless fishing gear and whether they operate with fixed or mobile gear.

Many stakeholders express concern that eliminating or reducing the number of physical surface markers with ropeless gear will increase the incidence of gear conflict. Conversely, others suggest that digitally marked gear may actually reduce conflicts due to the distinct advantages of digital marks. Environmental factors—such as nighttime operations, fog, and heavy seas—severely limit the visibility of traditional surface markers. Digital marking provides reliable, long-range viewability of fixed gear under both normal and adverse conditions that may be superior to visual sightings of surface markers.

Furthermore, because ropeless gear could be less susceptible to displacement by heavy weather, and some systems can be acoustically detected even if displaced, its adoption could result in less “ghost” gear, further reducing the potential for conflict. Additionally, removing physical buoy lines from the water column allows vessels to safely transit directly over fixed gear without causing a conflict.

Stakeholders have also pointed out that digital marks could significantly assist in the enforcement and resolution of gear conflict incidents. If law enforcement agencies are authorized to access digital gear-marking data, combining near real-time ropeless gear locations with existing vessel tracking systems (such as vessel monitoring systems or automatic identification systems) could provide useful data to support investigations into gear conflicts.

In 1996, at the recommendation of the New England Council in coordination with the Mid-Atlantic Council and the Atlantic States Marine Fisheries Commission, NMFS implemented a process for resolving gear conflicts in

fixed and mobile gear fishery management plans through a framework adjustment. NMFS or the Councils could initiate a new framework adjustment that specifically considers and delineates the operational obligations and responsibilities for fishing with, and around, ropeless fishing gear in Federal waters.

Questions

26. What are the gear conflict-related benefits and concerns of ropeless fishing? How are those benefits or concerns different for one-end ropeless?

27. Are specific steps or regulatory measures necessary to proactively decrease gear conflicts related to ropeless fishing? If so, what are they?

28. Is it necessary for fishing vessels operating around ropeless gear to view digital gear markings in near real-time? Does this depend on the fishery or location?

29. Should fishing vessels operating near ropeless gear be required by regulation to carry the technology necessary (e.g., internet and a visualization tool, such as a chartplotter) to view digital gear markings in near real-time? Or, are the consequences of causing a gear conflict enough deterrence that such regulatory requirements are not necessary?

30. Should fishermen be required to report gear conflicts?

31. Does the digitization of fishing gear locations improve situational awareness of gear locations at sea?

6.0 Equity

Context

Currently, the Greater Atlantic Region fixed-gear fishery regulations require various physical surface markers, prohibiting the use of ropeless gear. Research and testing of ropeless fishing gear is being conducted through exempted fishing permits (EFP), which allow approved vessels to engage in otherwise prohibited activities. While some view EFPs as a viable pathway for permitting ropeless fishing to advance our knowledge and experience, others argue they are inequitable because they grant fishing privileges to a limited number of select permit holders. NMFS, in general, supports permanently relieving the restrictions on gear-marking requirements, in part, to minimize the burden on the industry to apply for and report on EFPs, as well as to minimize governmental resource burdens. Furthermore, long-term reliance on EFPs to authorize ropeless fishing could lead to unequal access and opportunities among fishermen.

Some forms of ropeless fishing—such as on-demand gear—require different

technology compared to traditional fixed-gear fishing. For fishermen who choose to adopt ropeless gear, their operational methods could change in ways that some allege would potentially alter the character of the fishery. Some have voiced concerns that the technological and financial requirements of on-demand gear could shift the balance of competitive success, which could ultimately lead to the consolidation of some fixed-gear fisheries. Others note that industries regularly adapt to emerging technologies while maintaining the character of the industry.

Questions

32. What specific equity concerns do you have regarding the authorization and use of ropeless fishing gear?

33. What measures could NMFS implement to address equity concerns?

34. How does the current reliance on EFPs impact the development, fairness, and opportunity within the fishery?

35. How can ropeless fishing programs be designed and managed to ensure fair access and equitable outcomes for all willing participants and affected parties?

7.0 Potential Training Requirements To Use Ropeless Fishing Gear

Context

As with any technology, it is assumed that experience with a new gear will foster proficiency with its use. To establish a baseline of proficiency, a knowledge demonstration or training requirement could be required before fishermen are authorized to use ropeless systems. This requirement could be structured in various ways, ranging from an on-the-water practical test to simply reviewing educational materials (such as “how-to” videos for a manufacturer's mobile application) followed by a brief knowledge assessment. If a training requirement is deemed necessary, decisions on which entities should develop and provide this training, and exactly how fishermen should be expected to demonstrate their competency with ropeless systems, will need to be made.

Questions

36. Should ropeless users be required to demonstrate that they know how to properly deploy, retrieve, and/or mark ropeless fishing gear before being authorized to use it?

37. If a knowledge demonstration or training requirement is implemented, what specific elements or milestones should be required of the operator? Who should be responsible for developing

and administering this training (*e.g.*, NMFS, gear manufacturers, other)?

38. Should other ocean users (*e.g.*, mobile gear fishermen) be required to demonstrate proficiency in using the visualization technology necessary to detect digitally marked gear?

39. How should NMFS handle repeated instances of operator error? How would NMFS distinguish between an operator error and an equipment malfunction?

8.0 Law Enforcement

Context

Ropeless systems present both challenges and practical utility for law enforcement. For example, on-demand gear manufacturers currently use proprietary acoustic communication protocols, requiring law enforcement vessels to carry multiple, manufacturer-specific deck boxes and transducers to retrieve and inspect different ropeless gear systems. While efforts are underway to develop and test a universal deck box capable of communicating with all on-demand gear, this remains a technological hurdle. If manufacturers adopted a common acoustic-signaling standard, a universal deck box would be unnecessary; however, there is currently no industry-wide initiative or regulatory requirement to pursue a standardized acoustic protocol. The MITRE Corporation's technical report *Evaluation of On-Demand Gear Acoustic Interoperability Approaches in the Northeast U.S.* (see **ADDRESSES**) examines whether a common acoustic signaling approach is needed.

In addition to the challenge of triggering on-demand devices, enforcement personnel must be trained to safely operate various proprietary release mechanisms to retrieve and properly redeploy gear during at-sea inspections. Furthermore, it may be impractical for law enforcement to inspect timed-retrieval devices. Safety and logistical concerns also exist for grappling ropeless gear. Covert inspections may also be logistically challenging.

Despite these physical challenges, digitally marked gear offers practical utility for enforcement operations. If law enforcement personnel are authorized to access digital gear location data from shore, or from an expanded radius at-sea, it could streamline patrol trip planning and help agencies allocate their on-water resources more efficiently. Likewise, digital markers and associated data records could provide law enforcement with useful information to support investigations—

information that is simply not available with traditional fixed gear.

Questions

40. What concerns or suggestions do you have regarding enforcing ropeless fishing?

41. How should law enforcement address the inspection of ropeless gear that is rigged with timed-retrieval devices or that is grapple-only?

9.0 Data Governance and Management Context

Data Standard

For digital gear markings to successfully reproduce the functions of physical surface markers, a robust data-governance framework must be developed to ensure that essential information flows efficiently among data users. NMFS is currently working to identify the specific information that should be aggregated from ropeless fishing systems and disseminated to end users. Standardizing the data associated with digitally marked gear (as is done for other U.S. fisheries programs) can support software development, efficiency in information management and dissemination, and generally increase the quality and accuracy of data. A potential list of data elements and user groups is provided in a Northeast Fisheries Science Center report (Galvez, 2026, see **ADDRESSES**).

Data Aggregator(s)

As described in Section 5.0, an entity must act as a data aggregator that collects and disseminates the location information of ropeless fishing gear. Currently, two organizations act as data aggregators in the Greater Atlantic Region. NMFS has conducted an initial evaluation regarding the role of the Federal government in providing these data services, as well as the additional legal requirements that would apply. Federal management of ropeless gear location information would likely require complex procedures to comply with multiple Federal statutes. Given that certain Federal statutory requirements would not necessarily apply to private or independent entities, a non-Federal third party could aggregate this data more efficiently than NMFS, potentially providing more effective data services for ocean users.

Currently, data from each on-demand system is transmitted to the manufacturer's database, transmitted to one data aggregator, shared with the other data aggregator, and finally distributed back out to visualization platforms. Having a single data aggregator and fewer points of

transmission would reduce errors and latency and increase reliability and efficiency. It would be helpful to determine if multiple organizations should be allowed to coordinate with each other and each act as a data aggregator or if only one organization should act as a data aggregator. In addition, NMFS is seeking stakeholder input on what requirements there should be for digitally marked gear databases to protect fishermen's proprietary data.

Questions

42. How should data for ropeless fishing be governed and managed?

43. Do you have any additional feedback or recommendations regarding the list of data elements in the report *A Proposal for Functional Data Specifications of On-Demand Fishing Gear* (Galvez, 2026, see **ADDRESSES**)? Are there any missing data elements, or elements that should be modified or removed?

44. What specific security and operational requirements should be considered for independent third parties managing digitally marked gear locations and other associated data?

10.0 Additional Considerations

Questions

45. Is there any other information that you would like to share in response to this request for information or regarding ropeless fishing more generally?

46. NMFS has heard concerns regarding the cost of systems. For fishermen who choose to fish with ropeless fishing gear, there could be several ways to reduce the cost of acquiring ropeless systems, such as by leasing gear from gear libraries or utilizing grant or loan programs. How should NMFS balance the potential regulatory requirements for technologically complex features (*e.g.*, automated acoustic marking, real-time data transmission, *etc.*) against the potential cost of these features?

47. Beyond the direct cost of purchasing ropeless gear, what are the other economic costs of ropeless fishing? What are the economic benefits?

48. Should NMFS require a common acoustic protocol or signaling standard for all approved on-demand systems to ensure interoperability across the industry, or should manufacturers be permitted to maintain proprietary acoustic approaches? This topic is discussed in the MITRE technical report *Evaluation of On-Demand Gear Acoustic Interoperability Approaches in the Northeast U.S.* (see **ADDRESSES**).

49. If NMFS allows the use of ropeless fishing gear, should the option to use it be phased in (e.g., by specific geographic regions, by fishery, or through pilot programs)?

50. How can NMFS design ropeless fishing regulations to be flexible enough to accommodate future technological advancements?

51. What are the potential environmental benefits or consequences of fishing with ropeless gear? What are the potential benefits or consequences of ropeless fishing on fisheries operations?

52. Ropeless fishing gear is currently being used in fisheries outside of the Greater Atlantic Region. Do you have examples of its use or management outside the Greater Atlantic Region that should be emulated or avoided within the Greater Atlantic Region?

III. Definitions

Grappling: Method of retrieving fishing gear from the ocean floor by dragging a weighted hook along the bottom to snag rope (such as a groundline or bridle) that is connected to traps, pots, or nets.

Interoperability: Capability of different technologies, systems, devices, models, or brands to communicate, share information, and function with each other.

Retrieval mechanism: Apparatus designed to surface a retrieval line to allow for the hauling of fixed gear. For example, a buoyant spool, inflatable lift bag, and pop-up buoy.

On-demand device: Equipment that uses acoustic release technology to trigger a retrieval mechanism.

On-demand fishing gear: Fixed gear equipped with at least one on-demand device.

On-demand system: Combination of technologies and devices, including an on-demand device, that allow for the deployment, retrieval, and marking of fixed gear positions without persistent buoy lines. This definition excludes the technology needed to share and display digital gear marks. An on-demand system is a type of ropeless system.

One-end ropeless: String or trawl of fixed gear that uses a traditional, persistent buoy line on only one end. The end without the persistent buoy line may or may not be rigged with an on-demand or timed-retrieval device and retrieval mechanism.

Ropeless fishing gear: Fixed fishing gear that operates without persistent buoy lines. This definition includes fixed gear rigged with an on-demand device or timed-retrieval device that triggers a retrieval mechanism, as well

as fixed gear that can only be retrieved by grappling.

Ropeless system: Combination of technologies and devices that allow for the deployment, retrieval, and marking of fixed gear positions without persistent buoy lines. This definition excludes the technology needed to share and display digital gear marks. This definition includes, but is not limited to, on-demand systems and timed-retrieval systems.

Timed-retrieval device: Equipment that uses a pre-set timer or a degradable galvanic link to trigger a retrieval mechanism.

Timed-retrieval fishing gear: Fixed gear equipped with at least one timed-retrieval device.

Timed-retrieval system: Combination of technologies and devices, including a timed-retrieval device, that allow for the deployment, retrieval, and marking of fixed gear positions without persistent buoy lines. This definition excludes the technology needed to share and display digital gear marks. A timed-retrieval system is a type of ropeless system.

Persistent buoy line: Traditional fixed gear endline or vertical line that extends from the fishing gear on the seafloor to the physical surface marker for the entirety of the soak time.

IV. Other

Please note that this is an RFI only. In accordance with the implementing regulations of the Paperwork Reduction Act of 1995 (PRA), specifically 5 CFR 1320.3(h)(4), this general solicitation is exempt from the PRA. Facts or opinions submitted in response to general solicitations of comments from the public, published in the **Federal Register** or other publications, regardless of the form or format thereof, provided that no person is required to supply specific information pertaining to the commenter, other than that necessary for self-identification, as a condition of the agency's full consideration, are not generally considered information collections and therefore not subject to the PRA.

This RFI is issued solely for information and planning purposes; it does not constitute a request for proposals, applications, proposal abstracts, or quotations. This RFI does not commit the U.S. Government to contract for any supplies or services or make a grant award. Further, NMFS is not seeking proposals through this RFI and will not accept unsolicited proposals. Choosing not to respond to this RFI does not preclude participation in any future procurement, if conducted.

(Authority: 16 U.S.C. 1801 *et seq.*; 16 U.S.C. 5101 *et seq.*; Consolidated Appropriations Act, 2023, Division JJ, Title I, Section 101 *et seq.*)

Dated: July 13, 2026.

Shannon Bettridge,
Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.

[FR Doc. 2026-14363 Filed 7-15-26; 8:45 am]

BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XF865]

Gulf Fishery Management Council; Public Meeting

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

ACTION: Notice of a public meeting.

SUMMARY: The Gulf Fishery Management Council (Gulf Council) will hold a 2 day in-person meeting of its Standing and Shrimp Scientific and Statistical Committees (SSC).

DATES: The meeting will be held in-person on Tuesday, July 21 and Wednesday, July 22, 2026, from 9 a.m.–5 p.m., EDT daily.

ADDRESSES: The meeting will take place at the Gulf Council's office located at 4107 W. Spruce Street, Suite 200, Tampa, FL 33607. Hybrid connection information will be available on the Council's website at <https://www.gulfcouncil.org> and clicking on the "meeting tab".

Council address: Gulf Fishery Management Council, 4107 W. Spruce Street, Suite 200, Tampa, FL 33607; telephone: (813) 348-1630.

FOR FURTHER INFORMATION CONTACT: Mr. Ryan Rindone, Lead Fishery Biologist, Gulf Fishery Management Council; ryan.rindone@gulfcouncil.org, telephone: (813) 348-1630.

SUPPLEMENTARY INFORMATION:

Tuesday, July 21, 2026; 9 a.m.–5 p.m. EDT

The meeting will begin with introductions and adoption of agenda, review and approval of Meeting Minutes and Summary from the May 2026 SSC webinar meeting, and Scope of Work.

The SSCs will review and discuss Estimation of Shrimp Trawl Bycatch Methodology and Gray Triggerfish Bycatch Estimation, including presentations, background materials and SSC Discussion.

Atlantic States Marine Fisheries Commission

Committee On Economics and Social Sciences

August 4, 2026 1 PM – 4 PM

August 5, 2026 8:30 AM – 4 PM

Webinar Link: <https://attendee.gotowebinar.com/rt/2881178318303736157>

Draft Agenda

Please note the agenda is preliminary; the order in which items will be taken is subject to change; other items may be added as necessary.

August 4, 2026

1. Welcome and Introductions (<i>S. Lovell</i>)	1:00 p.m.
2. Update on the Striped Bass RDM (<i>S. Steinbeck</i>)	1:15 p.m.
3. CESS Tasks Update (<i>Species Leads</i>)	2:15 p.m.
a. Menhaden (<i>A. Scheld</i>)	
b. Spiny Dogfish (<i>T. Scott</i>)	
c. Tautog (<i>S. Lovell</i>)	
4. Break	3:15 p.m.
5. Data Access Update (<i>J. Patel</i>)	3:30 p.m.
6. Species Assignments (<i>J. Patel</i>)	3:45 p.m.
7. Public Comment	3:55 p.m.
8. Adjourn	4:00 p.m.

5:00 p.m. ASMFC Public Outreach Hour

6:00 p.m. CESS Social Happy Hour

August 5

1. Process on Handling Commission Requests (<i>A. Scheld</i>)	8:30 a.m.
2. Economist Discussion (<i>J. Patel</i>)	9:30 a.m.
3. Break	10:00 a.m.
4. Risk and Uncertainty Discussion (<i>J. Holzer</i>)	10:15 a.m.
5. Knudsen AI tool Presentation	11:30 a.m.
6. Lunch	12:30 p.m.
7. Human Mobility Presentation (<i>G. DePiper</i>)	2:00 p.m.
8. Break	3:00 p.m.
9. Upcoming Tasks and Management Changes (<i>J. Patel</i>)	3:15 p.m.
10. Other Business	3:45 p.m.
11. Public Comment	3:55 p.m.
12. Adjourn	4:00 p.m.

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details

Atlantic States Marine Fisheries Commission

Winter Flounder Management Board

*August 4, 2026
1:30 p.m. – 2:30 p.m.*

Draft Agenda

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

1. Welcome/Call to Order (<i>N. Lengyel Costa</i>)	1:30 p.m.
2. Board Consent	1:30 p.m.
• Approval of Agenda	
• Approval of Proceedings from February 2026	
3. Public Comment	1:35 p.m.
4. Update on Board Request for Information on Environmental Impacts to Winter Flounder Population Dynamics (<i>R. Balouskus</i>)	1:45 p.m.
5. Review New England Fishery Management Council's Groundfish Specification Process (<i>R. Frede/T. Bauer</i>)	1:50 p.m.
6. Technical Committee Report (<i>R. Balouskus</i>) Possible Action	2:05 p.m.
• Potential Impacts of Increasing Bag Limit in Southern New England/ Mid-Atlantic	
7. Other Business/Adjourn	2:30 p.m.

This meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details

MEETING OVERVIEW

Winter Flounder Management Board

August 4, 2026

1:30 p.m. – 2:30 p.m.

Chair: Nicole Lengyel Costa (RI)	Technical Committee Chair: Rich Balouskus (RI)	LEC Representative: Keith Williams
Vice Chair: Vacant	Advisory Panel Chair: Bud Brown	Previous Board Meeting: February 3, 2026
Voting Members: ME, NH, MA, RI, CT, NY, NJ, NMFS, USFWS (9 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from February 2026

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

4. Update on Board Request for Information on Environmental Impacts to Winter Flounder Population Dynamics (1:45 – 1:50 p.m.)

- At their February 2026 meeting, the Board expressed interest in receiving additional information in the future regarding: 1) information on research of environmental drivers that are hypothesized to limit stock rebound and 2) utilization of catch limits in federal waters.
- The TC has prepared a memo which provides an update on these two requests (**Briefing Materials**).

Presentations

- Technical Committee update on Board requests by R. Balouskus, Chair

5. Review New England Fishery Management Council's Groundfish Specification Process (1:50 – 2:05 p.m.)

- At their February 2026 meeting, the Winter Flounder Management Board requested a staff memo explaining the current specification process for winter flounder.
- Commission and Council staff have prepared a memo which addresses this request, detailing the New England Fishery Management Council's (Council's) specification process (**Supplemental Materials**).

Presentations

- Summary of the New England Fishery Management Council's Groundfish Specification Process by R. Frede and T. Bauer

6. Technical Committee Report (2:05 – 2:30 p.m.) Possible Action

- At the February 3, 2026 meeting, the Winter Flounder Management Board (Board) tasked the Winter Flounder Technical Committee (TC) with analyzing available data to assess the potential for increasing the daily bag limit in the recreational Southern New England/Mid-Atlantic (SNE/MA) winter flounder fishery.
- The TC met via webinar on March 17, May 15, and June 16, 2026 to review and provide input on the Board requests. To address the Board task, the TC 1) discussed potential stock implications and 2) analyzed available Marine Recreational Information Program (MRIP) data, both of which are described in their report (**Briefing Materials**).

Presentations

- Technical Committee Report by R. Balouskus, Chair

Board Actions for Consideration

- Consider Technical Committee Recommendations

7. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
WINTER FLOUNDER MANAGEMENT BOARD

The Westin Crystal City
Arlington, Virginia
Hybrid Meeting

February 3, 2026

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

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INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of February 2025** by consent (Page 1).
3. **Move to approve status quo commercial and recreational Southern New England/Mid-Atlantic and Gulf of Maine winter flounder measures for the 2026-2028 fishing years** (Page 11). Motion by Eric Reid; second by Ray Kane. Motion passes by unanimous consent (Page 12).
4. **Move to approve Winter Flounder FMP Review for the 2024 fishing year, state compliance reports, and de minimis status for New Jersey’s commercial fishery** (Page 12). Motion by Doug Grout; second by Ray Kane. Motion passes by unanimous consent (Page 12).
5. **Move to elect Nicole Lengyel Costa as Vice Chair of the Winter Flounder Management Board** (Page 13). Motion by Matt Gates; second by Dan McKiernan. Motion passes by unanimous consent (Page 13).
6. **Move to adjourn** by consent (Page 13).

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

ATTENDANCE

Board Members

Nichola Meserve, MA, proxy for D. McKiernan (AA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Jason McNamee (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Bill Hyatt, CT (GA)
Craig Miner, CT proxy for Rep. Gresko, CT (LA)
Jim Gilmore, NY, proxy for M. Gary (AA)
Emerson Hasbrouck, NY (GA)
Heather Corbett, NJ, proxy for J. Cimino (AA)
Jeff Kaelin, NJ (GA)
John Clark, DE (AA)
Roy Miller, DE (GA)

Craig Pugh, DE, proxy for Rep. Carson (LA)
Michael Luisi, MD, proxy for L. Fegley (AA)
Lewis Gillingham, VA, proxy for J. Green (AA)
Chris Batsavage, NC, proxy for K. Rawls (AA)
Jerry Mannen, NC (GA)
Chad Thomas, NC, proxy for Rep. Wray (LA)
Malcolm Rhodes, SC (GA)
Ben Dyar, SC, proxy for Sen. Cromer (LA)
Spud Woodward, GA (GA)
Erika Burgess, FL, proxy for J. McCawley (AA)
Karyl Brewster-Geisz, NMFS

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

Ex-Officio Members

Corinne Truesdale, Technical Committee Chair
Tracy Pugh, Technical Committee Chair

Rob Beal, Law Enforcement Committee Rep.

Staff

Bob Beal
Toni Kerns
Tina Berger
Madeline Musante

Caitlin Starks
Jeff Kipp
Tracy Bauer
James Boyle

Katie Drew
Jainita Patel
Chelsea Tuohy

The Winter Flounder Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Tuesday, February 3, 2026, and was called to order at 11:15 a.m. by Chair Bill Hyatt.

Call to Order

CHAIR WILLIAM HYATT: Good morning, everybody. This meeting of the Winter Flounder Management Board is called to order. My name is Bill Hyatt; I am the Governor's Appointee from Connecticut and the current Chair of this Board.

Approval of Agenda

Everyone has had a chance to review the agenda. Are there any changes? Seeing none; the **agenda is approved** by consent.

Approval of Proceedings

Regarding the **proceedings** from January, 2023. On Page four and continuing through Page six is a long presentation that was attributed to me. I did not give that presentation, it was done by Tony Wood. Are there any other corrections needed to the proceedings? Seeing none; the **proceedings as corrected are approved** by consent. Next is Toni.

MS. TONI KERNS: I just want to let everyone know who is online for the Board today, and maybe I'll do a little bit better for this Board meeting than I did last time. I have Steve Train from Maine, I have Representative Gesko from Connecticut, Adam Nowalsky and Heather Corbett from New Jersey, Emerson Hasbrouck from New York, and I think that's everybody. I apologize if I left anybody off.

Public Comment

CHAIR HYATT: Thank you, Toni. Next is Public Comment. Is there anybody in the room who wants to comment on anything that is not on the agenda today? Seeing none; anybody online? Okay, no public comment so that brings us to Review of the 2025 Management Track Assessments for Gulf of Maine and Southern New

England/Mid-Atlantic Stocks of Winter Flounder. For this we have presentations by Paul Nitschke and Tony Wood. We'll take questions after each of the presentations. Paul, are you ready?

Review 2025 Management Track Assessments for Gulf of Maine and Southern New England/Mid-Atlantic Stocks of Winter Flounder

MR. PAUL NITSCHKE: Good morning, my name is Paul Nitschke, from the Population Dynamics Branch. I will be giving a quick overview of the 2025 Management Track Assessment for the Gulf of Maine winter flounder. This was a Level 1 Assessment, so that's a direct delivery to the SSC.

The last assessment was done in 2022. This assessment is based on the 30 + centimeter survey-area swept. This is an empirical approach, so it is a fairly simple assessment model. The Gulf of Maine stock was historically thought of as the smallest of the three winter flounder stocks. That perhaps has changed with the declines in the Southern New England stock. The catch for the Gulf of Maine stock mostly comes out of Statistical Area 514; Cape Cod Bay, Massachusetts Bay, Stellwagen Bank are important areas for the removals of this stock. Here is the removal time series for the Gulf of Maine stock.

In the early 1980s the recreational component was a significant chunk of the removals. However, that declined fairly quickly into the 1990s. The commercial removals declined more gradual. More recently, the catch is around a few hundred metric tons. However, early on the removals were a few thousand metric tons.

There has been a large change in the catch over the time series. However, that change in the time series doesn't really seem to correspond to response in the surveys. When we look at the surveys, the indices remain relatively flat for the entire time series. Perhaps you could argue the Mass DMF Spring survey has a little bit of a decline, but in general the turns are fairly flat.

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

In addition, when we look at the size and age structure, there is also not really a big change in the size in age over time. This produced a real conflict when we tried to do the analytical models back at SARC 52. It resulted in a massive retrospective problem in the model, to the point where it wasn't accepted. It didn't get passed through peer review.

Then after that, basically the 30+ area swept estimate was developed as the empirical approach for this stock. This biomass estimate comes directly from survey information. We use three different surveys, because you don't have a single survey that covers the entire stock. We used these three surveys that use Strata sets that don't overlap to cover the stock.

We used the Northeast Fisheries Science Center Bottom Trawl Surveys for the offshore Strata, and some of the inshore Strata in Mass Bay and Cape Cod Bay. We used the Mass DMF Survey for the real shallow Strata in Cape Cod Bay and Mass Bay, and we used the Maine/New Hampshire Survey north of Massachusetts inshore.

We did develop overfishing definitions using a length-based Yield per Recruit Model with this same 30+ centimeter knife edge selectivity. This was a crude proxy for the selectivity so that we could estimate exploitable biomass. Exploitable biomass can then be calculated based on the 30+ centimeter biomass index per tow from each survey, multiplied by this expansion factor, which is the total survey area divided by the tow footprint times q .

Q , you can think of q as the efficiency of the gear between the wingspread. Q , the estimate of exploitable biomass is very sensitive to this assumption of Q . These expansions tend to be very large, because of that huge expansion factor for the entire area. Once you have that estimate you can estimate the exploitation rate, which is simply the catch over the 30+ centimeter biomass estimate.

You can compare that exploitation rate to the overfishing definition from the length-based yield per recruit. This table just shows how large these expansion factors really are. When you look at that

total area divided by the footprint from each survey it results in very large multiplying those estimates out. There was an experiment done using a twin trawl, to get at this efficiency estimate. This experiment compared catch rates from the Bigelow here versus a flat vet, which is more efficient for flat fish. Tim Miller and others have developed this relative catch efficiency estimate, taken into account biomass effects and also size effects. Here you can see that beyond 30+ centimeters there isn't really a big size effect. However, there is a big day/night effect.

During the night there really isn't a big difference in efficiency between the two gears, but during the day you can see there is a pretty big difference. With this we can calculate a q for each survey in each year. We basically have been taking the average of all that information and using that for the assumption of the q to estimate the 30+ centimeter biomass.

Now with time we're adding more information to this average and those numbers are starting to, they are not changing as much with more information and you can see this updated estimate didn't change very much from the last assessment. The spring estimate was a 0.71 and the fall estimate was a 0.79.

Here is a plot of basically the results of the 30+ centimeter biomass estimate. On top is the spring survey and on bottom is the fall survey. You can see in the spring that there is a greater proportion of the population in the state surveys. This makes sense, because in the spring the fish are spawning. They tend to move inshore.

It's also perhaps some concerns that we're missing fish in the spring, because there could be fish inside the estuaries that are not covered by the survey. That is one reason we rely more on the fall survey estimates. The other reason is, we do have efficiency experiments with the Bigelow gear, and with a greater chunk of the population being in the offshore survey, we perhaps have a little more confidence in the fall estimates.

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Regardless of that, if you look at the estimates between the spring and the fall it produced pretty similar results in total. Here is the plot of the total 30+ biomass estimates over time on top and on the bottom is the exploitation rates. More recently there has been some positive increases in that 30+ biomass estimate, which seems to correspond to the decline in the exploitation rate.

Hopefully there is perhaps some sort of response now under these low exploitation rates, with some positive effects on the biomass. Hopefully the exploitation rates remain low and this is true that these trends will continue in the future. However, I wanted to stress there is still some uncertainty and the dynamics are still hard to explain with this method.

If you look at the time series you see this decline that occurred, which is hard to explain, because under these estimates we're thinking that the exploitation rate is far below the overfishing definition. This is not what we would expect if that were true. But perhaps because the catch continues to go down, the exploitation rates continue to be low.

Maybe there is now a positive response to that. For the stock status the overfished status is unknown, because there is no way of determining that from this method. Overfishing is not occurring. The stock is not in a rebuilding plan, and actually was never declared overfished. The ABCs were calculated using the 75% of the exploitation rate at 40%, multiplied by the 30+ centimeter biomass index from the fall surveys. We use the average of the most recent fall surveys in this estimate. At the last assessment we actually did use some of the spring information, because we were missing information from COVID at that time. In this assessment we went back to using the fall information, since that information is available again. This is the PDT Test Performance Plot that we put together.

Just looking at the OFLs and ABCs over the time series compared to the catch. The updated ABCs and OFLs are very similar to what we had in the last

three years. There is hardly any change between the OFLs and ABCs. Maybe a very slight decline, but pretty close to what we had before, so it isn't a big change. I can take any questions if there are any.

CHAIR HYATT: Thank you, Paul. Any questions for Paul regarding the Gulf of Maine assessment? Seeing no questions in the room, any questions from the public? Okay, Eric and then David.

MR. ERIC REID: I'm curious why you don't use NEAMAP Survey data. They are fishing in much shallower water than the Bigelow can get to, and at times that is where those flounders are. That's my question, thank you.

MR. NITCHKE: This assessment is just for the Gulf of Maine and NEAMAP doesn't go into the Gulf of Maine.

CHAIR HYATT: Dave. Okay. Any other questions from the Board? Anything online or from the public? Okay, Tony, why don't you take it away with the Southern New England/Mid-Atlantic stock.

MR. TONY WOOD: This should be a pretty quick summary of the most recent Level 1 assessment or Southern New England winter flounder. This stock was last assessed in 2022. At that time it was a Level 3. The model has stayed consistent with that last update; it still uses ASAP. Reference points at the time indicated the stock was not overfished, overfishing was not occurring.

It's important to note that during this 2022 assessment we made a pretty big change to the recruitment standard that's used in the projections and reference point calculation. Essentially, we move the goal posts and became not overfished, overfishing not occurring. But our perception of the stock really hasn't changed for quite a while.

For fishery dependent data going into the assessment, commercial landings and discards comes from our old AA Table process and switches to our new Catch Account and Monitoring System. Then recreational information, both landings and discards come from MRIP. Commercial landings in

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recent years have been very low, the lowest in the time series, lower than even the moratorium years in the late 2000s.

Updated landings were 76 metric tons in 2024, and the lowest in the time series in 2023 at 35 metric tons. Commercial discards have stayed pretty consistent for the past decade or so, but well below the time series average. In 2024 commercial discards were 89 metric tons; 60% of those are from trawl and 40% is scallop dredge. Recreational landings have basically collapsed for this stock. In 2024 recreational landings were 1.9 metric tons, a very slight fraction of the average over the time series, and collapsed when compared to the very early values in the time series. The recreational discards saw a similar trend. In 2024 recreational discards were 1.8 metric tons, well below the time series average of 145 metric tons.

Total catch in 2024 was 169 metric tons. In 2023 and 2024 the total catch was less than 1% of the peak catch in the time series, which we see early on. Catch has declined pretty drastically for this stock. These are just the catch components out of the proportion of percent low. Moving on to the fishery independent information.

We have 11 age indices and then 2 young of the year survey indices. The regional survey indices, which are the Science Center Survey and NEAMAP Spring Survey shows pretty consistent trends with the total catch, starting at a peak, a bit of a bump in the middle of the time series, then a slow decline since then.

For all the state survey indices that go into this stock, pretty general declining trend over time, pretty consistent trend between each of the surveys. Finally, for the two Young of the Year Survey indices, kind of contrast one another. Connecticut shows this decline, from a peak in the late nineties and then the Mass Young of the Year Survey seems to be pretty flat over time.

Then the biological information going into the stock was derived in the benchmark in 2011. These values are retained and have been retained since

that time, and were for this assessment update. Getting into the results, 2024 biomass estimates, total biomass at about 4700 metric tons with a spawning stock biomass around 2800 metric tons. F is very low, 0.048

Recruitment has been slowly picking up for the past 7 or so years, 2024 recruitment was 6.2 million fish, still well below the time series average. Recruitment has remained pretty flat since about 2008. Retrospective bias in SSB and F is pretty small for this stock. Retrospective bias in recruitment seems to be increasing. But overall, it's considered a minor retrospective pattern and no adjustments are made.

For reference points we use SPR 40% to calculate $F_{40\%}$ as a proxy for F_{msy} . That 40% declined a bit since 2022. I believe at that time it was 0.26, now we're at 0.23. We project forward a hundred years at this F_{msy} proxy to get our SSB $_{msy}$ reference point. For this assessment update that was at 3100 metric tons.

Here's just a list of the reference points, and the recurring quantities coming out of the model. F is currently at 21% of the threshold, with SSB at 89% of the target and 179% of the threshold. Our stock status is unchanged, it's not overfished, overfishing is not occurring, and again there is no retrospective adjustment made for this stock. That's all I have.

CHAIR HYATT: Thank you, Tony. You did a good job with some rather discouraging information. Are there any questions for Tony? Seeing none; any questions online or from the public? No questions. Thank you, Tony. At this point we'll move into setting the 2026-2028 specifications. Tracey is going to do an overview, then we'll have a review of the Technical Committee recommendations by Richard Balouskus, and review the Advisory Panel Report, which you're going to do, right, Tracey? Okay.

Set 2026-2028 Specifications

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MS. TRACEY BAUER: In this presentation I'm going to briefly review the New England Fishery

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Management Council Winter Flounder Specifications for fishing year 2026 through 2030. Then I'll give you guys a reminder of the Addendum III specifications process for winter flounder, and then we'll go through the Technical Committee Recommendations, the Advisory Panel Report and then just keep in mind the Board action for this addendum item is to consider setting specifications for fishing year 2026 through 2028.

Starting off with the New England Fishery Management Council specifications for the Gulf of Maine and the Southern New England/Mid Atlantic spawning stocks. Here on the slide, I have it for the current fishing year 2025 to compare to the upcoming years that they set it for, fishing year 2026 through 2030.

The New England Fishery Management Council and NOAA decided to put specifications for the next five years on the books, because there is a possibility that management track assessments will not be able to be conducted as frequently as in years past due to lack of things like staff, time, money; factors such as those.

However, changes can be made in the meantime to these specifications if there is updated information. The sub annual catch limits, ACLs for the fishing years 2026 through 2030 for both stocks have not drastically changed from the recent fishing year. The Gulf of Maine sub-ACL was adjusted up by a few percentage points and it has held constant over the five years.

Then the Southern New England/Mid-Atlantic sub-ACL was adjusted down by about 14%, again, reflecting the results of the 2025 Management Track Stock Assessment you guys just heard about. As part of the specifications the Council also sets the state sub component for the next five years. As a reminder, the state sub component is comprised of both the recreational and commercial catch.

The commercial portion of the state sub component is caught by vessels that do not hold federal multispecies permits and the sub component is an estimate of what the state fisheries will harvest in

each year. It is an estimate not an allocation, so there is no accountability measures associated with the state waters sub component, meaning there is no payback if the state water sub component is exceeded.

Moving into what the New England Fishery Management Council set for the state sub component, or estimated for the state sub component. They were both adjusted to reflect the average catch for the years 2022 through 2024. This means for the Gulf of Maine state sub components, there was a 7% decrease from fishing year 2025, and for the Southern New England/Mid-Atlantic state sub component this is just a 2% increase from fishing year 2025.

As a reminder, Addendum III, which was approved back in 2013, revised the state specifications setting process so that recreational and commercial measures could be set for up to three years to better align with the federal specifications process, at that time at least. Commercial measures that are subject to change are trip limits, trigger trip limits, size limits, season and area closures. Then the recreational measures that are subject to change are the size limits, bag limits and season. You'll notice that there is sort of a discrepancy between what the New England Fishery Management Council has set specifications for five years, whereas we can only set specifications for only three years at a time.

We'll just come back in three years and set those, unless there is new information available. Here on the slide, which we can refer back to. However, whenever we need to this is the current commercial winter flounder regulations for both the Gulf of Maine and Southern New England/Mid-Atlantic, and these management measures have not changed since 2014.

In the next slide we have the respective recreational winter flounder regulations, which again have not changed in a while. Again, we can refer back to those if needed. I will hand it over to the Winter Flounder TC Chair, Rich, to cover the summary of our TC call.

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Review Technical Committee Recommendations

MR. RICHARD BALOUSKUS: Thank you, Tracey. My name is Rich Balouskus, I'm a biologist with the state of Rhode Island and the Chair of the TC. The TC met by webinar on January 6 of this year. As I think Tony put it so well, the 2025 Management Track Stock Assessment really didn't change up the managers perceptions of the two stocks that ASMFC manages.

As a result of that and some further discussion, no changes are recommended to commercial and recreational measures for either Gulf of Maine or the Southern New England/Mid-Atlantic stocks for '26 through '28. As per each stock we had discussions for each. In the Gulf of Maine, the Technical Committee discussed at length Massachusetts conservation equivalency program that was implemented in 2024 and approved by the Winter Flounder Board. This program permitted fishermen to keep back-to-back commercial limits across two days.

Basically, discussion was limited, as only a partial year of data was available to look at. But through what we were able to see in some discussion, the TC is fine-tuning the reporting requirements for Massachusetts, so that we can better understand both this program and how commercial harvesters are using that full 500-pound daily limit on targeted trips. As far as Southern New England/Mid-Atlantic, the commercial and recreational catch remain very low, you know steady low across more than a decade at least.

Maybe that last part is a little strongly worded, but the TC has not received any specific requests or commentary from the Board looking to make specific changes to management measures for the past period of time. Last time the TC met the discussion really strongly revolved around keeping both commercial and recreational specs at status quo, until the planned Research Track Stock Assessment was released.

We really had a strong hope that the inclusion of environmental and climate data into a new research

track stock assessment model was going to help to, I guess, provide more insight into both the current state of the stocks and really help inform those projections by the Science Center that we rely on for spec setting. You know sort of help us get at that disconnect between the indices and the catch decline that Paul talked about for the Gulf of Maine. That research track stock assessment is indefinitely paused. We did start it and put in some work, but due in part to staffing and prioritization of other assessments at the Science Center, that assessment is no longer happening, or at least officially paused. Also sort of contributed to the TC effectively defaulting back to status quo for this round of the recommendations.

I think we would really, in the present and the near future be looking to the Board and the AP for tasking or thoughts on future exploration or spec changes. This is the last point I'll make, but it was sort of an extensive conversation that the Technical Committee had. It's sort of about the overall spec setting process that we discussed.

I can really only speak to winter flounder, as it's the only groundfish comanaged by the Commission and the Council, but as far as I know this may also be a potential discussion that other comanaged stocks may come up against. As Tracey mentioned, the Council is now setting five-year specs for winter flounder, and this occurred prior to our Technical Committee meeting.

As Tracey sort of outlined, in the Council spec setting procedure they effectively use a status quo assumption for state waters catch by using those recent averages across the region, and that is true for both commercial and recreational. As we were discussing this, this sort of results in a question of how and when Commission spec changes could or even should take place in relationship to those Council decisions.

Then we also have that three vs. five-year schedule offset on changes. It's just a discussion, you know what we had spent some time on in the TC meeting, and we're looking maybe for some input moving forward from both the Commission and Council,

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perhaps smooth that out. Obviously, a status quo recommendation from us, it's not a huge sticking point at the moment, but just something we wanted to consider.

That said, even with the Council moving ahead with those status quo assumptions, if the Board tasks the TC with exploring possible changes we'll obviously work with all the parties to figure out how to make this work moving forward. I think that concludes my comments. Yes, thanks, Tracey.

Review Advisory Panel Report

MS. BAUER: Thanks, Rich. Moving into the Advisory Panel Meeting summary, which I will be covering. The AP met on January 12 of this past month with four AP members in attendance. At that meeting we came out with a few recommendations. Two advisors supported status quo, commercial and recreational management measures for fishing years 2026 through 2028 for both stocks.

They made the note with this recommendation that they would be able to reevaluate regulations in three years if changes ended up needing to be made. They weren't too concerned about continuing with status quo for now. Specifically for the Southern New England/Mid-Atlantic stock they noted that recreational fishermen, including party boats, specifically are no longer really targeting winter flounder anymore.

Any changes to regulations wouldn't be highly impactful at this time in their estimation. Similarly, AP members noted that bait shops have stopped carrying bait in April, in I think it was New York specifically, and most anglers are not putting their boats into the water until May. Gulf of Maine specifically, Advisors noted it appeared like how I mentioned the biomass estimates have been generally stable over the last ten years. There was some speculation by the AP that this could indicate that the stock had stabilized.

It had matched one of the advisors on the water observation, so they thought based on all these

reasons, not many people targeting, biomass estimates in the Gulf of Maine seem to be stable right now. Status quo was the recommendation. Moving on to some general comments and research recommendations by the Advisory Panel at this meeting.

One advisor had noted he has been observing expansion of Gulf of Maine winter flounder size classes, in particular seeing larger fish. The advisor however, noted this may not necessarily indicate that the age structure is also expanding, but could indicate something with their environment is just generally changing, leading to increased growth rates.

After discussing some recent research that there was very low survival of young of year winter flounder. The AP as a whole expressed general frustration with the lack of answers on how to ensure winter flounder survived to maturity and to some the in general the continued low biomass of winter flounder.

Related to this discussion as well, the AP discussed different types of natural mortality that might be impacting winter flounder's ability to recover, including predation impacts. For research recommendations, the AP provided and discussed, first one advisor who is also a member of the Northeast Trawl Advisory Panel noted that there is that recent interest and improvement in the catchability estimates from the Northeast Fisheries Science Center, Northeast Trawl Survey that Paul noted.

He recommended that similar research be conducted for the other state surveys that go into this assessment. The AP also expressed the importance of continued exploration into ecosystem approaches in winter flounder management, to improve the estimates of natural mortality specifically, especially changes through time of natural mortality.

An advisory reiterated his recommendation from the last time the AP met to discuss specs back in January 2023, that managers should reconsider utilizing stock enhancement as a potential path

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forward for winter flounder. Then lastly, the AP had a short discussion on the potential need for an assessment that focuses on winter flounder in Long Island Sound specifically. That concludes my summary of the Advisory Panel meeting, so move to the Board Action for consideration for this meeting of considering setting specifications for fishing year 2026 through 2028.

CHAIR HYATT: Thank you, Tracey, thank you, Rich. At this point are there any questions for Tracey or Rich? Dan, go ahead.

MR. DANIEL J. McKIERNAN: My question is for Tracey. In the AP conversation, did anyone mention that maybe the two-fish limit discourages participation in the recreational fishery?

MS. BAUER: I think that was touched upon in the AP discussion, where it's like we only have two fish to go for, so why bother going out at all type of sentiments expressed.

MR. McKIERNAN: Yes, thank you. The other thing that strikes me is to me there is a missing part of a story here that when you do this again in three years, maybe you could come forward with a description of the degree of un-utilization of the tows or TACs by the sectors. I'm guessing that in the Gulf of Maine the majority of fish that are being caught is by federally permitted vessels in sectors.

But I think this assessment is kind of ignoring that, and so it would be good to know. I understand we're just managing for the most part the set aside. But the rest of the story, I'm blind to that. It would be useful to understand whether or not we're underutilizing the federally approved quotas, for lack of a better word.

MS. BAUER: Absolutely, I can bring that to the next time we discuss this, for sure.

CHAIR HYATT: David.

MR. DAVID V.D. BORDEN: Just following on Dan's comment. I think it would also be useful in the future to come back with more explicit explanations

of what we think the environmental drivers are that are keeping the stock down. I just mention the fact that yes there has been significant environmental changes in the Gulf of Maine.

Stock pre-recruits seem to be fine. You look at those charts. Paul mentioned the fact that they had been remarkably consistent. There has got to be a decoupling in there that explains why we just don't get a rebuilding of it, particularly the Gulf of Maine population. I think it would help all of us to have a discussion of that, why that is taking place.

I know, and this goes back a long time in my history, but at one point we only had two nesting pair of cormorants in the state of Rhode Island on east and west island, and before I retired, we were up to something like 2500 nesting cormorants. Those cormorants were all over the Bay and in packs of 500 fishing in August in a foot and a half of water, where all the juvenile flounder basically reside.

I mean there are probably some correlations here, that the scientific community come back with, and I think that would help us. Maybe there is some strategy that we could put together, in terms of how the cormorants are managed by U.S. Fish and Wildlife Service or whatever, that would address some of these concerns. That's kind of the first step, I think.

MS. BAUER: Yes, and I'll note that in the APs discussion they also discussed factors, when they are having a natural mortality discussion birds come up as well there. But I think that is something we could absolutely put together. Next time maybe a summary of all the recent research going into environmental impacts or something like that. Does that sound like what you're looking for? Okay, thank you.

CHAIR HYATT: Any other questions? Rich, correct me if I'm wrong, but just building on what David just said. My recollection from the Technical Committee is that while they were recommending status quo, the general sentiment went further than that, in that they felt that status quo should be maintained until such time as a research assessment is done,

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which would address some of the concerns, maybe not the cormorants, but some of the concerns that David brought up. Is my recollection correct, Rich:

MR. BALOUSKUS: Yes, effectively that had been our stance from 2022 through 2025, now operating in a new environment in which we may never be anticipating that is now I guess where David's point comes in, where we may not rely on as much external information and bring some more of that into this ourselves. That was the sentiment of the TC, but obviously facing a different future we're not going to just sit on our hands and do nothing. I think looking at some of those environmental drivers and other things it's going to be our best path forward.

CHAIR HYATT: Any other questions? Anything from online or from the public? Steve Haasz, member of the public online, go ahead.

MR. STEVE HAASZ: I don't understand this. We have no fishery really going on over in New Jersey area. Nobody wants to fish for two fish. I don't understand, why can't we bring it up to like a four or five bag limit, to where we can actually see what is really out there, because nobody is going fishing for two fish.

No party boats or charter boats are even going to think to go out for that, because nobody is going to book the boat. None of the recreational guys, don't want to pay that kind of money to buy baits and all that stuff to go out to do anything. If you're only going for two fish it's too much money.

Give us a little bit of a chance March, April and May, and every year, just to see what happens, whether or not we can get this done or not, just to see what's in the Bays and rivers in New Jersey. We don't really know, because nobody is fishing for them. You guys even say the same thing, you don't know what's going on. I just don't understand where you're coming up with these rules. Why not give us a chance? We've got to fight for something here. Give us a chance to fish for them and see what happens. That's all I've got to say.

CHAIR HYATT: Thank you. Any other comments from the public or online? Nicole.

MS. NICOLE LENGYELL COSTA: This question is for Tracey, just a follow up on the public comment and some other comments that we've heard. Do states still have the option for conservation equivalency, where they could, for example, put in a program to restrain their recreational season but increase their bag limit, and that only goes through ASMFEC, you don't have to go through the Council for that.

MS. BAUER: Yes, that is correct. You would have to submit a CE proposal following the guidelines to do something like that. Toni clarifies that we don't need to go to the Council process at all to change any of the recreational measures.

CHAIR HYATT: Dave.

MR. BORDEN: Yes, and just to follow up to that question. What is the timing of the submission to the Commission? I anticipate at some point some state, I mean this issue was raised by a New Jersey AP member, and at some point, the states are going to want to try to submit conservation equivalency proposals, so what is the timeframe they have to do that, the window? Is there one, Toni?

MS. KERNS: For conservation equivalency the guidelines are on the website that it is two months. But I also think that a bunch of individual state conservation equivalency programs may not serve us well, and that if we are interested in changing the recreational measures for these species, that we can task the Technical Committee to evaluate the measures that we have right now and you can give them an idea of what you're looking for, and then they can come back and say, this is what we think would happen to the landings if we made changes on X, Y or Z things.

Then I think what Tracey and I can do is talk with the New England Fishery Management Council staff about the process for specification settings and what happens with the accountability measures if we do exceed the state set-aside for winter flounder for any of the other measures, and what

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has been going on with the sectors and their landings, and how that impacts what happens when we go beyond what they've set aside for us.

CHAIR HYATT: Are there any other questions or comments before we move along? John.

MR. JOHN MANISCALCO: On the topic of potentially states looking at some alternative measures. New York never adopted the year-round season that most of the other states have. We did this to protect our Bay populations, to prevent people targeting the fish when they were the most vulnerable. We know that there are distinct genetics amongst our Bays. I'm just wondering, would that then be held against New York if other states wish to essentially utilize their longer seasons to potentially pump up the bag limit?

MS. BAUER: Yes, that's something that the TC could look at if they were tasked to evaluate what sort of impacts shuffling around the bag limit and the season would have. That can definitely be one of the considerations.

CHAIR HYATT: Go ahead, Dan.

MR. McKIERNAN: Consistent with what was just mentioned, it seems to me that the way things are evolving almost all the fish is allocated to the commercial sectors, because the set asides are basically the averages of the previous years and the recreational sector is discouraged from fishing, then they are never going to get a reasonable share, because we'll just be dwindling down to nothing.

I think it would be appropriate if the TC examined, especially in the Southern New England Stock, the potential for going to four fish, that that would be considered risky for the stock, and come back to report on that to this Board, because I think the two-fish limit is basically keeping people home. But as that one gentleman mentioned, maybe a four-fish limit might create some level of interest, especially in Wave 2, which is not a very popular wave to be fishing, but I think that that is what we would gain. We would gain some fishing opportunity in Wave 2 for the recreational sector.

CHAIR HYATT: I don't think we need a motion or anything here, but I think we've got a pretty solid sentiment that we would want the Technical Committee to take a look at various alternatives for using what fish are available to the recreational sector, maybe exploring some shifting, but to take a look at those options and report back to this group at the next meeting. Megan.

MS. MEGAN WARE: Yes, maybe as a part of that, I think it would be helpful for maybe like a staff memo on how the Council specifications are set, because this is a pretty nuance conversation of where these pounds are coming from. The state water set aside is taken off the top, so an increase in that has been mentioned, decrease the federal quota.

There are no accountability measures on the state water set asides so an overage of that is payback by the federal boats. I think this is a pretty dynamic multi rider decision, and I think having some context around that would be really helpful.

CHAIR HYATT: Thank you, Megan, you're correct. State water set aside is the beginning of the process and the end of the process, it could get complicated. Is there anything else? If not, I believe we've got a prepared motion to bring up relative to setting the specifications for '26 to '28.

MS. KERNS: Just as a quick note here. If you are setting specifications for all three years, and then you decide you want to make a change to your recreational measures. Then we would need to do a two-thirds vote, because that is a final action, to change them in the future. You could set all of the specifications except for the recreational measures, because that is what you're asking to explore changes in.

Then do those for '27 and '28. Obviously, '26 you would set your rec measures for, because you can't change those this year. But just so you understand what would need to happen to change them in future years. Does that make sense to everybody?

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CHAIR HYATT: If we set the specifications as anticipated, we would need to rescind that with a two-thirds vote and revisit for the recreational part of it, correct?

MS. KERNS: Yes, you don't have to rescind it, but you just do a new vote that is two-thirds.

CHAIR HYATT: Nicole.

MS. COSTA: Yes, just on timeline. When can we expect something back from the TC reasonably?

MS. BAUER: Yes, I would say our August meeting, the summer meeting. I think that seems like a realistic timeline to look into this and get back to you guys.

CHAIR HYATT: Dan.

MR. McKIERNAN: If we were to get a report in August or the decision to maybe increase the bag limit in the recreational sector, would it be able to be done at the November meeting, or do we have to do an addendum?

MS. BAUER: You wouldn't need to do an addendum, because Addendum III allows you to make changes like this. If you guys had a final decision at the August meeting you could make those changes at the August meeting, I believe, unless you think there is something that needs more discussion.

MR. McKIERNAN: That would be ideal, because if recreational fishermen are going to get news of it, it would need to go out in those guides which are usually printed by the first of the year, so that is great, thank you.

CHAIR HYATT: Is there anything else before we bring up a prepared motion and then talk about how to modify that motion? Here we have a motion prepared by staff that follows the recommendations of the Technical Committee and sets these specs for three years, 2026 to '28. I will ask if anybody wants to make this motion or to modify this motion in a manner that better reflects the conversation that we've just had. Eric.

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

MR. REID: Yes, Mr. Chair, I'll make this motion. **I move to approve status quo commercial and recreational Southern New England/Mid-Atlantic and Gulf of Maine winter flounder measures for the 2026 through 2028 fishing years.**

CHAIR HYATT: Second by Ray. Motion by Eric, second by Ray.

MR. REID: Given the discussion, did you hear what Megan Ware said about having to engage the New England Council? That is not a small topic, because of the way the tonnage is allocated. Whether or not we have a report for our August meeting or not, I think it's going to take a lot longer time than that to get this where everybody is comfortable with it. I have no problem with the three years, and if in fact we want to change it with a two-thirds vote, I don't think that is any problem either. I would just as soon leave this motion the way that it is and move forward.

CHAIR HYATT: Ray, do you have anything to add? Nothing to add.

MR. RAYMOND W. KANE: I thought I heard Tracey say that she and Toni would talk to the Council, thank you.

CHAIR HYATT: Thank you, Ray. Any further discussion? Are there any concerns with this motion? Any abstentions? If not, **motion passes by consent**. Thank you. Next item to consider is the Fishery Management Plan Review and State Compliance for the 2024 Fishing Year. Tracey.

Consider FMP Review and State Compliance for the 2024 Fishing Year

MS. BAUER: Yes, I think I can go through this very quickly. I will skip the monitoring requirements; they remain unchanged except for the review of what is in the FMP. There is one de minimis request, and then I'll go through the PRT discussion and recommendations. One de minimis request. New Jersey continues to request de minimis status for their commercial fishery. Then moving on to the PRT recommendation. The PRT found no

inconsistencies between state compliance reports and the requirements of the winter flounder FMP, and there are a few questions that the PRT recommends be added to the compliance reports.

Essentially, these questions are just to help the PRT in the future track if and like whether overages are occurring on commercial trips, next are found in the FMP review if you want to review them more closely. But basically, they just give information or allow the PRT to look at information about how many trips are landing at the trip limit, below the trip limit and over the trip limit, and if there is an overage how much that overage is.

If there are no trips, commercial trips that are exceeding the trip limit then you can put that in too. But this was just something that the PRT thought would be helpful as a reference in future years. Just briefly, Rich already went through Massachusetts' CE Plan. The Massachusetts compliance report provided some initial information on the period that has been active thus far, just in 2024, which was September 20 through the end of the year, 2024.

If you go to the next slide the PRT's discussion recommendation, they had recognized that this compliance report had only contained information for a very small portion of the year, so there is interest to see how it will perform in the first full year. There was some conversation by the PRT that generally for all CE programs it might be useful in the future to consider types of socioeconomic data that could be gathered to evaluate performance.

In this case for Massachusetts program some of the justifications for the program in Massachusetts proposal was for socioeconomic reasons, so monitoring this information potentially, or consideration of monitoring this information in the future could help, you know the state and the PRT determine if the program is meeting the goals and objectives of that program.

Lastly, the PRT just noted the change in the requirements to seal each day's catch with a DMF issued tag, changing it to require each day's catch to be clearly segregated and accurately labeled. The

Board action for consideration is to approve the Winter Flounder FMP Review and de minimis status for New Jersey's commercial fishery.

CHAIR HYATT: Is there anybody who would like to make this motion to read into the record? Doug.

MR. DOUGLAS E. GROUT: **I move to approve the Winter Flounder FMP Review for the 2024 fishing year, state compliance reports and de minimis status for New Jersey's commercial fishery.**

CHAIR HYATT: Thanks Doug and second. Second by Ray. Any discussion or any questions for Tracey on the report that she gave? Seeing none; is there any concern with this motion? Any abstentions? **It passes by consent.** Go ahead, Tracey.

MS. BAUER: Before we move on from this topic, I just want to make sure that the Board doesn't have any concerns or objections to adding those questions to the future compliance reports. If there are no concerns with that, then that will be in the next template that I send out this year.

CHAIR HYATT: No concerns, so, so noted. Last item on our agenda is election of a Vice-Chair. I believe that we've got a motion and a nomination. Matt.

MR. MATTHEW GATES: It is my pleasure to **nominate Nicole Costa from our neighboring state to the east, Rhode Island.**

CHAIR HYATT: Thank you, Matt, second Dan. Are there any other nominations? Okay, Nicole, **congratulations.**

At this point, is there any other business to come before the Board? Seeing none; we are **adjourned.** Thank you.

(Whereupon the meeting adjourned at 12:20 p.m.
on Tuesday, February 3, 2026)

- - -

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



Atlantic States Marine Fisheries Commission

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703.842.0740 • asmfc.org

MEMORANDUM

TO: Winter Flounder Management Board
FROM: Winter Flounder Technical Committee
DATE: July 20, 2026
SUBJECT: Update on Board Requests

At its February 2026 meeting, the Winter Flounder Management Board (Board) expressed interest in receiving additional information in the future regarding several topics. This memo provides an update for the Board from the Technical Committee (TC) on 1) information on research of environmental drivers that are hypothesized to limit stock rebound and 2) utilization of catch limits in federal waters.

1. Research on Environmental Drivers Limiting Winter Flounder Stock Rebound

In February 2026, there was a request from the Board for information on the environmental drivers limiting the rebuilding of the winter flounder stock to be provided at a future meeting. Predation, specifically from cormorants, was mentioned as a topic of particular concern. Although there are no peer-reviewed papers specifically addressing winter flounder predation by cormorants, the TC was able to locate several existing datasets, and conducted a preliminary analysis which is provided below.

More broadly, the Winter Flounder Research Track Working Group had prioritized further analysis and compilation of information on environmental drivers on the winter flounder population. Population projections within the current ASAP model framework have been found to be sensitive to the recruitment period chosen, as well as the temporal period selected from which recruitment estimates are drawn. In addition, recruitment and natural mortality are both likely to be dependent on environmental conditions, which cannot be explored within the ASAP framework. Although the Northeast Fisheries Science Center (NEFSC) winter flounder research track stock assessment is currently paused, investigations of environmental covariates within a state-space model framework (e.g., WHAM) are ongoing, including graduate work at University of Maine.

A Master's thesis regarding the characterization of environmental impacts on winter flounder stock dynamics in US waters was recently completed (Appendix 1; Barron 2025). Topics covered in this thesis include a literature review of ecosystem and climate influences on winter flounder stock dynamics, an evaluation of shifts in winter flounder stock dynamics, and modeling of climate and ecosystem drivers of the winter flounder population.

Since there are one or more peer review publications in progress based on this thesis, the TC will come back to the Board at a future meeting with a presentation summarizing the literature review and other results of this research.

Double-Crested Cormorants

The coastal colonial waterbird nesting survey was initiated in Rhode Island in 1976 and in Massachusetts in 1984. The survey has been conducted annually in RI with a partial survey conducted in 2021 and no survey in 2023. The MA survey has been conducted sporadically: 1984, 1994-95, 2006-08, 2013, 2018, and 2024. Fixed stations are surveyed once annually. For this analysis, all RI stations are used and only MA stations adjacent to the SNE/MA winter flounder stock bounds are used (e.g., Buzzards Bay, south side of Cape Cod, Martha's Vineyard, Nantucket). The first nesting pair was not observed until 1982. Only one single station (of 46 sampled) in the MA coastal colonial waterbird nesting survey had double-crested cormorants present in the 1984 survey. The cormorant nesting population increased steadily through the 1980s until the mid-1990's when the population appears to have plateaued (perhaps reaching ecosystem carrying capacity; Figure 1).

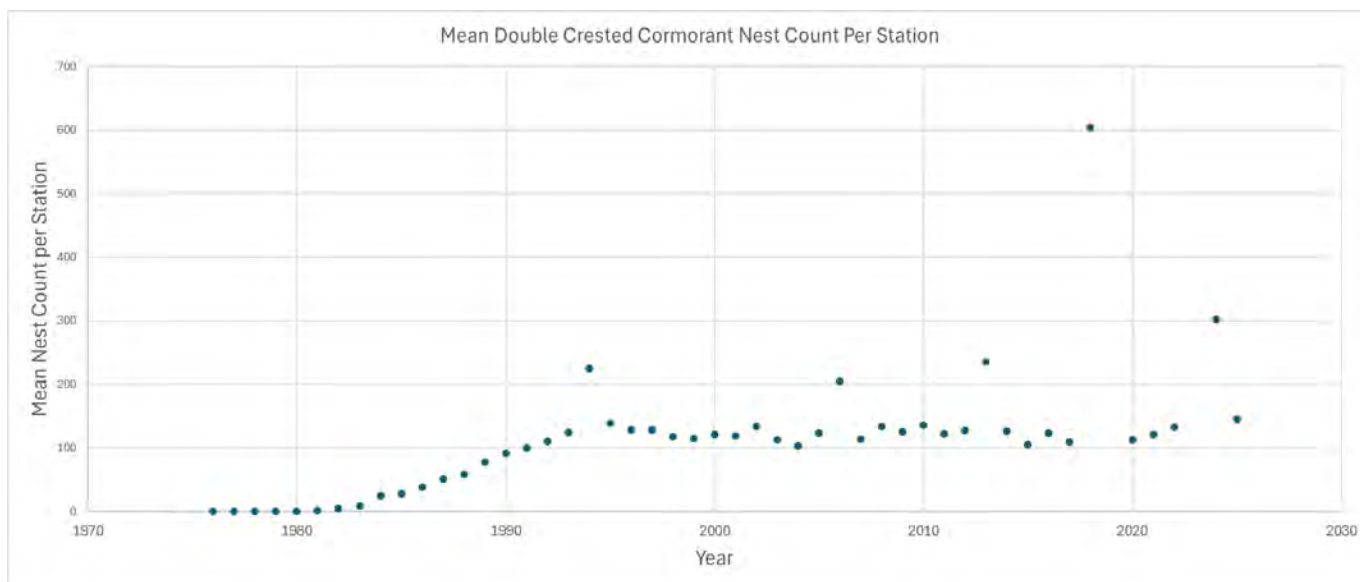


Figure 1. Mean double-crested cormorant nest count data 1976-2025 for Massachusetts and Rhode Island combined. Number of stations sampled per year are variable.

In 1995, from April through August, the State of Rhode Island conducted a stomach content analysis on double-crested cormorants at two locations within Narragansett Bay (Hope Island and Sakonnet Point). Sixty-seven (67) cormorants were collected during this project. Thirteen of the 67 cormorants (19.4%) had winter flounder in their stomachs. When present, winter flounder comprised between 16 and 100% of the mass of the cormorant stomach contents. Across all cormorants sampled, cunner comprised the greatest mass of all prey, winter flounder were second most among identifiable prey species.

Table 1. Top ten greatest mass prey species from double-crested cormorant stomach contents collected from Narragansett Bay, Rhode Island 1995. Mass represents the total grams of each prey species sampled from all 67 cormorants collected. Percentage of total mass shows the relative percentage of mass of prey species among all collected cormorants.

Species	Mass (g)	Percentage of Total Mass
Cunner	1153.2	18.9
Unidentified	1100.7	18.1
Winter Flounder	623.6	10.2
Northern Searobin	559.5	9.2
Common Mummichog	491.8	8.1
Butterfish	466.4	7.7
Oyster Toadfish	465.4	7.6
Tautog	283.8	4.7
Grubby Sculpin	206	3.4
Scup	164.8	2.7

2. Commercial Utilization

The TC compiled information on the utilization of catch limits for the SNE/MA and GOM stocks between 2011 and 2025, which in the future will be updated for Board discussions of specifications.

Commercial utilization of winter flounder was extracted from the commercial summary table (sector and common pool) catch monitoring database hosted by NOAA GARFO (<https://apps-garfo.fisheries.noaa.gov/quota-monitoring/groundfish/MultiMonReports.html>). Commercial utilization of SNE/MA winter flounder by the federal groundfish fleet has steadily declined from 2018 through 2025 (Figure 2). Commercial utilization of GOM winter flounder by the federal groundfish fleet has generally varied without much trend (Figure 3).

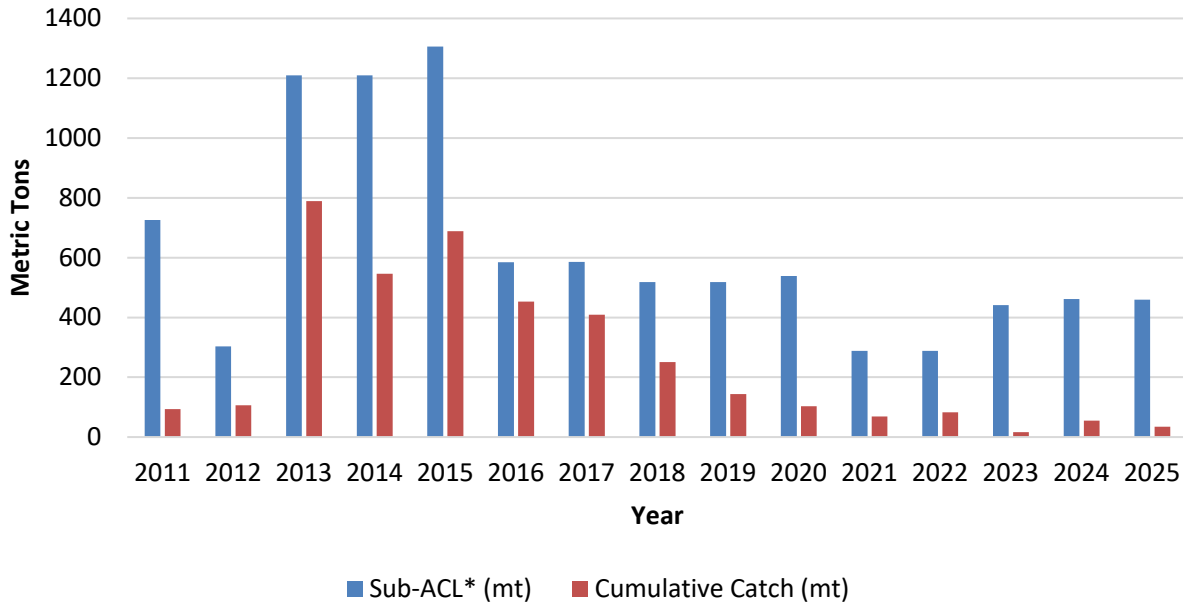


Figure 2. Comparison of cumulative catch vs. the groundfish sub-ACL by year for SNE/MA winter flounder in metric tons. In years where utilization rates are high, the red cumulative catch bars are close in height to the blue sub-ACL bars. In years where utilization rates are low the red bars are small compared to the blue bars.

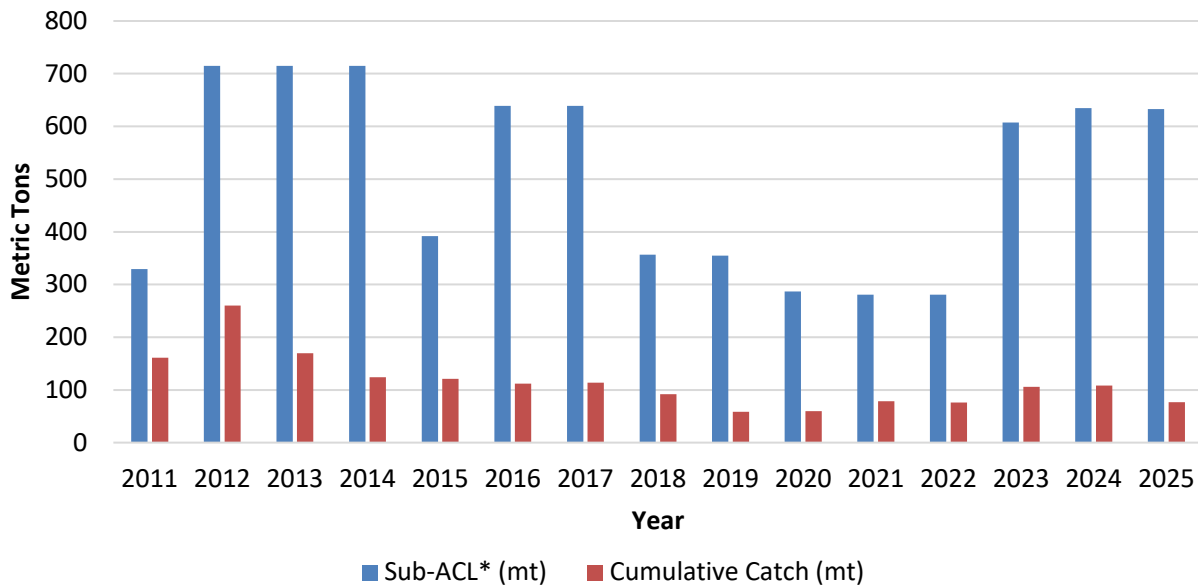


Figure 3. Comparison of cumulative catch vs. the groundfish sub-ACL by year for GOM winter flounder in metric tons. In years where utilization rates are high, the red cumulative catch bars are close in height to the blue sub-ACL bars. In years where utilization rates are low the red bars are small compared to the blue bars.

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**CHARACTERIZING THE IMPACTS OF CLIMATE CHANGE ON WINTER FLOUNDER
STOCK DYNAMICS IN US WATERS**

By

Julia Barron

B.A. Smith College, 2020

A THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Science

(in Marine Biology)

The Graduate School

The University of Maine

December 2025

Advisory Committee:

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CHARACTERIZING THE IMPACTS OF CLIMATE CHANGE ON WINTER FLOUNDER

STOCK DYNAMICS IN US WATERS

By Julia Barron

Thesis Advisor: Dr. Lisa Kerr

An Abstract of the Thesis Presented
In Partial Fulfillment of the Requirements for the
Master of Science
(in Marine Biology)
December 2025

Over the last 40 years, the Northwest Atlantic region has warmed at an accelerated rate, impacting marine fish communities and the fisheries that depend on them. Winter flounder, *Pseudopleuronectes americanus*, is a demersal flatfish species managed as three stock units in U.S. waters (Georges Bank, Gulf of Maine, Southern New England/Mid-Atlantic). In the 1980s, winter flounder stocks were severely overfished. Groundfish species like winter flounder are sensitive to environmental change, and despite little fishing pressure, the stocks have not recovered to their historical abundance levels. Thus, characterizing the impact of climate change on stock dynamics is critical for accurate stock assessment and effective fisheries management of winter flounder.

By reviewing the best available science on ecosystem influences on winter flounder stock dynamics, I identified key environmental drivers described as affecting winter flounder distribution, recruitment, growth, and natural mortality in previous studies. Environmental drivers such as surface and bottom temperatures, salinity, and the frequency of warm-core rings were identified in the scientific literature as affecting the dynamics of winter flounder in one or more stock areas. Due to the varied timing and spatial scale of these studies, it is important to revisit these relationships to determine their stability and whether new relationships emerged.

Large-scale ecosystem changes or regime shifts in the Northeast US shelf ecosystem can drive temporal shifts in fish population dynamics, specifically impacting stock productivity. To identify temporal non-stationarity in winter flounder stock dynamics, I conducted a changepoint analysis of three stock responses: recruitment, growth, and distribution. The scales at which these changepoints are evident (i.e., across all stocks or in individual stocks) can inform further steps in understanding the environmental drivers of non-stationarity in stock trends.

I used generalized additive models to characterize relationships between the previously identified environmental drivers and winter flounder stock dynamic indices. This analysis revealed strong correlations between winter flounder stock dynamics and ecosystem drivers, contributing to a comprehensive understanding of how this species responds to environmental change. This research aims to inform improved winter flounder stock assessment and management through examination and characterization of climate influences at the stock scale.

DEDICATION

To my parents, whose unconditional and unwavering support throughout my educational career has brought me to where I am today. Thank you for instilling in me the love of learning and giving me the perseverance to continue learning every day.

ACKNOWLEDGEMENTS

Thank you to my husband, Sean, who moved with me to Maine so that I could achieve this advanced degree. I would not be half the person I am today without his love, support, and encouragement. Thank you to the Kerr Lab for their cheers of support throughout this process, as well as the countless hours they contributed to reading and reviewing my thesis. I would like to highlight the constant help and assistance from lab manager Jamie Behan, who was invaluable in my learning and understanding of the statistical analyses conducted in this thesis. I would also like to thank the members of the paused winter flounder NOAA Working Group Research Track, who contributed to the making of the ecosystem profile, assisted me with data acquisition, and provided invaluable feedback throughout all stages of my research. Lastly, I would like to extend my deepest gratitude to my committee members for their constant support and time spent reviewing my thesis.

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CHAPTER 1

Introduction

The Northeast U.S. continental shelf ecosystem supports abundant and diverse living marine resources that many coastal communities in New England rely upon. Within the last 40 years, the Northwest Atlantic has warmed at an unprecedented rate, significantly impacting marine fishery resources and communities (Townsend et al. 2023, Pershing et al. 2015). Winter flounder (*Pseudopleuronectes americanus*) is an important fishery resource in the Northwest Atlantic that has been significantly affected by climate change. Winter flounder is a demersal flatfish species managed as three stock units in US waters: the Gulf of Maine (GOM), Georges Bank (GB), and Southern New England/Mid-Atlantic (SNE/MA) stocks. In the 1980s, winter flounder stocks were severely overfished and are now dimly representative of what once was a thriving commercial fishery resource. Although recent stock assessments (NOAA 2022) indicate no overfishing currently occurs on these stocks, the resource has yet to return to its historic abundance.

The most recent status determinations for winter flounder stocks are as follows: the Georges Bank stock is not overfished, is still rebuilding, and is not subject to overfishing (NOAA 2025). The Southern New England/Mid-Atlantic stock is not overfished, is not subject to overfishing, and has rebuilt to the target population level due to the revision of biological reference points (NOAA 2025). The Gulf of Maine stock is not subject to overfishing, and the overfished status is unknown because the population size could not be estimated due to highly uncertain assessment results (NOAA 2025). NOAA initiated a research track stock assessment for winter flounder stocks in U.S. waters in 2023; however, this process has been temporarily paused due to capacity issues.

Problem Statement

Winter flounder have historically been a highly valued fishery resource with cultural and economic significance to the Northeast US. The fishery resource is targeted by the groundfish fishery as part of a multi-species complex. The magnitude to which climate and ecosystem drivers have been influencing winter flounder population dynamics and, therefore, affecting sustainable yield are unknown.

The Northeast US continental shelf region has undergone large-scale changes primarily due to global warming within the past half-century. Like many species in the groundfish complex, winter flounder are sensitive to environmental change. Due to their dependence on both estuarine and demersal waters, they can be particularly susceptible to climate change and other anthropogenic impacts on these varied habitats. A vulnerability assessment of species along the Northeast U.S. Shelf to climate change ranked winter flounder as having a “very high” vulnerability score with “high” biological sensitivity and “very high” climate exposure (Hare et al. 2016). Hare et al. (2016) suggested that the impacts of climate change are expected to negatively impact winter flounder, particularly at the southern extent of their range. This vulnerability assessment provides useful context for understanding climate change impacts on winter flounder, but it is based on expert opinion and the data available at the time of publication. Understanding the influence of ecosystem and climate drivers of winter flounder population dynamics is essential to the accurate assessment of these stocks and the effectiveness of their management.

Stock assessments are a crucial aspect of the fishery management process, providing estimates of current stock biomass and status (i.e., overfished and overfishing status) that inform harvest advice. Most stock assessments do not explicitly include climate and ecosystem impacts on population dynamics, leading to model misspecification. The failure to account for these impacts can

lead to inaccurate assessments and impact the advice given by managers, resulting in ineffective management and the potential for overfishing (Kerr et al. 2022). Given the multiple sources of uncertainty inherent in the assessment process, evaluations for climate-vulnerable species, such as winter flounder, should incorporate ecological and environmental context to enhance understanding and management of the stock. For many groundfish stocks, the impacts of climate change are thought to play a significant role in preventing the rebuilding of these fishery resources (Wiedenmann and Jensen 2018). The lack of rebuilding of winter flounder stocks to historic levels has severely reduced the targeting of winter flounder by the groundfish fishery, affecting the industry and its stakeholders.

Research Goals and Objectives of Thesis

The goal of this thesis was to characterize how climate change is influencing winter flounder stock dynamics and to provide recommendations on how to integrate this information to improve the assessment and management of this important groundfish species. The core research questions included:

- 1) What are the key climate and environmental drivers influencing the dynamics of winter flounder stocks in the US?
- 2) How are these drivers impacting fish productivity and distribution?
- 3) How can we use this information to inform improved stock assessment accuracy and management effectiveness?

These questions were addressed through the research activities described in three chapters. Chapter 2 synthesizes the best available science on the influences of climate and ecosystem change on winter flounder population dynamics and provides ecosystem context for the species that can inform climate-integrated management of this fishery resource. This ecosystem profile was developed through a systematic literature review and synthesizing knowledge of experts on winter flounder

through NOAA's Winter Flounder Research Track Stock Assessment process. In Chapter 3, evidence of regime shifts in the population dynamics (i.e., recruitment, growth, and distribution) of winter flounder stocks in US waters was tested. Breakpoint analysis was used to identify evidence for regime shift dynamics within and across all three winter flounder stocks. Chapter 4 quantified the relationships between winter flounder population dynamics and the important climate drivers identified in Chapter 2. Generalized additive models (GAMs) were used to evaluate the relationship between stock dynamic processes (i.e., recruitment, growth, and distribution) and environmental drivers.

This work applied a framework developed through the Northeast Climate Integrated Modeling Initiative (NCLIM) that outlines a structured approach for climate information to be integrated into fisheries stock assessment (Fig. 1.1, Kerr et al. In Review). This approach has been applied to multiple groundfish in the region, including American plaice, Atlantic cod, and yellowtail flounder, in the context of research track stock assessments. The results of this work have the potential to inform the stock assessment through 1) providing an ecosystem context to understanding data, 2) improving modeling assumptions, and 3) providing guidance on aspects of stock dynamics that should be considered time-varying or informed by an environmental driver in the context of the stock assessment model. Overall, this research promotes the framework that a deeper understanding of environmental effects from both a literature and stakeholder perspective can benefit stock assessment and management and help us better predict how winter flounder stocks will adapt in the future.

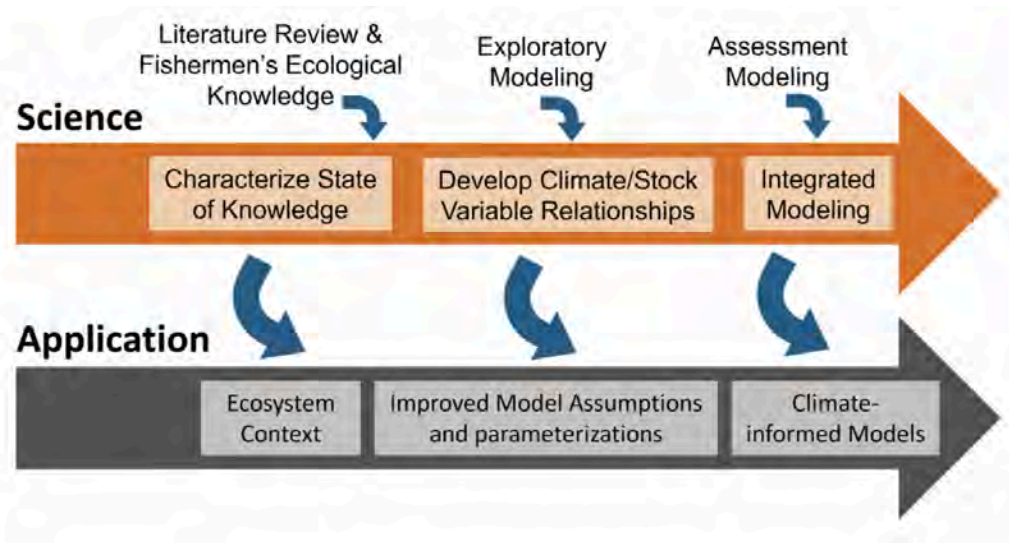


Figure 1.1. NCLIM Stock Assessment Framework. Visualization of the framework by NCLIM to integrate ecosystem and climate knowledge into the stock assessment process, Excerpt from Kerr et al. (In Review).

CHAPTER 2

PROFILE OF ECOSYSTEM AND CLIMATE INFLUENCES ON STOCK DYNAMICS OF WINTER FLOUNDER

Introduction

Winter flounder (*Pseudopleuronectes americanus*) are a demersal flatfish species commonly distributed in New England and Eastern Canadian waters (NOAA 2023). Winter flounder have been an intensely studied species both in the field and in the lab, in part because they are readily sampled in nearshore habitats and can be successfully reared under controlled conditions. Decades of research interest in this species led to the establishment of a regional scientific conference in 1986 devoted to winter flounder, which later evolved into the Flatfish Biology Conference, focused on advancing scientific understanding of flatfish species (NOAA 2024). Research on winter flounder has also advanced ecosystem approaches to fisheries science and management. For example, the initial Atlantic States Marine Fisheries Commission (ASMFC) management plan for winter flounder, which explicitly considered habitat (ASMFC 1992), was the basis of the US federal mandate to conserve essential fish habitat.

Winter flounder are currently managed as part of the Northeast Multispecies (groundfish) Fishery Management Plan developed by the New England Fisheries Management Council (NEFMC) and the ASMFC. Three stocks are defined for this groundfish species in U.S. waters: 1) Gulf of Maine (GOM), 2) Georges Bank (GB), and 3) Southern New England/Mid-Atlantic (SNE/MA; Fig. 2.1). Canada manages three additional stocks: Western Scotian Shelf (NAFO Div. 4X), Eastern Scotian Shelf (NAFO Div. 4VW), and the Southern Gulf of St. Lawrence (NAFO Div. 4T, DFO). The U.S. three-stock management approach was initiated in 1996 to align with the most current understanding of winter flounder stock structure (NEFSC 1996). Prior to 1996, winter flounder were managed as four stock units in U.S. waters, as Southern New England and Mid-Atlantic were separate stocks (DeCelles and Cadrin 2011).

A vulnerability assessment of species along the Northeast U.S. Shelf to large-scale climate change ranked winter flounder as having a vulnerability score of “very high” with high biological sensitivity and very high climate exposure (Table 1, Hare et al. 2016). The effect of climate change was expected to be negative for winter flounder, particularly at the southern extent of their range (Hare et al. 2016). The vulnerability assessment provides valuable context for understanding the impacts of climate change on winter flounder, but it is based on expert opinion and the data available at the time of publication.

Table 2.1. Winter Flounder Vulnerability Analysis. Climate vulnerability analysis for winter flounder depicting the expert's scores for biological sensitivity and climate exposure. Excerpt from Hare et al. (2016).

Overall Vulnerability Rank = Very High ■

Biological Sensitivity = High ■

Climate Exposure = Very High ■

Data Quality = 92% of scores ≥ 2

<i>Pseudopleuronectes americanus</i>		Expert Scores	Data Quality	Expert Scores Plots (Portion by Category)	
Sensitivity attributes	Stock Status	3.4	3.0		
	Other Stressors	2.4	2.6		
	Population Growth Rate	2.2	2.7		
	Spawning Cycle	2.6	2.7		
	Complexity in Reproduction	2.4	2.8		
	Early Life History Requirements	3.2	2.9		
	Sensitivity to Ocean Acidification	1.4	2.4		
	Prey Specialization	1.3	3.0		
	Habitat Specialization	1.8	3.0		
	Sensitivity to Temperature	2.1	3.0		
	Adult Mobility	1.9	2.9		
	Dispersal & Early Life History	2.7	2.8		
Sensitivity Score		High			
Exposure variables	Sea Surface Temperature	4.0	3.0		
	Variability in Sea Surface Temperature	1.0	3.0		
	Salinity	1.4	3.0		
	Variability Salinity	1.2	3.0		
	Air Temperature	4.0	3.0		
	Variability Air Temperature	1.0	3.0		
	Precipitation	1.2	3.0		
	Variability in Precipitation	1.3	3.0		
	Ocean Acidification	4.0	2.0		
	Variability in Ocean Acidification	1.0	2.2		
	Currents	2.0	1.0		
	Sea Level Rise	2.2	1.5		
Exposure Score		Very High			
Overall Vulnerability Rank		Very High			

The goal of this chapter is to synthesize the best available science on the influence of climate and ecosystem change on winter flounder population dynamics and provide an ecosystem context for the species that can inform climate-integrated management of the fishery. This review was conducted in coordination with NOAA's Winter Flounder Research Track Stock Assessment process to address Term of Reference 1 (TOR 1): "Identify relevant ecosystem and climate influences on the stock. Characterize the uncertainty in the relevant sources of data and their link to stock dynamics. Consider findings, as appropriate, in addressing other TORs. Report how the findings were considered under impacted TORs." Because of the individualized nature of winter flounder stocks in terms of their genetics, distribution, vital rates, morphology, and behavior (DeCelles and Cadrin 2011), this literature review compiles the best available science regarding winter flounder dynamics, including habitat/distribution, recruitment, growth, and natural mortality, and their response to environmental change on a stock-by-stock basis (Kittel 2025).

Methods

A broad review of the scientific literature was conducted to develop an ecosystem profile of winter flounder, based on the best available science, identifying climate and ecosystem influences on winter flounder stock dynamics. Keywords searched for in Google Scholar in this review included: "winter flounder", "climate change", "ecosystem", "population", "stock", and "dynamics". Applicable literature was then sorted by stock area, date of publication (search was for any year of publication after 1900), and life history trait studied using the following terms: "habitat", "distribution", "recruitment", "growth", "natural mortality", "Gulf of Maine", "Georges Bank", and "Southern New England/Mid-Atlantic." In addition to this systematic approach to review, a portion of the literature was identified through contributions from NOAA's Winter Flounder Research Track Working Group

members, who recommended key studies and seminal works considered essential to understanding winter flounder stock dynamics and ecology. The profile was then organized by each aspect of stock dynamics (i.e., distribution and habitat use, spawning phenology and recruitment, growth and maturity, and natural mortality) with a general description at the beginning of each section followed by stock-specific content where applicable.

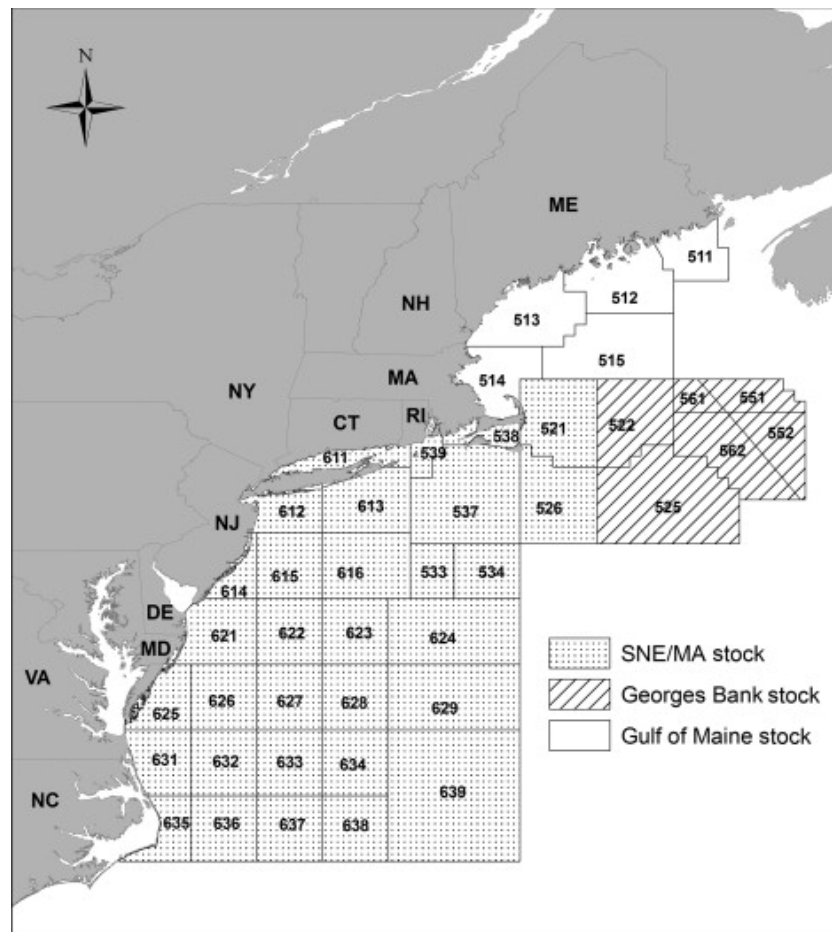


Figure 2.1. Spatial Definition of Winter Flounder Stocks. Spatial definition of the three stocks of winter flounder off the northeast US and southern Canada: Southern New England/Mid-Atlantic (SNE/MA), Georges Bank, and Gulf of Maine. Excerpt from DeCelles and Cadrin (2011)

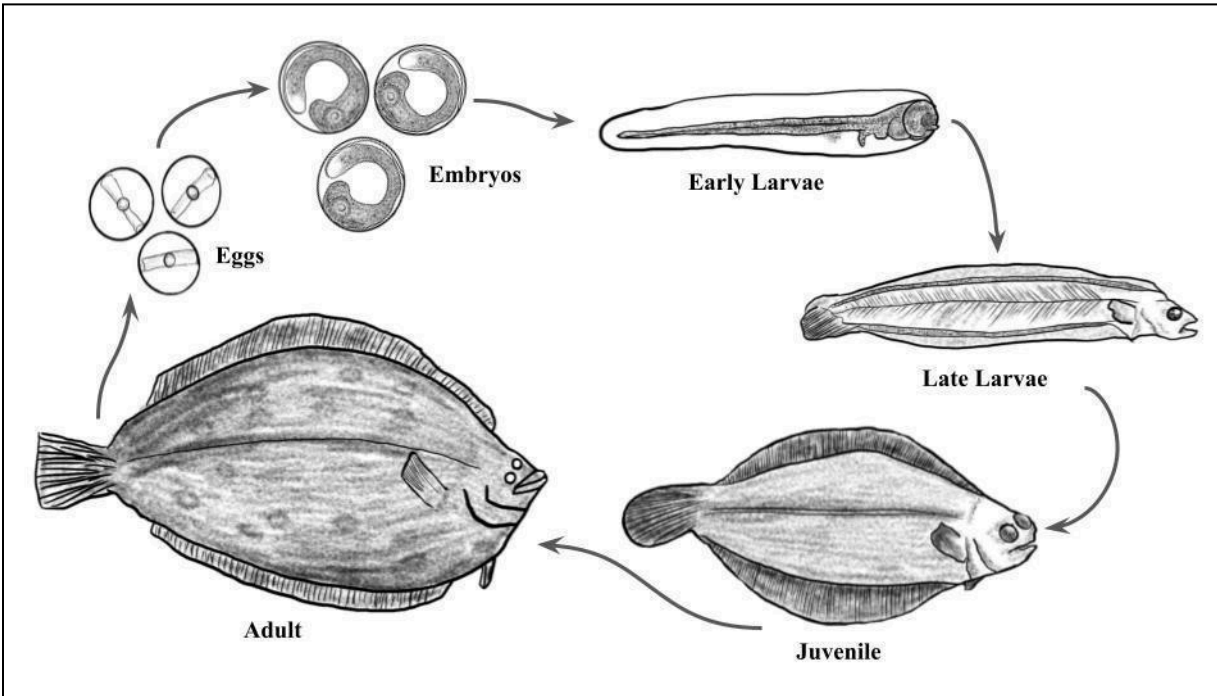


Figure 2.2. Winter Flounder Life History Stages. Winter flounder life history stages, beginning with the egg stage and ending at the adult stage. Images referenced are found in Jordan and Evermann (1896) and were originally drawn by H.L. Todd.

Distribution and Habitat Use

General Description of Distribution by Life Stage

Winter flounder exhibit variation in habitat preferences and tolerances across different life stages and within various stock areas (Table 2.2, Pereira et al. 1999).

Table 2.2. Winter Flounder Preferences. Preferences of winter flounder at each life stage for depth, substrate type, vegetation type, and currents and the specific temperature, salinity, and dissolved oxygen preferences across life stages. Excerpt from Pereira et al. (1999).

Life Stage	Depth	Substrate	Vegetation	Currents
<i>Eggs</i> ¹	Found at 0.3-4.5 m (inshore); 90 m or less on Georges Bank.	Mud to sand or gravel.	Diatom mats, drifting macroalgae.	
<i>Larvae</i> ²	1-4.5 m inshore.	Fine sand, gravel.		Hydrodynamics work to retain larvae in nursery areas.
<i>YOY</i> ³	0.5-12 m inshore.	Mud to sand with shell or leaf litter.	<i>Ulva</i> , eelgrass and unvegetated adjacent areas.	
<i>Juveniles</i> ⁴	Peak abundance of flounder less than 200 mm occurs in 18-27 m of water in Long Island Sound in April and May. In Canadian waters, juveniles were most abundant at 11-18 m. Less than 100 m offshore.	Equally abundant on mud or sand shell.		
<i>Adults</i> ⁵	Most 1-30 m inshore, shallowest during spawning; less than 100 m offshore.	Mud, sand, cobble, rocks, boulders.		

Table 2.2 continued

Life Stage	Temperature	Salinity	Dissolved Oxygen
<i>Eggs</i> ¹	Spawning initiated at about 3°C; highest percent hatch at 3-5°C; 18°C lethal.	Found from 10-32 ppt; salinity has little effect on survival or hatch.	Found at 11.1-14.2 mg/l.
<i>Larvae</i> ²	No feeding or metamorphosis at 2°C; hatch from 1-12°C; larvae most abundant at 2-15°C.	Found at 3.2-30 ppt; higher on Georges Bank.	Found at 10.0-16.1 mg/l.
<i>YOY</i> ³	Found at 2-29.4°C; Laboratory study suggests preferred temperature is 19.5°C; 30°C may be lethal.	Found at 23-33 ppt; 5 ppt suggested by laboratory study as lower avoidance salinity.	Constant 2.2 mg/l or diurnal variation from 2.6-6.4 mg/l adversely affects growth.
<i>Juveniles</i> ⁴	Commonly found at 10-25°C during summer and fall.	Collected 19-21 ppt; 10 ppt suggested as lower avoidance level.	
<i>Adults</i> ⁵	0.6-23°C; 12-15°C suggested as preferred; upper incipient lethal limit is 27°C.	Found at 15-33 ppt.	Lower dissolved oxygen associated with lower mean length of catch suggesting avoidance by larger fish or reduced growth.

Early Life History

Winter flounder exhibit early life history patterns typical for a flatfish, with a pelagic larval stage and settlement to demersal juveniles (Fig. 2.2). Winter flounder eggs are both demersal and adhesive and therefore less likely to be widely dispersed from their hatching site compared to pelagic eggs (Pearcy 1962; Miller et al. 1991; DeCelles and Cadrin 2011). Winter flounder deposit eggs in depths less than 5 m in estuaries, deeper in coastal waters (DeCelles and Cadrin 2011, Fairchild et al. 2013, Fairchild 2017), and up to 90 m on Georges Bank (Scott 1929; Bigelow and

Schroeder 1953; Pearcy 1962; Crawford and Carey 1985; Monteleone 1992). Frank and Legett's (1983) study in Newfoundland supported the adaptive emergence hypothesis for winter flounder young of year, which contends that the demersal eggs hatch due to the onset of specific environmental conditions, such as increased presence of warm, food-rich waters, and is timed to avoid peak predator abundances in shallow nursery areas (Frank and Legett 1983). This cue for synchronized, local hatching is thought to decrease the risk of mortality due to predator swamping effects (Frank and Legett 1983).

Newly hatched winter flounder larvae are pelagic and have a typical bisymmetric body plan (NOAA 2025). The larval stage lasts 28–42 days, during which larvae may accumulate in nursery areas due to tidal movement (Chant et al. 2000). New larvae depend on yolk-sac absorption during the first 4-14 days post-hatch, after which larvae transition to exogenous feeding behaviors (Buckley 1982). Metamorphosis begins at around 5–6 weeks post hatch and is completed by 8 weeks or when larvae reach around 8–9 mm in length (Collette and Klein-MacPhee 2002). Metamorphosis is characterized by migration of the left eye to the right side of the head along with a loss of pigmentation on the left (blind) side (Klein McPhee 1978; Chambers and Leggett 1987; Collette and Klein-MacPhee 2002). Along with these physical changes, pelagic larvae begin to settle to demersal habitat (Fig. 2.2). As demersal juveniles, estuarine or inshore-spawning individuals tend to stay in these habitats for their first 2-3 years of life (depending on study and by stock), with seasonal movements to avoid colder temperatures nearshore (Pereira et al. 1999). Post-settlement winter flounder are negatively buoyant and are thus more affected by bottom water cycling than surface water cycling within nursery grounds (Percy 1962; Pereira et al. 1999). Winter flounder's essential fish habitat source document characterized small and narrow estuary habitat to be productive nursery grounds as they tend to restrict heavy water flow and in turn

help retain larvae (Pereira et al. 1999). Notably, winter flounder on Georges Bank spawn, settle, and mature offshore where waters are generally shallower, demonstrating diverse early life history strategies. Estuarine or coastal-spawned winter flounder tend to remain in or near inshore nursery waters until maturity when they begin spawning migrations between inshore and offshore regions (Langan 2021).

Juveniles

Habitat suitability for juvenile winter flounder is highly dynamic and influenced by various regulatory factors essential for growth and survival (Manderson et al. 2002). The suitability of shallow habitats is reported to depend in large part on predator density (Manderson et al. 2004). Larger Young of Year (YOY) tend to concentrate in shallow, structurally complex habitats that can be as shallow as 1-2 m deep, which may provide refuge from predators (Manderson et al. 2004). While some shallow habitats may lack structural complexity, YOYs tend to prefer them over deeper water, where predator density may be higher (Manderson et al. 2004). Manderson et al. (2004) found that YOY movement from deep habitat to shallow shoreline areas is expected in the future if stressors found in shallow water are less influential than the photo-negative benefits of deeper water.

Adults

Winter flounder adults are found in estuarine, coastal, and offshore waters along the Atlantic coast of North America in depths less than 100 m (Mansueti 1962; McCracken 1963; Olla et al. 1969; Kennedy and Steele 1971; Van Guelpen and Davis 1979; Macdonald and Green 1986; Steimle et al. 1993). There is plasticity in the habitat winter flounder utilize for spawning, ranging from shallow estuarine habitat to open ocean depending on the geographic location of the stock

(Table 2.1, Pereira et al. 1999). Adult winter flounder migrate to spawning habitat during the winter and spring months (NOAA 2023) and have been reported to spawn in 3-7°C (Press et al. 2014). Many adults move into shallower water ahead of spawning and have been observed in estuary depositional habitats less than 5 m deep (Manderson et al. 2004). High-quality spawning habitat for winter flounder was deemed as shallow (<18 m) mud, sand, and transitional bottom sediment and deep (>18 m) mud areas (Howell et al. 2016). The Georges Bank stock is thought to be primarily restricted to offshore spawning while the Gulf of Maine stock uses variable habitats and Southern New England winter flounder are believed to be obligate estuarine spawners with the exception of some offshore residents (DeCelles and Cadrin 2011, Siskey et al. 2020). Winter flounder have been regarded as “total spawners”, such that oocytes develop simultaneously, but females may lay multiple batches of benthic eggs throughout the spawning season (Press et al. 2014). However, contrary research suggests that winter flounder should be considered batch spawners, in which females develop and release eggs in batches, and subsequently oocytes develop in batches (Burton and Idler 1984).

Winter flounder are thought to have natal homing tendencies that require them to return to their historical spawning grounds. The results of studies aimed at characterizing the degree of spawning site fidelity have depended on the scale of the tagging study (DeCelles and Cadrin 2011), with some studies determining winter flounder exhibit local spawning (Perlmutter 1947, Saila 1961), another determining they exhibit a homing tendency towards habitat rather than specific spawning grounds (Phelan 1992), and lastly, those determining that winter flounder exhibit natal homing (Pruell et al. 2010, Ziegler et al. 2019).

Distribution and Habitat Use by Stock

Gulf of Maine Stock

Gulf of Maine winter flounder can utilize estuarine habitat for spawning, but evidence supports plasticity in their spawning patterns and locations (DeCelles and Cadrin 2010; Fairchild et al. 2013). Fairchild et al. (2013) observed year-round residence in coastal waters and that the majority of fish did not enter estuaries during the spawning season. Offshore spawning by winter flounder in the Gulf of Maine appears to be the dominant mode, and this is supported through a variety of lines of evidence including tagging, and fisheries-dependent data (Fairchild et al. 2013). The estuaries adjacent to the Gulf of Maine are thought to provide an essential nursery habitat for young-of-year winter flounder (Hammer et al. 2020), although no study has focused on broader habitat use. The change in perception of winter flounder spawning habitat in the Gulf of Maine may result from observation bias (e.g., traditional sampling of estuaries and more recent observations of coastal spawning from acoustic tagging) or a shift from primarily estuarine spawning to coastal spawning associated with warming and deeper distribution of winter flounder in the last decade (e.g., Mills et al. 2024, Table 2.3).

Kerr et al. (2022) examined the Mohn's rho time series of different groundfish stocks in the Gulf of Maine region and identified increases in bottom temperature as a driver of the stock's variant distribution and productivity.

Table 2.3. Winter Flounder Depth and Latitude Change. Average depth and latitude change over time of winter flounder, as well as the significance of these changes. Excerpt from Mills et al. (2024)

	Latitude (N)			Depth (m)		
	1970-2009	2010-2019	<i>P</i>	1970-2009	2010-2019	<i>P</i>
Winter flounder	41.70	41.98	0.006	61.12	68.14	0.004

Georges Bank Stock

Estuarine spawning is considered non-existent in the Georges Bank stock due to its geographic range and its adaptation to rising sea levels over geological time (DeCelles and Cadrin 2011). However, connectivity with the SNE/MA stock may be an important connection to the estuaries in the southern part of the species range. Migration across the Great South Channel onto Georges Bank is possible, causing a decline in the SNE/MA stock abundance and a subsequent increase in the Georges Bank stock abundance (Bell et al. 2015). Siskey et al. (2020) found some evidence of inshore spawning based on otolith chemistry from winter flounder samples on Georges Bank, but concluded that the sample size was too small to support a robust conclusion; therefore, Georges Bank spawning is still thought to occur only offshore.

Kerr et al. (2022) found that warm core ring formation is one environmental driver affecting the habitat use and distribution of winter flounder in Georges Bank, as the number of warm core rings explained the most variance in groundfish Mohn's rho values across the region (Kerr et al. 2022).

Southern New England/Mid-Atlantic Stock

Since the 1980s, winter flounder within the Southern New England/Mid-Atlantic stock have undergone a significant reduction in biomass and contraction in their habitat use (Frisk et al. 2018). During this same time, a key predator, summer flounder, exhibited a range expansion and increase in abundance (Frisk et al. 2012). However, fishing mortality was estimated to be 3 times the FMSY (fishing mortality rate under maximum sustainable yield) in the late 1980s and early 1990s, and the reduction in stock biomass was concomitant with historical overfishing (NEFSC 2022). Thus, while stock productivity may be suppressed, and overfishing hasn't occurred since 2007, the primary cause of the contraction of habitat is most likely reduced abundance due to historical overfishing.

Environmental Influence on Distribution

Winter flounder are considered eurythermal, exhibiting broad thermal tolerance, including cold-tolerance and the ability to withstand a wide range of temperatures and salinities. They produce an antifreeze protein that protects against cold shock, reducing the likelihood of overwinter mortality (Fletcher 1981; Wilber et al. 2016). Additionally, they are considered euryhaline and able to tolerate a wide range of salinities (Pearcy 1962, McCracken 1963). Despite these broad tolerances, in the Gulf of Maine region, winter flounder adults are typically found mainly in areas with moderate temperatures (15-20°C) and salinities (18-26 ppt) and are rarely found in areas with temperatures >20°C and salinities >26 ppt (Hammer et al. 2020). The maximum temperature adult winter flounders are known to survive is 19.3°C (Hammer et al. 2020). However, juveniles are more flexible in their thermal tolerance and can be found at higher than 19.3 C in estuaries (Hammer et al. 2020).

Many organisms' first response to climate change is shifting their distribution (Nye et al. 2009). Species that have been pushed outside their range are susceptible to further disturbance to their population (Langan 2021). Because of winter flounders' plasticity in habitat use, adaptation to climate conditions has been predicted for winter flounder stocks (Butts and Litvak 2007, Klein et al. 2016). However, winter flounder also have a high degree of spawning-site fidelity (Langan 2021), which has the potential to make this species particularly vulnerable to changing ecosystem conditions (Butts and Litvak 2007, Klein et al. 2016). For example, the natal homing tendencies of winter flounder may require them to return to their historical spawning grounds where conditions may no longer be optimal (Bell et al. 2015). In 2015, Bell et al. noted that the center of biomass of winter flounder had varied over time without a clear trend, suggesting that warmer temperatures may not have a significant effect on the possible retraction or expansion of the species (Bell et al. 2015). Additionally, an examination of biomass weighted mean centroid of winter flounder distribution between two time periods (1986–1990 and 2014–2018) showed that winter flounder retained their historical distribution (Roberts et al. 2020). This stability has been attributed to flounder being a benthic species with strong association with the bottom substrate and spawning site fidelity, as well as spawning phenology (Bell et al. 2014, Roberts et al. 2020). However, a more recent evaluation of the distribution of winter flounder over time showed relative stability of mean latitude between the 1970s and 2010s but shifts northward and into deeper habitats since 2010 (Table 2.2, Mills et al. 2024). Winter flounder may have a sub stock structure at the level of individual estuarine habitats, which are disproportionately affected by climate change impacts at the southern extent of their range (Able et al. 2014). Thus, it is possible that individuals are not shifting north but instead are declining in abundance due to low productivity of local spawning groups resulting from exposure to less-suitable conditions (Bell et al. 2015).

Essential fish habitats like estuaries and inshore bays are especially vulnerable to climate and anthropogenic stressors due to their proximity to human-caused disturbances such as pollution (Langan 2021). Estuaries are considered important nursery habitat for the SNE/MA stock, allowing young-of-year to remain for their first two years before moving offshore (Fairchild et al. 2012). However, these historic nursery habitats, such as the lower Narragansett Bay, are increasingly impacted by warming and pollution (Langan 2021). Winter flounder are highly susceptible to the effects of high temperature, hypoxia, and anthropogenic disturbances within their nursery grounds (Langan 2021). Given that much of the current population depends on these vulnerable habitats, the SNE/MA stock is unlikely to rebuild to historical levels of abundance (Langan 2021).

Spawning Phenology and Recruitment of Winter Flounder

General description for the species

Environmental factors play an important role in recruitment success and the productivity of winter flounder stocks (Wiedenmann and Jensen 2019). Spawning season varies by latitude with more southerly populations spawning earlier due to warmer temperature differences (Table 2.4, DeCelles and Cadrin 2011). The Southern New England/Mid-Atlantic stock is the earliest of the three stocks to spawn, beginning in early December to late March and occurring in mostly inshore estuaries and embayments (Ziegler et al. 2019). Spawning on Georges Bank occurs from March to May but peaks in April when there are the most egg densities present in their offshore spawning locations (Pereira et al. 1999). The spawning period for Gulf of Maine occurs both offshore (Fairchild et al. 2017) and in inshore estuary habitat from early March to early June with a peak in late April/early May (Fairchild et al. 2013). Due to these differences in spawning time, winter flounder stocks can experience quite different ocean conditions during their early life history. Temperature is

an important driver in determining survival during the egg, larval, and settlement phases of the winter flounder due to the amount of suitable thermal habitat available to juveniles in each season (Bell et al. 2014, Table 2.1, Fig. 2.3). Recruitment among all three stocks of winter flounder has declined since the late 1980's (Bell et al. 2014, Fig. 4).

Table 2.4. Spawning Seasons of inter flounder in Different Stock Regions. The range of spawning times is indicated with a gray block, with peak spawning times indicated with a black block. Excerpt from DeCelles and Cadrin (2011).

Stock	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Citation							
SNE/MA									Pearcy, 1962							
									Fairbanks <i>et al.</i> , MS 1971							
									Buckley <i>et al.</i> , 1991							
									Monteleone, 1992							
									Collette and Klein-MacPhee, 2002							
Georges Bank									Kendall, 1912							
									Bigelow and Schroeder, 1953							
									Reid <i>et al.</i> , MS 1999							
Gulf of Maine									Bigelow and Schroeder, 1953							
									Lux and Kelly, MS 1982							
									Normandeau Associates, MS 2009							
									Fairchild <i>et al.</i> , MS 2010							

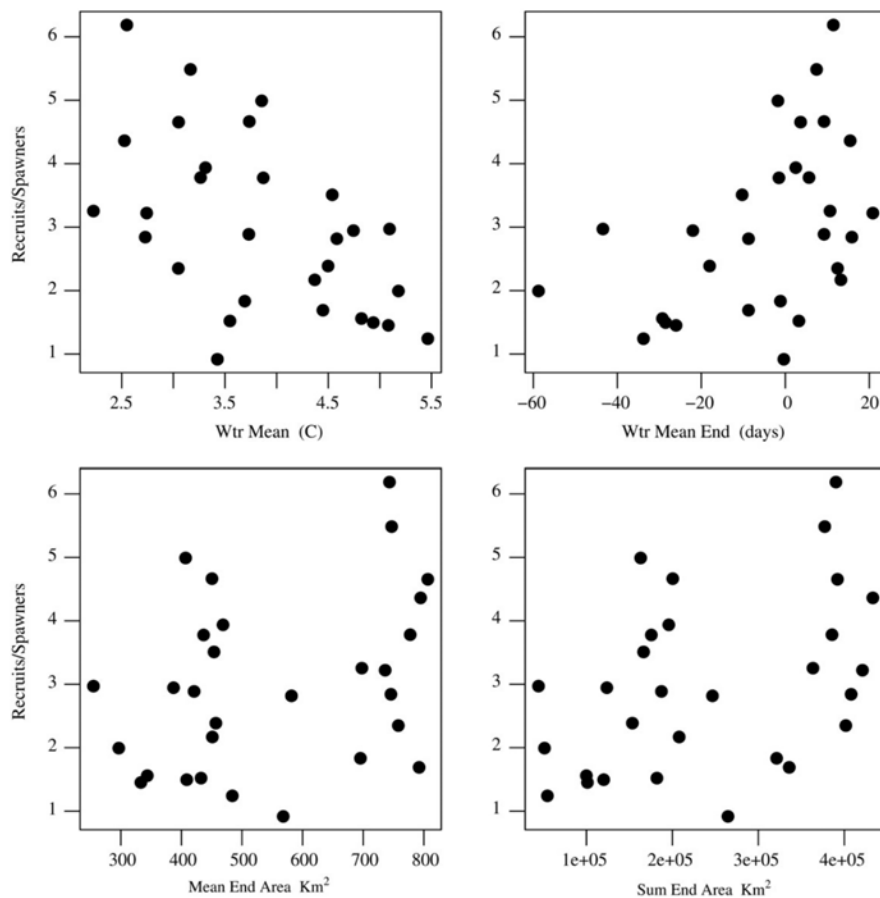


Figure 2.3. Thermal Indices and Potential Environmental Drivers of Winter Flounder. Four thermal indices and potential environmental drivers and winter flounder recruits divided by spawners. (Wtr Mean = mean winter temperature Jan–Mar temperature averaged across estuaries, Wtr Mean End = the number of days between the end of winter and the mean end of winter averaged across estuaries, Mean End Area = the mean thermal habitat area available each year, Sum End Area = the summed thermal habitat area available each year.) Excerpt from Bell et al. (2014).

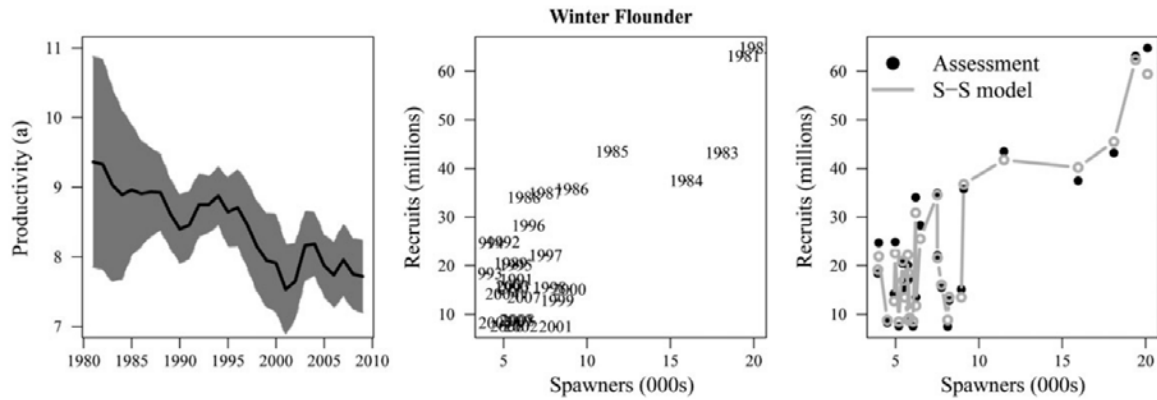


Figure 2.4. State-Space Ricker Model for Winter flounder. Results of the best fit, time-varying, state-space Ricker model for winter flounder. Left column: the estimate of the productivity parameter (a or $\ln a$) over time. Center column: the spawner and recruitment data. Right column: the best-fit stock–recruit relationship. Excerpt from Bell et al. (2014).

Gulf of Maine Stock

Press et al. (2014) found that colder temperatures and later vernal warming in the Gulf of Maine resulted in spawning one month later than in the other two stocks (Press et al. 2014). In a study of phenology shifts over time for multiple fish species within the Gulf of Maine, winter flounder were observed to shift their spawning times earlier in the year (Staudinger et al. 2019). The study predicted that this shift toward earlier spawning was associated with warming water in the Gulf of Maine (Staudinger et al. 2019). Therefore, spawning seasonality of winter flounder may be changing in response to decadal warming trends in the Gulf of Maine (Press et al. 2014). Press et al. (2014) also examined winter flounder oocyte and larval development in the Gulf of Maine to determine its patterns and seasonality. In general, they found decreased egg survival and increased hatching rate of Gulf of Maine winter flounder with increasing temperature (Press et al. 2014).

Georges Bank Stock

Recruitment from the Georges Bank stock varied through the 1980s and early 2000s and gradually declined to a historic low value in 2015 with a subsequent increase in recent years (Fig. 2.5, NEFSC 2022). Mills et al. (2024) compared the mean ratio of recruitment to spawning stock biomass from prior and subsequent to 2010. They found a statistically significant negative difference between recruitment in the two time periods, which they attributed to significantly warmer conditions since 2010 (Fig. 2.6).

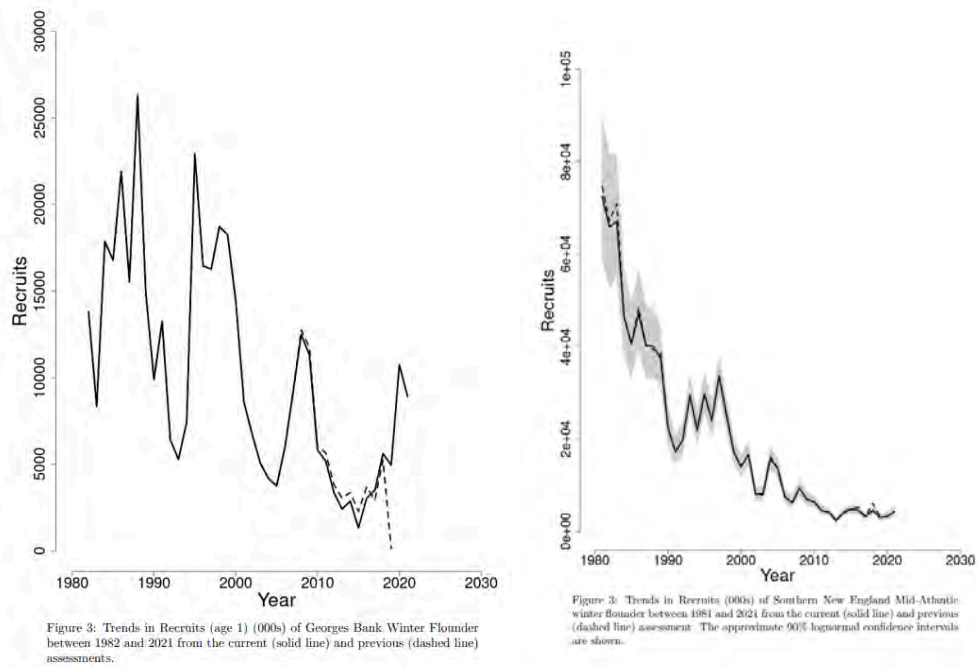


Figure 2.5. Recruitment Time Series of Winter Flounder. Recruitment time series from GB (left) and SNE/MA (right) stocks. Excerpt from NEFSC 2022.

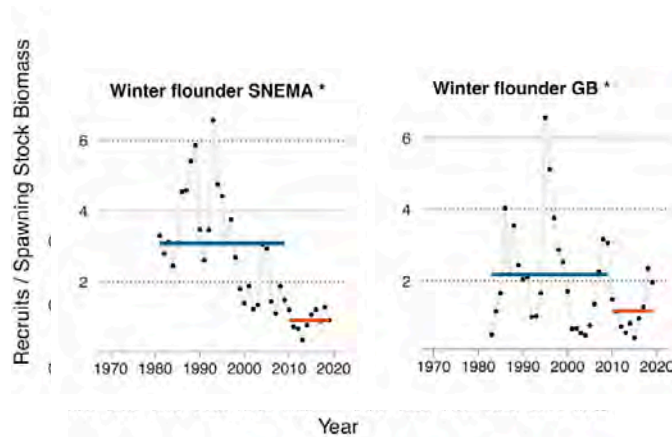


Figure 2.6. Recruits per Spawner Time Series for Winter Flounder. Time series of the Recruits-to-Spawning Stock Biomass ratio for SNE/MA and Georges Bank winter flounder stocks, indicating the mean ratio prior to 2010 in blue and from 2010 onwards in orange. Asterisks following the stock name indicate a statistically significant difference in the ratio during the two time periods. Excerpt from Mills et al. (2024).

Southern New England/Mid-Atlantic Stock

Winter flounder in the SNE/MA region are known to spawn earlier in the year due to their location in lower latitudes (DeCelles and Cadrin 2011). Langan et al. (2022) described trends in the abundance of early life stages of winter flounder in Narragansett Bay from 1985 to 2016 (Fig. 2.7). They concluded that abundance of all winter flounder life stages has declined below the mean (Langan et al. 2022, Fig. 2.7).

Due to their southern-most distribution of this temperate species, the impact of climate change on phenology may have larger implications on SNE/MA winter flounder recruitment than on more northerly distributed stocks. Invading warm-water species into the southern end of endemic fish populations in the Northwest Atlantic can lead to accelerated declines in productivity, causing unprecedented shifts in the marine biological community (Langan 2021).

However, the densities of known predators of winter flounder eggs and juveniles were not found to significantly impact interannual variation in winter flounder juvenile abundances (Wilber et al. 2016). In two estuaries, the abundance of age-1 winter flounder positively correlated with warmer April temperatures from two years previous (Wilber et al. 2016). Wilber et al. (2016) predicted that this could be due to the past warmer temperatures bringing about higher benthic productivity, therefore increasing the overall availability of prey for juvenile winter flounder and allowing energy reserves to be refilled for a more successful spawning season. A recent examination of adult spawning behaviors of winter flounder suggests that spawning multiple cohorts (i.e., early and later in the same spawning season) within the same year-class could be a bet-hedging strategy in the face of uncertain environmental conditions (Gallagher et al. 2015).

Overfishing took place on the SNE/MA winter flounder stock from the 1980s through early 2000s and since this time the stock has not been able to rebuild to its historical abundance levels (NEFSC 2022, Fig. 2.5, Fig. 2.6). This lack of rebuilding has been attributed to decreased recruitment and increased juvenile mortality (Langan 2021, McElroy et al. 2015, Wiedemann and Jensen 2019, Fig 2.8). Recruitment estimates from the 2022 stock assessment show a declining trajectory from the 1980s to today, and the recruitment assumption for projections and management reference points was revised from the previously assumed long-term average to a recent average based on a changepoint analysis (NEFSC 2022, Fig. 2.5), but Frisk et al (2018) found the number of recruits per spawner has remained relatively flat. In support of the importance of adult stock size to the maintenance of populations, Wilber et al. (2016) found that the single best predictor of age-1 winter flounder abundance in the SNE/MA region was egg abundance of the previous year.

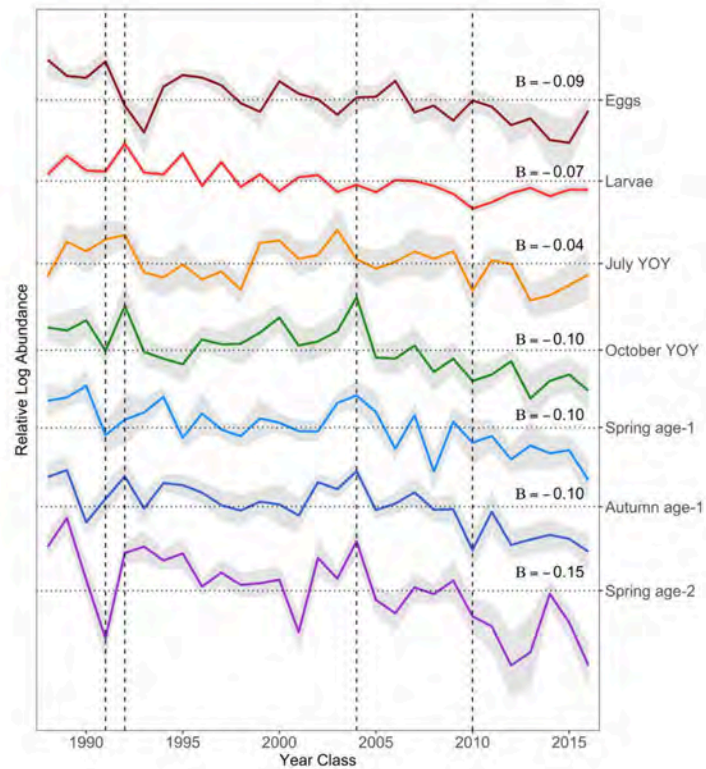


Figure 2.7. Narragansett Bay Winter Flounder Relative Abundance. Relative abundance indices of Narragansett Bay winter flounder within the SNE/MA stock by life-stage and year class with 95% confidence intervals (gray) from the estimated measurement error variances. The horizontal dotted lines represent the mean abundance and are offset by 3 to reduce overlap. B represents the rate of decline of log life stage abundance over time. The vertical dotted lines highlight specific year classes in 1991, 1992, 2004, and 2010. This figure is an excerpt from Langan et al. (2022).

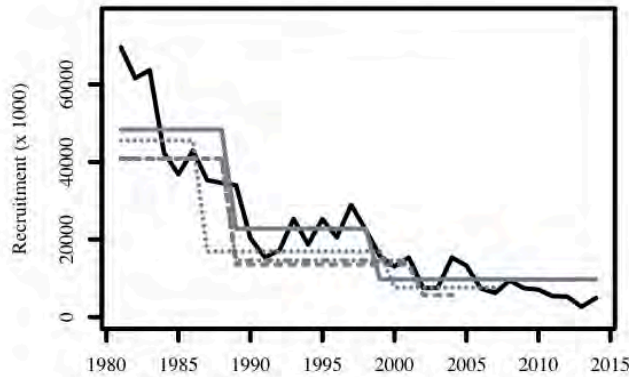


Figure 2.8. Recruitment Estimations of Winter Flounder in SNE/MA. Recruitment estimations of winter flounder in the SNE/MA stock using a regime shift detection algorithm. Past assessments are dotted gray lines, while the solid black line is the most recent assessment. The solid gray line is the estimated recruitment regime given the most recent recruitment estimations. Excerpt from Wiedemann and Jensen (2019).

Growth and Maturity of Winter Flounder

General description for the species

Winter flounder exhibit sexually dimorphic growth with females generally exhibiting faster growth rates and attaining a larger asymptotic size than males (Figure 2.10 and Table 2.6, DeCelles and Cadrin 2011). The growth rate of winter flounder depends on multiple external conditions, including temperature, salinity, water quality, and food availability (Manderson et al. 2002; NOAA 2023, Fig. 2.9). Klein et al. (2017) summarized the expected impacts of climate change on winter flounder growth and maturity due to changes in temperature, salinity, dissolved oxygen (DO), pH, and ocean currents (Klein et al. 2017, Table 2.5). The study found that warmer temperatures had varied impacts on winter flounder growth in pelagic and post-settlement early life stages (Klein et al. 2017, Table 2.4). Klein et al (2017) also noted that decreased salinity negatively affected winter flounder growth and development in pelagic and post-settlement life stages and lowered DO

negatively affected post-settlement growth (Klein et al. 2017, Table 2.5). Manderson et al. (2002) studied the influence of varying nursery conditions on post-settlement winter flounder through lab-based experiments. Their results showed that increased temperature and salinity adversely affected winter flounder growth (Manderson et al. 2002, Fig. 2.9).

The length and weight-at-age of winter flounder appear to have declined significantly in recent years (2010-2019, Mills et al. 2024, Fig. 2.11), with the greatest declines in the SNE/MA stock (Mills et al. 2024). The decline in early spring condition factor and growth, as well as possible increased predation, may be preventing winter flounder from rebuilding its abundance species-wide (Howell et al. 2016).

Table 2.5. Environmental Impacts on Winter Flounder. Excerpt from Klein et al. (2017). Summary of environmental impacts on winter flounder based on literature review. Green = positive effects, red = negative effects, light green or light red = indirect positive or negative effect, Multiple = mixed effects due to multiple driving factors.

Species	Environmental change	Pelagic stages (eggs & larvae)			Post-settlement (juveniles & adults)				Reproduction		
		Growth & development	Survival	Dispersal & settlement	Growth & condition	Survival	Behavior	Maturation	Fecundity	Spawning	Recruitment
Winter flounder	↑ Temperature	Light Green	Light Green	Light Green	Light Green	Red	Red	Light Green	Light Green	Light Green	Light Green
	↓ Salinity	Red	Red	Red	Red	Red	Red	Light Green	Light Green	Light Green	Light Green
	↓ pH	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
	↓ DO	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green
	Δ Currents	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green	Light Green

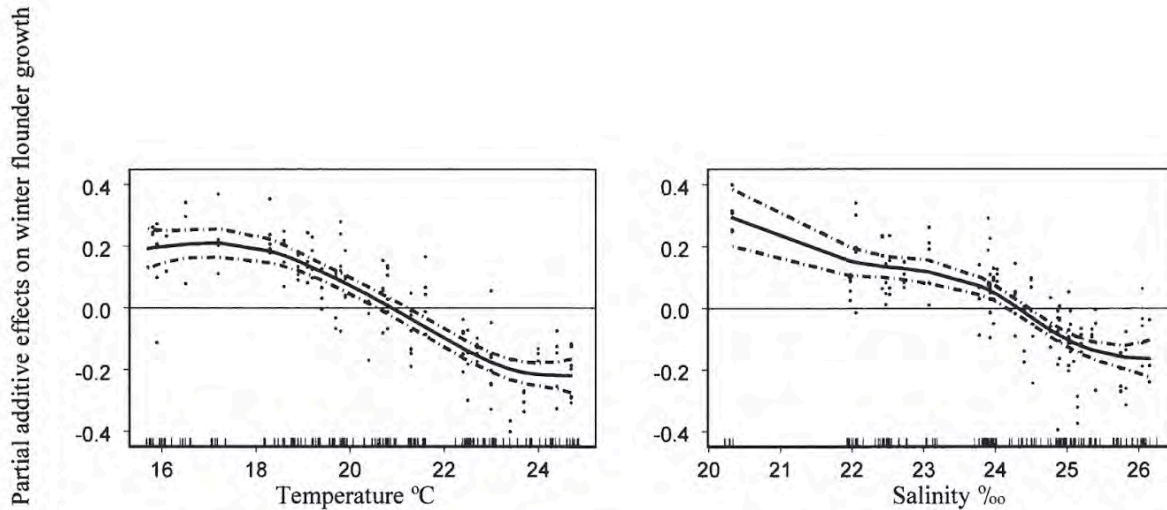


Figure 2.9. Partial Additive Effects of Temperature and Salinity on the Growth of Winter Flounder. Deviance plots derived from a generalized additive model showing the partial additive effects of temperature, salinity, on the growth of winter flounder in enclosures. Horizontal lines indicate thresholds for positive and negative effects, while vertical dashes along the abscissa show the distribution of values for each environmental variable. Dashed lines represent 2 standard error confidence bands. Excerpt from Manderson et al. (2002).

Winter flounder tend to mature at ages 3.7 years for males and 4 years for females (Beacham 1982). The further south the population of winter flounder is distributed, the faster individuals can mature (DeCelles and Cadrin 2011). With overfishing occurring between the 1970s and 1980s and higher selection pressure at certain life stages, the age at maturity of winter flounder has changed over time in all three stocks to varying degrees (DeCelles and Cadrin 2011). Fisheries-induced evolution may be at play in some of these areas, acting to differentiate the vital rates between stocks (DeCelles and Cadrin 2011)

Wilber et al. (2016) examined the growth responses of winter flounder in a Southern New England estuary throughout a spring season with colder temperatures. Although winter flounder

are adapted to withstand colder temperature conditions, they observed fewer age-1 juveniles following the colder winter. This suggests that continued colder temperatures can negatively affect survival, foraging success, and reproduction, in addition to a smaller body size (Wilber et al. 2016). A smaller body can have lasting negative effects on the lives of individuals, affecting the risk of predation, reduced foraging success, and a delay in reaching sexual maturity (Wilber et al. 2016).

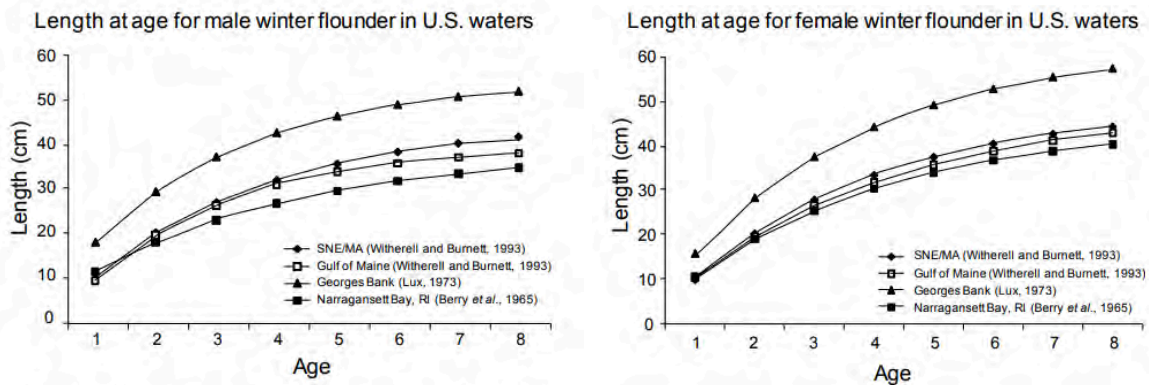


Figure 2.10. Winter Flounder Male and Female Growth Curves. Growth curves for male and female winter flounder in US waters. Figure excerpt from DeCelles and Cadrin (2011).

Table 2.6. Age at 50% Maturity for Male and Female Winter Flounder. Estimates of age at 50% maturity (A50) and length at 50% maturity (L50) for winter flounder males and females in US waters. Excerpt from DeCelles and Cadrin (2011).

Stock	A ₅₀ Males (y)	A ₅₀ Females (y)	L ₅₀ Males (cm)	L ₅₀ Females (cm)	Citation
SNE/MA	2.0	3.0	20–25	20–25	Perlmutter, 1947
	3.3	3.0	29.0	27.6	O'Brien <i>et al.</i> , MS 1993
	3.1	3.0	28.0	28.3	Witherell and Burnett, 1993
Georges Bank	1.9	1.9	25.6	24.9	O'Brien <i>et al.</i> , MS 1993
Gulf of Maine	3.3	3.5	27.6	29.7	O'Brien <i>et al.</i> , MS 1993
	3.3	3.3	27.2	28.7	Witherell and Burnett, 1993
Gulf of St. Lawrence	–	–	21	24	DFO, MS 2010
Newfoundland	6.0	7.0	21.0	25.0	Kennedy and Steele, 1971

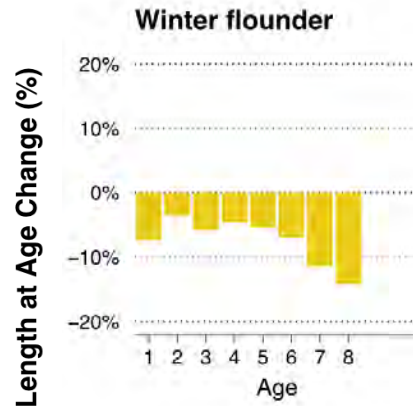


Figure 2.11. Length-at-Age Differences for Winter Flounder Over Time. Percent difference in length-at-age for 1970–2009 versus 2010–2019. Yellow bars indicate significant declines. Excerpt from Mills et al. (2024).

Gulf of Maine Stock

Most case studies of environmental effects on the growth and maturity of winter flounder were either based on studies conducted in laboratory conditions or in southern areas. However, Pereira et al. (1999) reported that growth is slower, onset of maturity is older, and the spawning season is later for winter flounder in the Gulf of Maine than more southern areas, presumably because of regional differences in temperature.

Georges Bank Stock

Compared to inshore populations that spawn in estuarine habitats, Georges Bank winter flounder are larger and faster-growing as adults and are thought to produce larger and faster-growing larvae (Butts and Litvak 2007). Differences in growth rates of winter flounder in various localities may lead to distinct phenotypic responses to stressors, such as ocean warming (Butts and Litvak 2007).

Southern New England/Mid-Atlantic Stock

A 29-year time series of the SNE/MA winter flounder stock located in Long Island Sound revealed complex relationships between population abundance and growth (Howell et al. 2016). As population abundance declined in the stock, so did condition factor and size at maturity for mature females (Howell et al. 2016). This was validated by a significant increase in the proportion of individuals mature at a given length for both sexes (Howell et al. 2016). Conversely, immature winter flounder showed an increase in overall condition factor as well as an unexpected increase in size at maturity as abundance declined (Howell et al. 2016; Fig. 2.12). Howell et al. (2016) suggested that individuals who directed their energy towards somatic growth rather than sexual maturation may have survived longer in a colder environment compared to those who matured at smaller sizes. The SNE/MA stock also revealed growth shifts related to population decline: age 4

and 5 winter flounder experienced a larger growth increment between ages 1 and 2 (Howell et al. 2016). This pattern suggests that natural mortality increased from predation, thereby favoring faster-growing individuals in a highly size-selective environment (Howell et al. 2016).

A two-year study of young-of-year winter flounder in Long Island, NY, found that daily growth was negatively correlated with age and daily average temperature (Gallagher et al. 2015). However, the association between temperature and daily otolith growth was weak, suggesting that temperature may have an indirect effect on growth and that other factors could be influencing growth patterns (Gallagher et al. 2015).

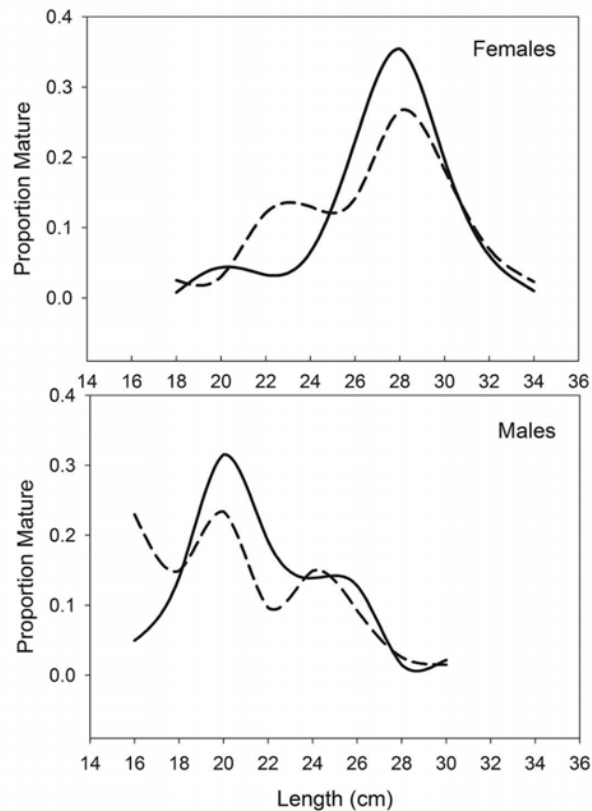


Figure 2.12. Percentages of Mature Winter Flounder Total Length. Percentages of TL (total length, cm) of sampled female or male winter flounder that were newly mature during the moderate-abundance (1992-2002; dashed line) and low-abundance (2003-2013; solid line) time periods in the SNE/MA stock. Excerpt from Howell et al. (2016).

Natural Mortality of Winter Flounder

General description for the species

Because of the role that large-scale environmental factors have on survivorship of winter flounder across life stages, fisheries stock assessment scientists predict that the biomass of all three stocks cannot fully recover to historic abundance levels (Langan 2021). Winter flounder are most vulnerable during their first summer at the post-larval stage (Langan et al. 2022).

Climate-driven increases in temperature, hypoxia, and predator abundance have contributed to increased juvenile mortality, which may be a primary driver of the long-term declines observed in population abundance and biomass (Langan et al. 2022). In addition to climate-related stressors, winter flounder are also sensitive to other human impacts on environmental conditions, such as thermal effluent from power plants and pollution from wastewater treatment facilities due to their dependence on estuarine habitats for spawning (Langan et al. 2022).

Higher temperatures, in general, can have cascading effects on the food web that ultimately influence the survival of winter flounder (Kerr et al. 2022). For example, the decline of the zooplankton species *Calanus finmarchicus*, an important food source for forage fish, could have a cascading effect on winter flounder who prey on them (Kerr et al. 2022). At the same time, key predators of winter flounder (e.g. striped bass, summer flounder) are also experiencing shifts in abundance, phenology and spatial distributions. How these interacting predator-prey relationships are shaping the natural mortality rates of winter flounder are not well known.

Gulf of Maine Stock

No directed studies were identified on the Gulf of Maine stock; however, Swain and Benoit (2015) analyzed the depleted stocks of winter flounder and other demersal fish populations in the nearby Southern Gulf of St. Lawrence in Canada. They hypothesized that the high mortality in

those stocks represented a predation-driven allee effect resulting from overexploitation by the fishery and the rise of certain groundfish predators. They found that winter flounder size distribution changed because of overexploitation (Fig. 2.13). The smaller size structure in the Gulf of St. Lawrence is associated with higher mortality and a smaller population (Swain and Benoit 2015).

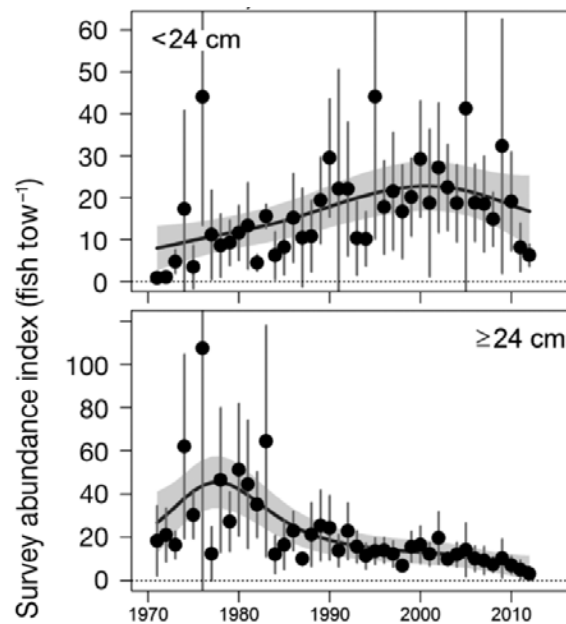


Figure 2.13. Survey abundance Index Trends by Length. Survey abundance index trends by length group for winter flounder in the southern Gulf of St. Lawrence. The two length groups roughly correspond to juveniles (top) and adults (bottom). Circles show annual stratified mean catch rates. Excerpt from Swain and Benoit (2015).

Georges Bank Stock

I found no evaluations of environmental impacts on natural mortality of Georges Bank winter flounder in the published literature.

Southern New England/Mid-Atlantic Stock

Mortality of juvenile winter flounder is increasing (Langan 2021). Substantial reductions in fishing effort have not had an effect on this loss of juvenile biomass (Langan 2021). Able et al. (2014) found that temperature increases have not directly caused the historical decline in winter flounder abundance. In some situations, climate is not solely responsible for a declining population. Decreased fitness is due to a combination of climate variation and resource competition (Nicholson 1933). Able et al. (2014) suggested that temperature increases may be contributing to a threshold effect that is leading to this decline. Their findings lead to the conclusion that once a certain temperature threshold is reached, an unknown secondary driver affects the temperature/recruitment relationship significantly enough to increase natural mortality (Able et al. 2014). In previous studies within a lab environment, winter flounder survival and growth were positively associated with higher temperatures (Able et al. 2014). Temperature may act indirectly on juvenile winter flounder, and predation may be the more influential secondary driver of juvenile mortality (Able et al. 2014).

Bell et al. (2014) explored the differences in external large-scale drivers that affect summer and winter flounder abundances within the SNE/MA stock. They found that estimates of abundance were negatively correlated with winter bottom water temperature but not with fishing mortality (Bell et al. 2014). They concluded that warming estuarine habitat kept the winter flounder stock at low abundance despite no longer overfishing. In addition to high juvenile mortality, post-settlement mortality is another main concern in winter flounder stock assessment and survivability (Dolan et al. 2021). Dolan et al. (2021) proposed that despite all management measures to prevent further overfishing, the population could be experiencing a “recruitment bottleneck,” which could potentially prevent the fishery's recovery. In 2009, the SNE/MA stock

reached a new low point, totaling less than 9% of its historic biomass (Dolan et al. 2021). Despite efforts to stop overfishing and recover the fishery, the stock has not responded positively (Dolan et al. 2021).

Dolan et al. (2021) explored the differences and similarities between juvenile vital rates in five estuary bays in Long Island, NY by conducting weekly beam-trawl surveys of young-of-year winter flounder. They compared estimates of young-of-year (YOY) mortality and growth with location. They found significant differences in growth but not in mortality across locations (Dolan et al. 2021). Natural mortality between sites was not statistically different from each other, meaning that “climate-driven synchronization” may be taking place, with the possibility of increased interactions with other species more directly impacted by climate change (Dolan et al. 2021). Dolan et al. (2021) estimated that these observations resulted from multiple settlement “pulses” throughout the spawning season. In earlier cohort pulses, YOY juveniles had faster growth, while later cohorts experienced slow and more variable growth, possibly due to increased interactions with other competing species (Dolan et al. 2021). It is assumed that early cohorts may have certain advantages in terms of out-competing other species for necessary resources like space and food (Dolan et al. 2021, Pereira et al. 1999).

Young-of-year fish exposed to habitat destruction and pollutants within essential fish habitat estuaries can have a detrimental effect on the population when combined with higher temperatures and unfavorable dissolved oxygen and salinity (Gallagher et al. 2015). Recent studies suggest that SNE/MA winter flounder exhibit a meta-population structure, with local many populations within the stock nearing full depletion (Frisk et al. 2018). With warmer winters and springs, competitor species like summer flounder may enter estuary habitat earlier, which can lower the amount of time young winter flounder can grow in low predation (Frisk et al. 2018).

Yencho et al. (2015) estimated higher mortality rates in Long Island Sound than in previous years and growth estimates that were within the range of or lower than field and otolith determinations. They observed that predation on young-of-year winter flounder in the Niantic River and Mystic River estuaries within the Long Island Sound is likely the cause of the higher natural mortality, despite other factors that may also be contributing. However, it has been difficult to determine the role of causal factors such as temperature and habitat quality affecting growth rates, as previous data all show high variation in length frequency and otolith increment analysis (Yencho et al. 2015).

Langan et al. (2022) found four environmental factors that had a significant impact on mortality rates in the early life stages of winter flounder in Narragansett Bay (Fig. 2.14). Striped searobin, a known predator of winter flounder, catch-per-tow was associated with increased mortality in larvae transitioning to young of year (Langan et al. 2022, Fig. 2.14). Mortality of young-of-year juveniles was positively related to summer mean sea surface temperature as well as the number of cormorant nesting pairs and negatively related to summer monthly mean dissolved oxygen (Langan et al. 2022, Fig. 2.14).

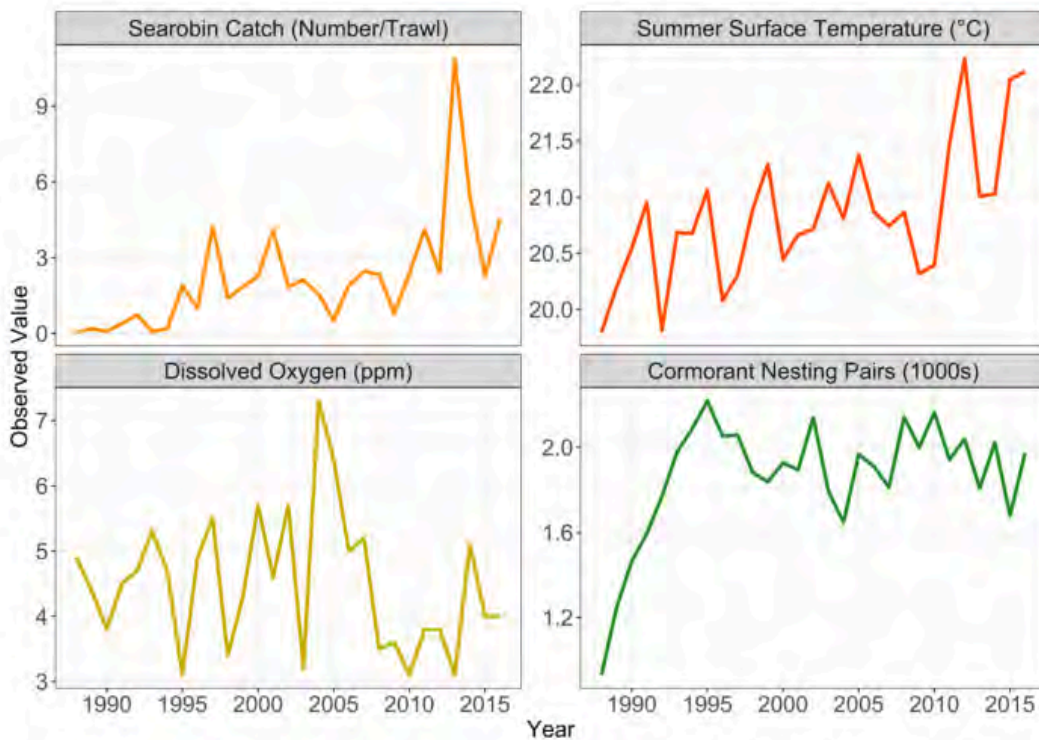


Figure 2.14. Covariates Impacting Natural Mortality Winter Flounder in Narragansett Bay. Covariates identified as having a significant impact on the mortality of winter flounder in Narragansett Bay. Excerpt from Langan et al. (2022).

Discussion and Conclusions

This ecosystem profile of winter flounder provides a synthesis of the best available science on the influence of climate and ecosystem drivers on aspects of winter flounder stock dynamics. This synthesis indicates that temperature-related processes are the most consistent and influential drivers across stock regions and population dynamics. Warming ocean temperatures have links to distribution and habitat use, spawning phenology, and changes in growth and maturation (Table 2.7). Additionally, thermal processes also influence natural mortality events, such as reduced egg survival and increased predation and competition with new shifting species (Table 2.7).

Although these environmental drivers are all known to impact winter flounder stock dynamics, the magnitude and direction of these effects appear to be stock-specific. Winter flounder

have a wide spatial distribution along the Northwest Atlantic Shelf, and this is reflected in the way each stock responds to environmental stressors. Further work is needed to understand the nuances in these responses and develop stock-specific management strategies that account for dynamic environmental conditions in the Northwest Atlantic.

Collectively, results from this ecosystem profile demonstrate that thermal conditions and associated oceanographic processes are impacting the recovery potential of winter flounder to return to their historical abundance and productivity level. These drivers may have individual roles in reshaping the baseline that managers need to identify in the stock assessment process in order to effectively manage this critical fishery. Further research is needed to test these specific drivers of winter flounder stock dynamics and inform future management decisions that benefit the fishery and all who depend on it.

Ecosystem profiles, such as this one, have become fundamental to integrating climate and ecosystem impacts into fisheries management. By synthesizing the best available knowledge of the environmental and ecological drivers that affect winter flounder stock dynamics, these profiles can inform choices in stock assessment modeling, such as the inclusion of environmental covariates into the process to determine management decisions. They also provide a solid foundation for developing precautionary management practices that take into account the non-stationarity within fish stocks. In doing this, ecosystem profiles can be considered as both strategic and diagnostic tools to use in the stock assessment process.

Table 2.7. Environmental Drivers Impacting Winter Flounder. Outline of the most important environmental drivers affecting the stock indicators for winter flounder by stock.

Stock Indicators	Gulf of Maine	Georges Bank	Southern New England/ Mid-Atlantic
Distribution/ Habitat Use		Number of warm core ring formations affects distribution and habitat use due to variance seen in Mohn's rho values (Kerr et al. 2022).	Abundance estimates were negatively correlated with winter bottom water temperature, but not with fishing mortality (Bell et al. 2014). South of Cape Cod, winter flounder have moved to deeper waters, and these movements appeared to be temperature-related (Howe and Coates 1975).
Spawning + Recruitment	Spawning times have shifted earlier in the year due to warming surface water temperatures (Walsh et al. 2015).		Earlier spawning times in lower latitudes, due to temperature differences (DeCelles and Cadrin 2011).
Growth + Maturity	Colder temperatures can result in later spawning and a shorter growing season (Press et al. 2014).		Daily growth negatively correlates with age and daily average temperature (Gallagher et al. 2015). Temperature could have an indirect effect on the growth of young-of-year winter flounder (Gallagher et al. 2015).
Natural Mortality	Egg survival declines and hatching rate increases as a result of higher temperature (Press et al. 2014).		Warming estuarine habitat has kept winter flounder stock at low levels despite no longer seeing overfishing pressure (Bell et al. 2014). With warmer winters and springs, predator species like summer flounder may enter estuary habitat earlier, which can lower the amount of time young-of-year winter flounder can grow in low-predation environments (Frisk et al. 2018, Langan 2020).

CHAPTER 3

EVALUATING COHERENCE AND TEMPORAL SHIFTS IN WINTER FLOUNDER STOCK DYNAMICS IN US WATERS

Introduction

The Northeast US shelf marine ecosystem has experienced measurable ecosystem changes, with ocean waters warming rapidly relative to the global ocean (Pershing et al. 2015). Sea Surface Temperature (SST) in the Northeast US Shelf has increased at a rate that is 2.5 times the warming rate experienced over the global oceans (Mills et al. 2024). Directional trends in ocean conditions, such as those experienced under climate change, can trigger large-scale regime shifts in the ecosystem. A regime shift, or a transition from one system state to another, has the potential to impact both the structure and function of an ecosystem, including fishery productivity (Mills et al. 2024).

Abrupt changes in oceanic conditions, such as regime shifts, can fundamentally alter the ecosystem relationships that regulate fish populations. For example, a shift in the stock-recruitment relationship can have significant consequences for population productivity, resilience, and its ability to recover from overfishing (Blöcker et al. 2023, Perälä and Kuparinen 2015). If a regime shift leads to a lowered productivity regime, a fishery's capacity to recover may be reduced. Conversely, a shift towards a higher productivity regime that remains undetected could lead to underfishing and low fishery yields (Perälä and Kuparinen 2015).

Undetected or unaccounted-for regime shifts that alter fundamental stock dynamics can greatly impact our ability to accurately assess a stock, therefore reducing the effectiveness of fisheries management. When underlying environmental conditions change rapidly from a previous regime, the historical information used to characterize the stock in the assessment model may no longer accurately represent the current system dynamics (Perälä and Kuparinen 2015). This is particularly critical for

establishing biological reference points (BRPs). BRPs are a crucial component of fisheries management, as they are used to determine stock status and establish management targets and thresholds (e.g., maximum sustainable yield, overfishing limits, acceptable biological catch) that inform catch advice and rebuilding plans. The accuracy of these BRPs relies on assumptions about the stock's future productivity. The presence of a regime shift that alters fundamental ecosystem functions and fisheries stock dynamics can render existing BRPs inaccurate. Determining BRPs without accounting for changes in stock dynamics over time can present significant challenges to management.

Understanding if and when a regime shift has occurred in fish stock dynamics can lead to more accurate management targets and inform better management decisions. Detecting these shifts is particularly critical for managing fisheries under an altered productivity regime (Perälä and Kuparinen 2015). In time series analyses, abrupt shifts associated with ecosystem change can be assessed through changepoint (or breakpoint) analysis. These breakpoints indicate transitions in ecosystem dynamics that may result from a single dominant driver or from multiple interacting factors that collectively produce large-scale changes in population dynamics.

History of Regime Shifts in the Northwest Atlantic

Several wide-scale, climate-driven shifts have been observed in the Northwest Atlantic over time. Evidence of regime shifts in this region have been examined from both a bottom-up perspective, focused on physical changes in ocean conditions and primary productivity, and top-down perspective, examining patterns at higher trophic levels, such as fish (e.g., Mills et al. 2024).

A regime shift in the 1990s was attributed to shifts in the Arctic Oscillation (AO), a natural climate phenomenon whose behavior was altered in the late 1980s to mid-1990s due to greenhouse gas emissions cooling the stratosphere and amplifying positive AO conditions (Greene 2012, MERCINA Working Group, 2012). As a result, pulses of low-salinity freshwater from the Arctic Ocean entered the

North Atlantic, resulting in large decreases in salinity (i.e., freshening) and changes in the plankton community in the early 1990s, especially in the Gulf of Maine and Georges Bank region (Greene 2012, MERCINA Working Group, 2012). By the late 1990s plankton blooms returned to the characteristic regime seen in the 1980s (Greene 2012, MERCINA Working Group 2012). Evidence of another regime shift was observed in the early 2000s, when the number of warm core ring formations, an important oceanographic process that occurs when eddies detach from the Gulf Stream, significantly increased from an average of 18 per year (1980-1999) to 33 per year (2000-2007; Gangopadhyay et al. 2019). Silver et al. (2023) proposed that the increased number of warm core rings indicated a regime shift occurred in the Gulf Stream system around the year 2000, resulting in an increase in water exchange between the Northeast Continental US Shelf and the Slope Sea and increase in salinity maximum intrusions on the Northeast U.S. Shelf (Silver et al. 2023). Changepoint analyses confirmed a statistically significant regime shift occurring in the year 2000 (Gangopadhyay et al. 2019, Silver et al. 2023).

In recent years, the Northeast Continental US Shelf has experienced pronounced warming. Friedland et al. (2020) identified the onset of a warming regime beginning in 2011, centered around the Georges Bank region, based on a changepoint analysis of surface water temperatures. Examination of bottom temperature trends revealed this warming regime beginning in 2008 in the Eastern Gulf of Maine and progressed southward, reaching the Southern New England region by 2010 (Friedland et al. 2020a). Subsequent changepoint analysis of indicators of primary production in the Northeast Continental Shelf ecosystem indicated declines in chlorophyll as both sea surface temperature and salinity increased following a 2012 changepoint (Friedland et al. 2020b). These physical and biological changes were most evident in the northernmost parts of the ecosystem, particularly in the Gulf of Maine and Georges Bank.

These transformational changes in the U.S. Northeast Shelf ecosystem have the potential to directly affect various aspects of stock dynamics (e.g., temperature impacts on growth) and to indirectly

influence fish population dynamics through trophic cascades and bottom-up effects driven by changes in primary production and forage fish assemblages. Perretti et al. (2017) found evidence of three different fish recruitment regimes occurring in the Northeast Continental US Shelf: a low recruitment regime in the late 1980s, high recruitment success in the 1990s, and a return to low recruitment in the early 2000s, broadly mirroring changes in zooplankton community structure. High recruitment states also coincided with low spawning stock biomass for many fish stocks studied (Perretti et al. 2017). Perretti et al. (2017) predicted that the high recruitment regime in the 1990s was at least partially driven by an increase in copepod prey and an increase in parental condition stemming from the overall decrease in SSB. Mills et al. (2024) identified impacts of the regime shift around 2010, stemming from substantially increased sea surface temperature anomalies in the Northwest Atlantic, on fishery resources. They found evidence that these ecosystem shifts had an adverse cascading effect on sensitive fish populations and their productivity (Mills et al. 2024).

Winter Flounder

Winter flounder (*Pseudopleuronectes americanus*) is a groundfish species whose productivity has been impacted by ecosystem changes in the Northeast US shelf ecosystem (Mills et al. 2024). Winter flounder are managed as three stock units in U.S. waters: Gulf of Maine, Georges Bank, and Southern New England/Mid-Atlantic. Winter flounder have been an important target fishery resource and historically was subject to overfishing which may have affected the population's ability to recover to their historic abundance (Fogarty & Murawski, 1998). Although no longer subject to overfishing, winter flounder populations have yet to recover to their historic abundance, leading scientists to believe that a regime shift had taken place (deYoung et al. 2004).

The Gulf of Maine and Southern New England stocks utilize inshore shallow/estuary habitats for spawning, environments that are particularly vulnerable to environmental variability and anthropogenic

stressors, whereas Georges Bank is an offshore located stock area. However, all stocks move offshore to deep demersal waters after the spawning season. The differing habitat use and life history strategies among all three stocks suggest that each may respond differently to regional environmental forcing. In this context, we aim to examine evidence of regime shifts through the lens of temporal changes in winter flounder productivity.

This chapter aims to identify significant changes in winter flounder stock dynamics in US waters using changepoint analysis. Changepoint analysis is a statistical method used to pinpoint breaks in a time series that deviate from a usual (or expected) trend. Breakpoint analysis of stock dynamics is valuable for fisheries management, as it sheds light on non-stationarity in aspects of stock dynamics that can inform choices in stock assessment model fitting, the specification of short-term projections, and the establishment of biological reference points. Results from this study will inform future exploratory modeling aimed at identifying relationships and potential patterns between certain environmental drivers and stock dynamics.

Methods

Data

To characterize several aspects of winter flounder stock dynamics, I utilized fishery-independent survey data from NOAA's Northeast Fisheries Science Center bottom trawl survey (NEFSC, fall and spring) and Massachusetts Division of Marine Fisheries (MADMF, fall and spring) bottom trawl survey.

The NEFSC bottom trawl survey was initiated in 1962 to collect data on marine species' abundance, distribution, feeding, size, and age composition (Politis et al. 2014). Both the NEFSC and MADMF (King et al. 2010) bottom trawl surveys collect data on winter flounder abundance (number/tow) and biomass (kg/tow) for the spring and fall seasons. The surveys also collect biological data, including weight, maturity, and age information, on a subsample of fish. For each US winter

flounder stock, we evaluated the presence of breakpoints in several metrics, including recruitment, recruits per spawner (R/SSB), weight-at-age, relative condition, and species distribution. Metrics were calculated by stock area with the exception of distribution metrics which were calculated throughout the survey footprint. Sources for these data and calculations of metrics are as follows.

Recruitment Metrics

Recruitment was characterized as the index of age 1 abundance (i.e., stratified mean number per tow) of winter flounder from the NEFSC and MADMF bottom trawl survey (fall and spring for NMFS and spring only for MADMF due to survey limitations) within each respective stock area. Recruits per Spawner (R/SSB) was calculated using a ratio of indices of age 1 abundance and spawning stock biomass (lagged one year to match year of spawning (age 0) from the NEFSC trawl survey). An index of SSB (Eq. 1) was calculated for each winter flounder stock based on survey indices (fall and spring) of number-at-age and weight-at-age for mature fish in each stock. Winter flounder age at 100% maturity (i.e., 4 years old, Beacham 1982) and stock-specific weight-at-age (WAA) from the NEFSC bottom trawl survey were used for these empirical calculations.

$$SSB_t = W_{4-7,t}^- \sum_{a=4}^7 N_{a,t}$$

Equation 1. SSB for year t was calculated as the mean biomass across ages 4–7 in year t multiplied by the total abundance index summed across ages 4–7+: Where $N_{a,t}$ is the index of fish of age a at time t , and $W_{4-7,t}^-$ is the annual mean weight across ages 4–7. Note that Age7 represents the 7+ age group in the dataset.

Growth Metrics

Growth analyses relied on NEFSC bottom trawl survey WAA data and a condition index derived from trawl survey data. Weight-at-age from the NEFSC bottom trawl survey was defined as the average

weight of winter flounder in an age group in each year, with age 7 as a plus group that included age classes 7 and above. The age 7 (plus) group was not included in the changepoint analysis due to the truncated and biased effect that combined older age groups can have on breakpoint results.

Relative condition data (weight at a given length) (K_n) was calculated using the equation: $K_n = W/W'$. Where W is the weight of an individual fish and W' is the predicted length-specific mean weight for the population in the given region (Le Cren 1951). These data were sourced from the 2024 New England State of the Ecosystem Report, which used indices collected from the NEFSC bottom trawl survey. The regions provided for winter flounder condition were the Gulf of Maine, Georges Bank, and the Mid-Atlantic Bight (spatially encompassing Southern New England/Mid-Atlantic region and used as a proxy for that stock).

Distribution Metrics

Distribution data was sourced from NOAA's Distribution and Mapping Analysis Portal (DisMAP), which utilizes latitudinal and depth data from the NEFSC trawl survey to examine species-wide changes in the center of gravity for winter flounder in spring and fall. The portal itself includes interpolated biomass distribution from taxa that are sampled in at least 5% of tows in at least 3/4th of all survey years (NOAA 2025). These include depth and latitude changes from 1974 to 2024. These values for distribution are considered species-wide and are not stock-specific.

Statistical Analysis

Breakpoint analysis was used to examine shifts in stock dynamics metrics, including recruitment (age 1 abundance), recruits per spawner (R/SSB), weight-at-age, condition, and species-wide distribution. The R package *EnvCpt* (Killick et al. 2021; Version 1.1.3) was used to calculate changepoints in the winter flounder population dynamics time series, following methods from a previous breakpoint analysis conducted in the most recent Atlantic cod (*Gadus morhua*) stock assessment research track

(Kerr and Behan 2022). Initially designed to analyze climate data, *EnvCpt* is now widely used in ecology for changepoint analysis (Haines et al. 2025).

In addition to breakpoint analysis, I performed a Pearson correlation analysis across the raw survey data (Schober et al. 2018). Because each stock is subject to different regional environmental conditions and may exhibit unique responses to change, I evaluated the coherence in stock responses across different dynamics by conducting this correlation analysis to characterize the degree of correlation between stock areas.

Changepoint detection within a time series determines the optimal number of segments into which the data should be divided to best represent potential trends (Killick and Eckley, 2013). *EnvCpt* fits eight different models and selects the one that provides the best fit to represent the time series being analyzed (Beaulieu and Killick, 2018). The simplest models in *EnvCpt* assume that a series is best represented with either a constant mean or a linear trend (Beaulieu and Killick 2018). They are then superposed to an AR(1), which leads to four models without changepoints identified (Beaulieu and Killick 2018). The models that include changepoints in all model parameters are also fitted, resulting in a total of eight models (Beaulieu and Killick 2018). In *EnvCpt*, each model is fitted using maximum likelihood estimation, and the exact number and location of each changepoint is found through the PELT algorithm (Killick et al. 2012; Killick and Eckley, 2013). PELT performs a search using the modified Bayesian information criterion (MBIC) as the penalty function to select the optimal number of changepoints, subject to a minimum segment length and other parameters (Beaulieu and Killick 2018).

Analyzing time series data for potential changepoints can be challenging due to the parameters used to define changepoint detection in the model. Resulting from one's constraints, a false negative or false positive changepoint still could or could not be present in the time series after an analysis. To ensure that my changepoint detection model was both sensitive enough to detect meaningful shifts in

the data and robust enough to prevent a single data point from causing a false detection, I applied several constraints. I first set the minimum segment length to 5 years to avoid detecting overly short-lived changes. I then established an adaptive threshold for detecting mean shifts, where changes were only considered valid if they exceeded 0.25 times the standard deviation of the data, with a floor of 0.2 to prevent the threshold from becoming too sensitive in low-variance conditions and help prevent false positives. I also constrained the detection to changes in mean shifts only, excluding shifts in variance to streamline interpretation. Finally, I added a manual penalty of $4 \times \log(n)$, where n denotes the number of data points in the time series, based on BIC but scaled to increase robustness and reduce overfitting. This specific penalty resulted from conservative manual tuning of the standard $\log(n)$ penalty and PELT to increase the changepoint model's robustness and control the number of detected changepoints in the time series.

Results

Recruitment

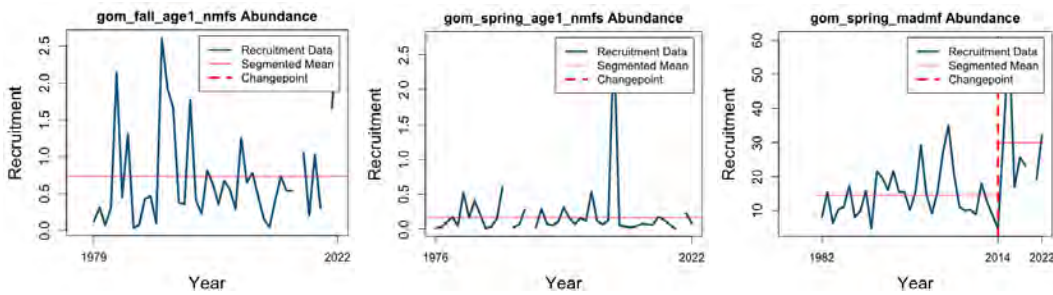
Gulf of Maine winter flounder recruitment (age 1 abundance) was highly variable without evidence of changepoints in either fall or spring NMFS time series (Fig. 3.1). However, a changepoint was found in spring of 2014 (Table 3.1) using the MADMF survey time series, which was followed by a positive change in mean recruitment (Fig. 3.1). Recruitment of Georges Bank winter flounder was also variable with no changepoint identified in spring, but a changepoint identified in the fall time series in 2016 (Table 3.1) followed by a decrease in mean recruitment (Fig. 3.1). Recruitment of Southern New England/Mid-Atlantic winter flounder exhibited a changepoint in 1983 (Table 1) in both fall and spring time series followed by a sharp decline in recruitment (Fig. 3.1). However, the fall time series exhibited another changepoint in 1992 (Table 3.1), which shifted recruitment to an overall higher mean, although not back to its notably high historic values seen at the beginning of the time series (Fig. 3.1). No

change points were found when analyzing the spring MADMF indices of recruitment for Southern New England/Mid-Atlantic (Fig. 3.1).

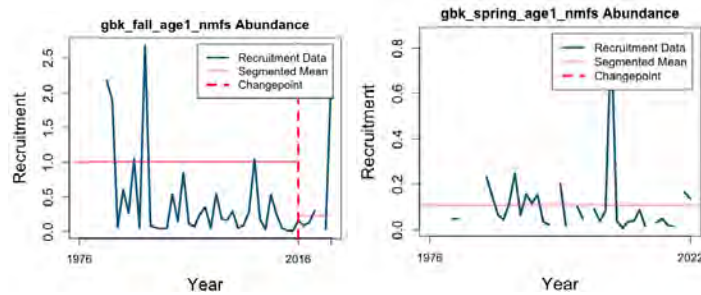
Table 3.1. Change point Years for Winter Flounder. Years of change point occurrences from EnvCpt change point detection analysis. Colors represent the trajectory of stock response following the change point year: Red – Mostly Negative response; Light Red – Slightly Negative response; Green – Mostly Positive response; Light Green – Slightly Positive response. GBK is Georges Bank, GOM is Gulf of Maine, and SNEMA is Southern New England/Mid-Atlantic.

STOCK RESPONSE VARIABLE	GOM		GBK		SNEMA	
Distribution: Depth	Fall 2009 (↓)					
Distribution: Latitude	(↑)					
Age 1 Recruitment	2014		2016		1983	1992
Recruits per Spawner			1993	2014	2015	
Relative Condition	1999		2001	2012		
Weight at Age 1	1985	2011	2009		1998	
Weight at Age 2	1985	2012	2010		1993	1999
Weight at Age 3	1983		2014		1993	
Weight at Age 4	1983		2015		1991	2012
Weight at Age 5	1984	2009			1991	2012
Weight at Age 6	1986	2009			1991	

Gulf of Maine Recruitment



Georges Bank Recruitment



Southern New England/Mid-Atlantic Recruitment

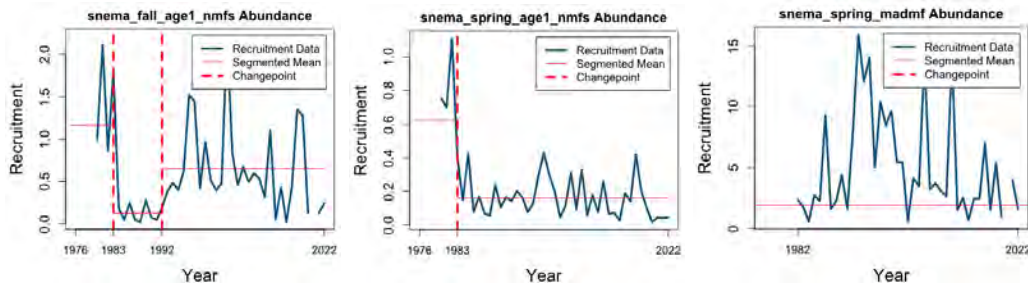


Figure 3.1. Age 1 Recruitment Changepoint Results. Age 1 recruitment changepoint estimates using the EnvCpt package for fall and spring seasons (NMFS trawl survey indices). Recruitment on the y axis is average numbers at age 1 per tow. GBK is Georges Bank, GOM is Gulf of Maine, and SNE/MA is Southern New England/Mid-Atlantic.

The Pearson correlation analysis for winter flounder recruitment provided insight on the cohesiveness of patterns between stocks. Gulf of Maine and Georges Bank spring NMFS recruitment indices were highly correlated with one another (Fig. 3.2). However, Southern New England/Mid-Atlantic

recruitment tended to have low positive or negative correlation with the other stocks (Fig. 3.2). Figure 3.3 illustrates the different snapshots of winter flounder recruitment recorded by the NMFS fall and spring surveys with the fall survey exhibiting higher indices at age 1, likely due to not having experienced overwintering mortality at that time, compared to the spring across all stock areas.

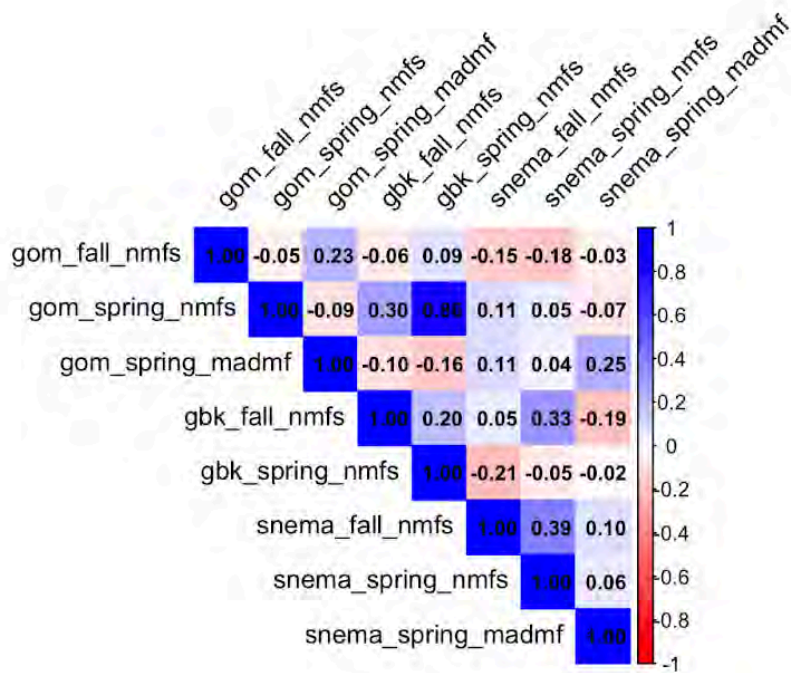


Figure 3.2. Correlation Analysis Results on Age 1 Abundance. Correlations between both the fall and spring NMFS survey indices of age 1 abundance, as well as the MADMF spring survey data (for Southern New England/Mid-Atlantic and Gulf of Maine only). GBK is Georges Bank, GOM is Gulf of Maine, and SNEMA is Southern New England/Mid-Atlantic

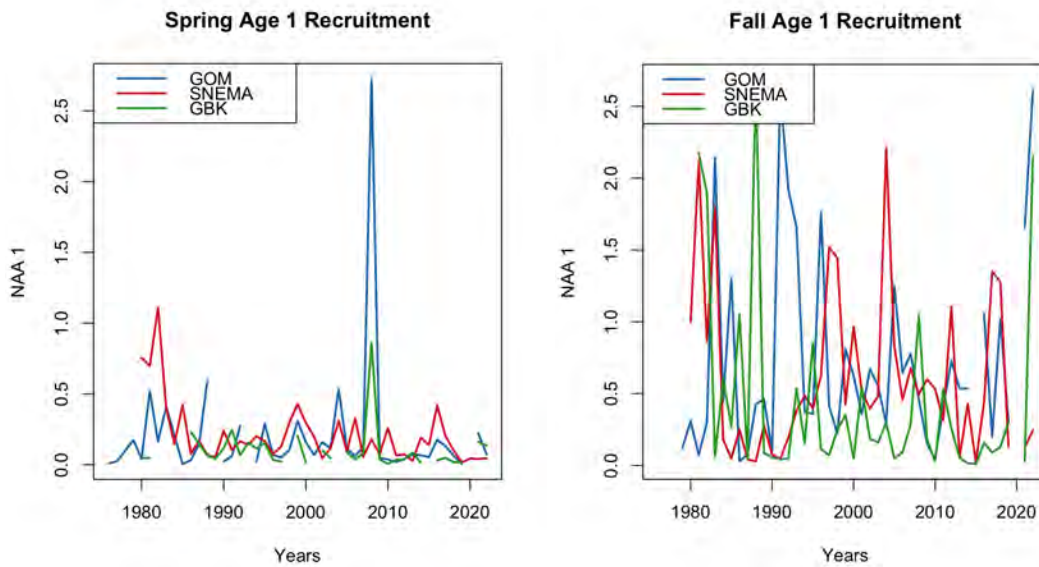


Figure 3.3. Survey Indices Average Number of Age 1 Per Tow. Average number of Age 1 per tow, recruitment survey indices from the NMFS bottom trawl survey in the spring (left) and fall (right) for all three winter flounder stocks. GBK is Georges Bank, GOM is Gulf of Maine, and SNEMA is Southern New England/Mid-Atlantic.

Recruits per spawner in the Georges Bank stock exhibited a changepoint in 1993 (Table 3.1) in both the spring and fall time series (Fig. 3.4). The changepoint in the fall of 1993 (Table 3.1) led to an increased mean in the rest of the time series in Georges Bank (note: this is driven largely by one value in 2017). However, the changepoint in spring 1993 (Table 3.1) led to a decreased mean in R/SSB followed by a second changepoint in 2014 (Table 3.1) associated with a higher mean recruits per spawner (Fig. 3.4). Gulf of Maine winter flounder recruits per spawner were generally present at constant low mean in the spring with the exception of high pulse of recruits per spawner in the early 2000s, however recruits per spawner were variable in the fall time series, with a changepoint in 2003 (Table 3.1) that led to a lowered overall mean (Fig. 3.4). Lastly, Southern New England/Mid-Atlantic recruits per spawner had visually similar time series in fall and spring (Fig. 3.4), with a general trend of increased values toward

the end of time series. While no changepoint was detected in the spring time series, a changepoint in 2015 (Table 3.1) was found in the fall, followed by a shift to a higher mean (Fig. 3.4).

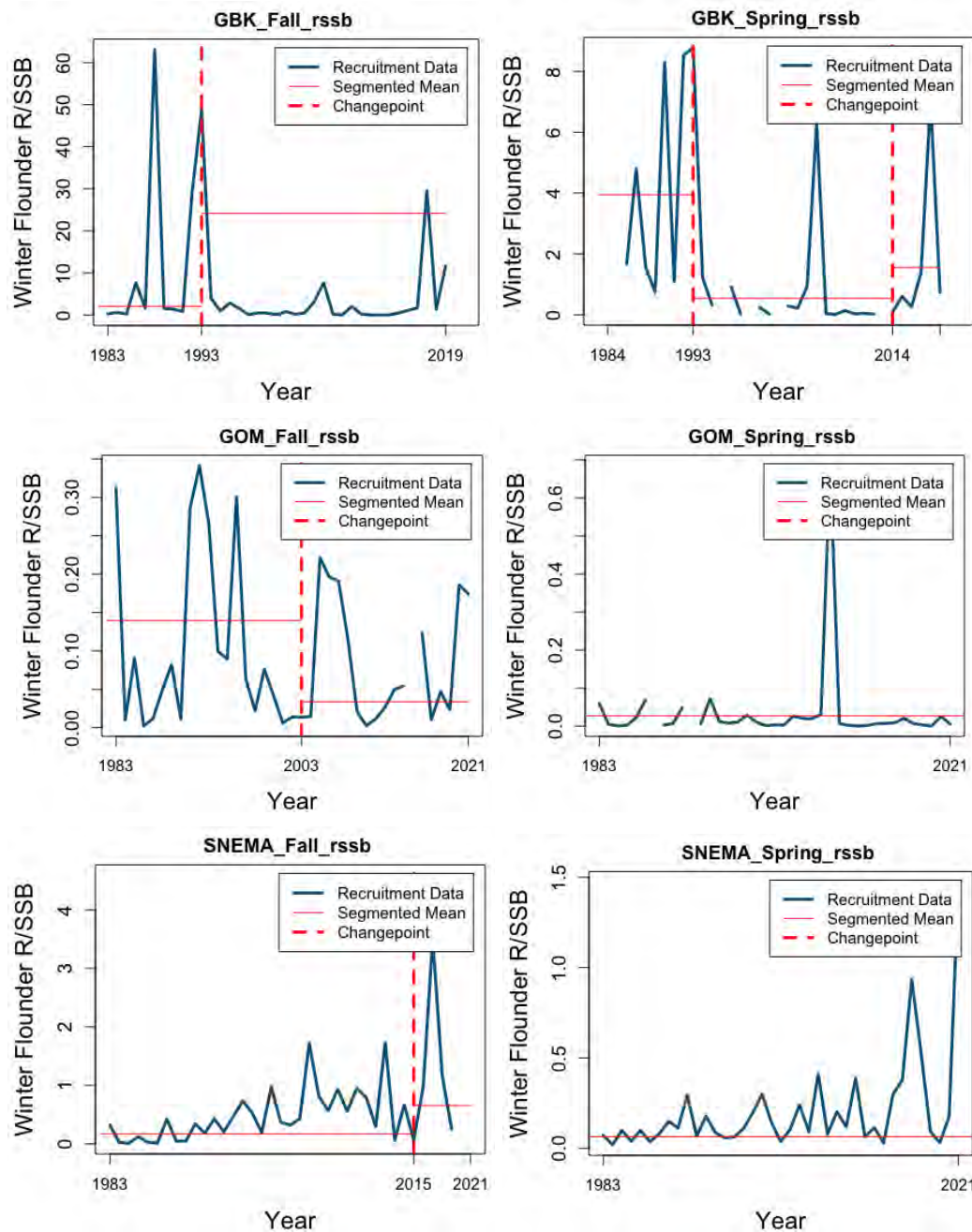


Figure 3.4. Recruits Per Spawner Changepoint Results. Identified changepoints in Recruits per spawner (R/SSB) data from the NMFS trawl survey indices of recruitment using the EnvCpt package by season and stock area. GBK is Georges Bank, GOM is Gulf of Maine, and SNEMA is Southern New England/Mid-Atlantic.

Notably the scaling of productivity across all three winter flounder stocks is considerably different (Fig. 3.6). When comparing the level of recruits per spawner across stocks, there were large differences between Georges Bank and the other two stocks with offshore Georges Bank stock exhibiting considerably higher productivity (Fig. 3.6). In the Pearson correlation analysis for winter flounder recruits per spawner, there was limited correlation across all stocks and seasons (Fig. 3.5).

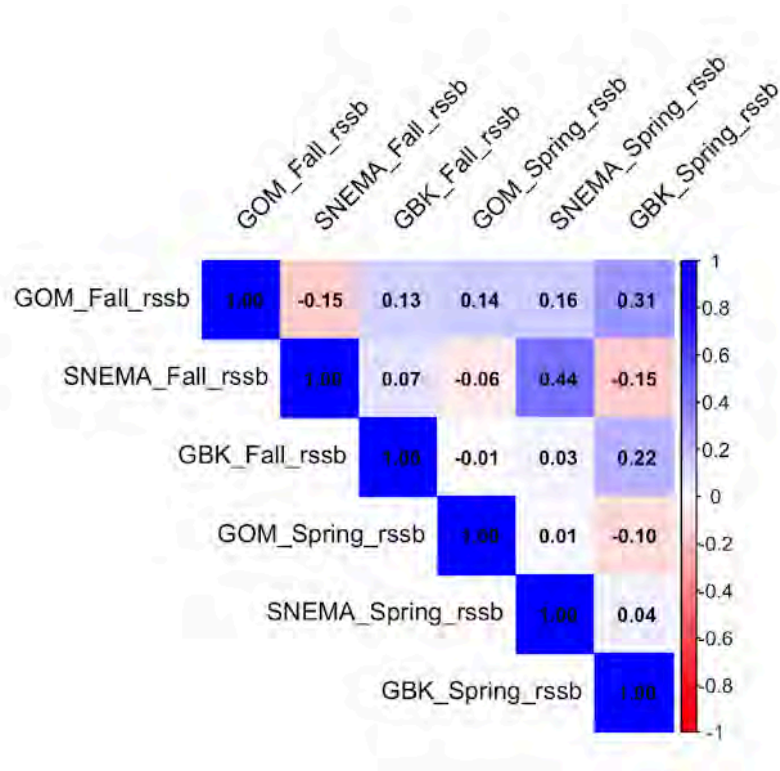


Figure 3.5. Correlation Analysis Results on Recruits Per Spawner. Correlation plot using a Pearson Correlation analysis for all three winter flounder stocks' seasonal recruits per spawner: GBK is Georges Bank, GOM is Gulf of Maine, and SNEMA is Southern New England/Mid-Atlantic.

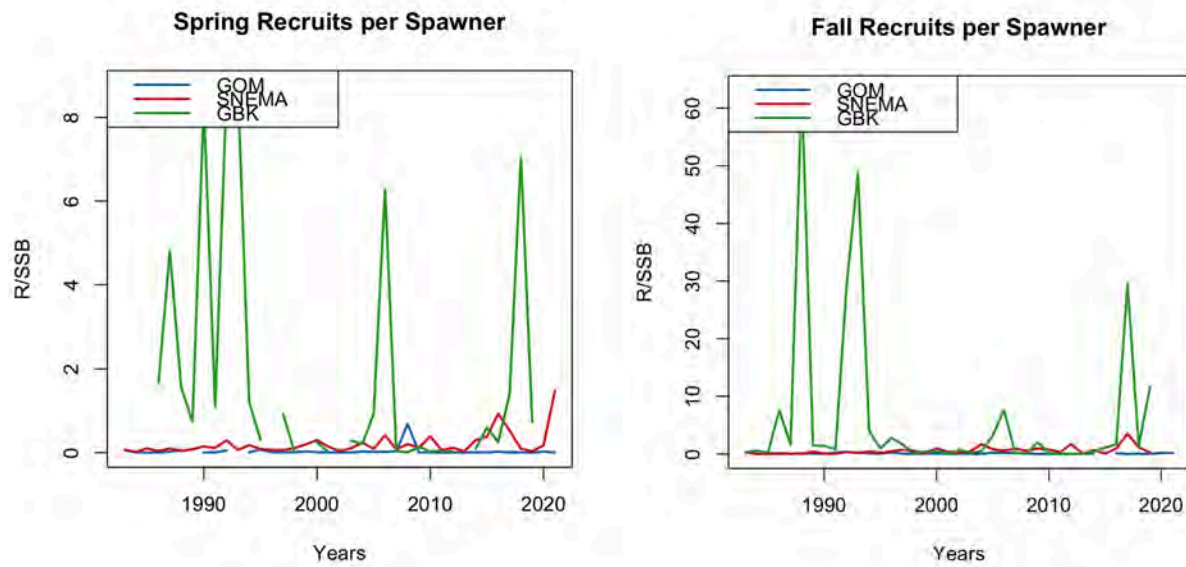


Figure 3.6. Recruits Per Spawner by Stock. Line plot of recruits per spawner for each of the three winter flounder stocks in the spring (left) and fall (right). GBK is Georges Bank, GOM is Gulf of Maine, and SNEMA is Southern New England/Mid-Atlantic.

Growth

In the Gulf of Maine stock, all age groups experienced a decrease in WAA over time, except for ages 1 and 2, which exhibited a small increase in mean weight (Fig. 3.7). A similar changepoint in the early 1980s was apparent in all age classes of Gulf of Maine winter flounder, leading to a decrease in WAA (Fig. 3.7). However, for ages 1 and 2, another changepoint occurred in the early 2010s which led to a small increase in mean WAA although not returning to pre-1980s means (Fig. 3.7). Gulf of Maine winter flounder WAA 5 and 6 experienced an additional changepoint in 2009 (Table 3.1) that led to an even lower WAA. Georges Bank winter flounder experienced a changepoint in growth in the early 2010s across all age groups, leading to an increase in mean WAA, except for age classes 5 and 6, which did not exhibit any changepoints over the time series (Fig. 3.7). The Southern New England/Mid-Atlantic stock

experienced changepoints in the early 1990s and in 2012 (ages 4 and 5, Table 3.1) that led to increased WAA over time for most ages (Fig. 3.7). In contrast, ages 1 and 2 experienced similar changepoints in the 1990s but exhibited decreased WAA (Fig. 3.7).

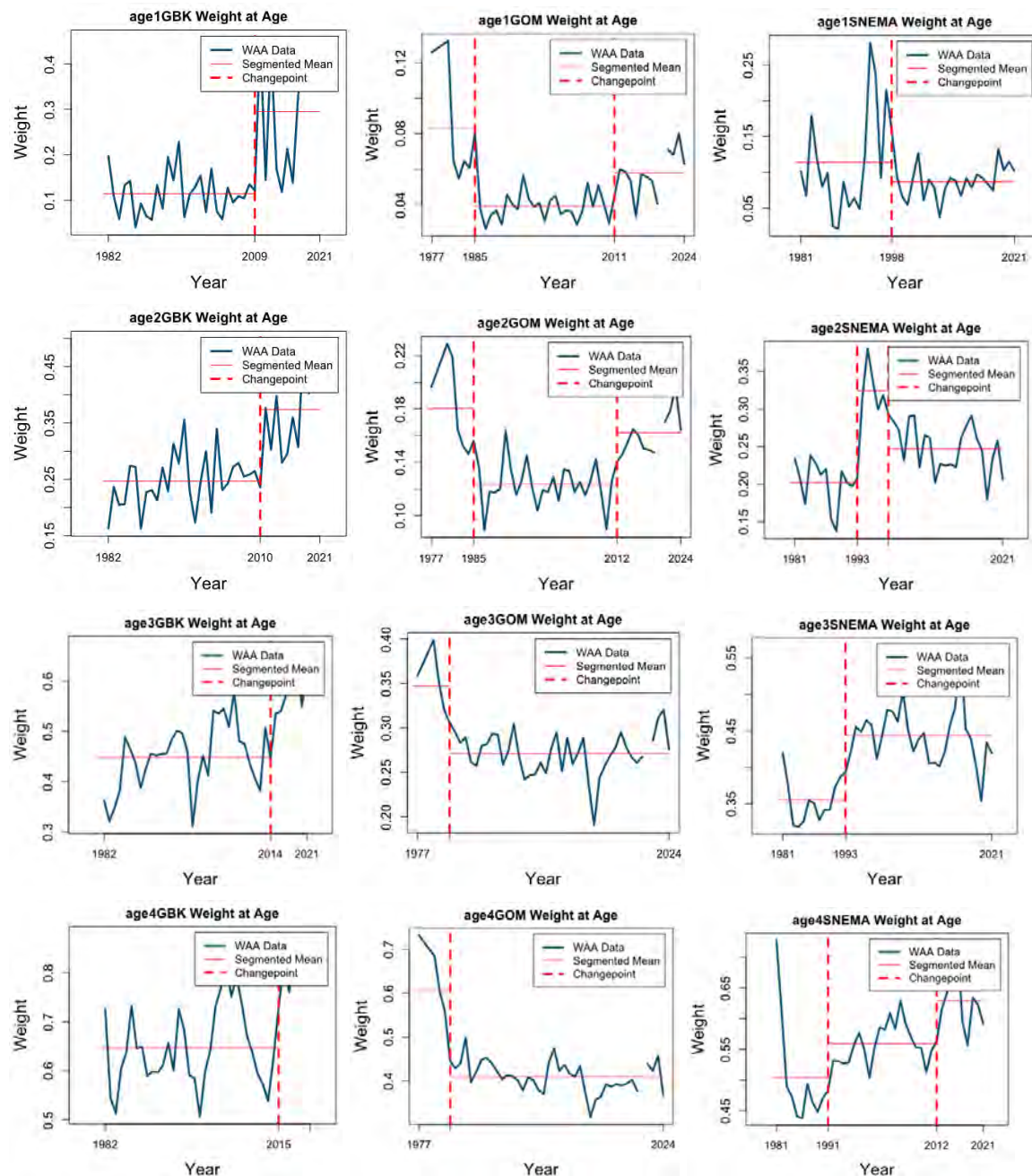


Figure 3.7 continued

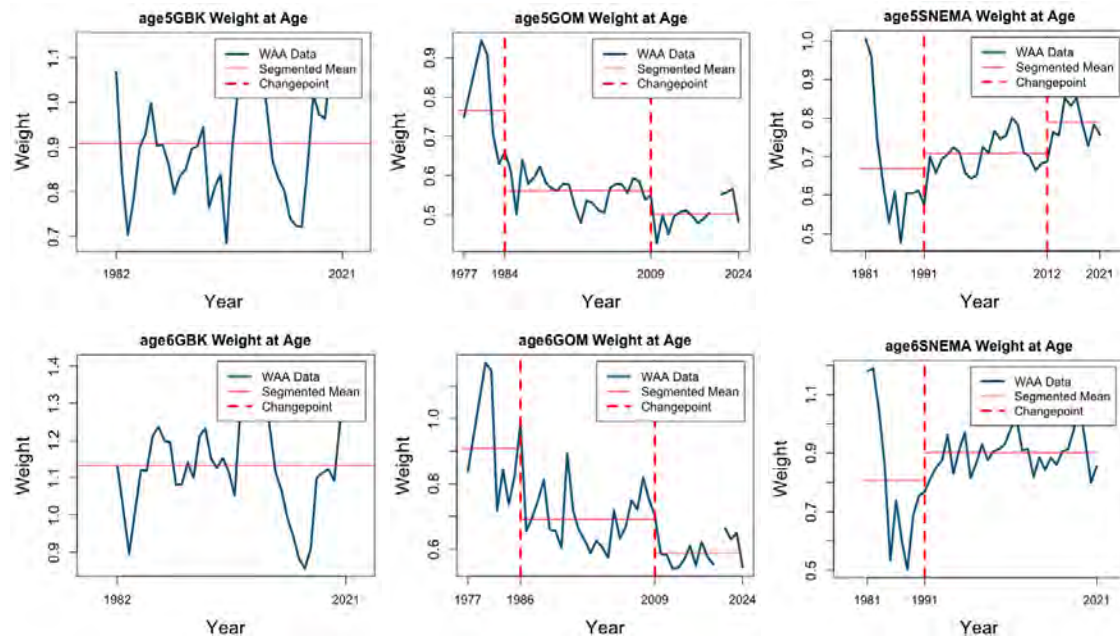


Figure 3.7. Weight at Age Changepoint Results. Weight-at-age changepoint estimates for age classes 1 through 6 using the EnvCpt package. Scaling of the x axis is varied across stocks and age groups.

The Pearson correlation analysis of winter flounder WAA reveals interesting patterns across all three stocks. As expected, the younger age classes contrast sharply with the oldest age groups among all stocks (Fig. 3.8). At mature ages, SNE/MA and GB winter flounder showed the strongest positive correlations in WAA (Fig. 3.8). Older age classes in Gulf of Maine and Georges Bank stocks were also highly correlated (Fig. 3.8). In contrast, mature ages in Southern New England/Mid-Atlantic and Gulf of Maine were negatively correlated (Fig. 3.8).

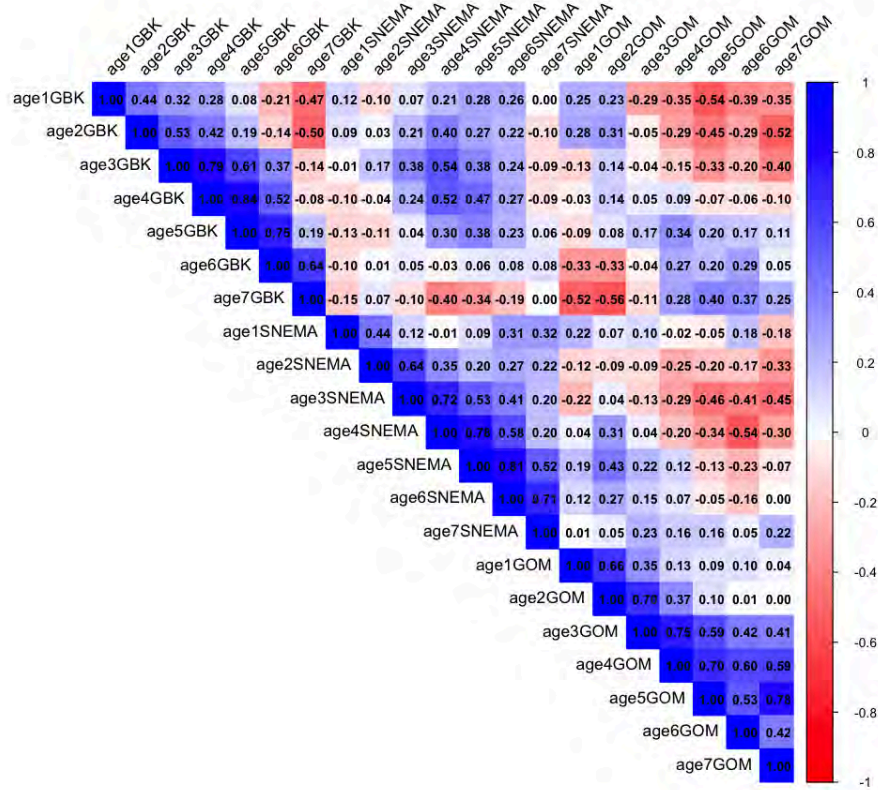


Figure 3.8. Correlation Analysis Results on Weight at Age. Pearson Correlation Plot for Weight at Age, comparing all winter flounder stocks and age classes to one another.

Both Gulf of Maine and Georges Bank winter flounder exhibited a changepoint in relative condition around 2000 (Table 3.1), marking a shift to a lower condition state (Fig. 3.9). Since that time, the Gulf of Maine stock has shown fluctuating trends with no additional changepoints (Fig. 3.9). In contrast, the Georges Bank stock experienced another changepoint in 2012 (Table 3.1), corresponding with a rebound to average relative condition levels comparable to those observed in the 1990s (Fig. 3.9). Winter flounder in the Mid-Atlantic Bight, used as a proxy for the Southern New England/Mid-Atlantic stock, experienced no changepoints throughout the time series, maintaining a relatively consistent condition index (Fig. 3.9).

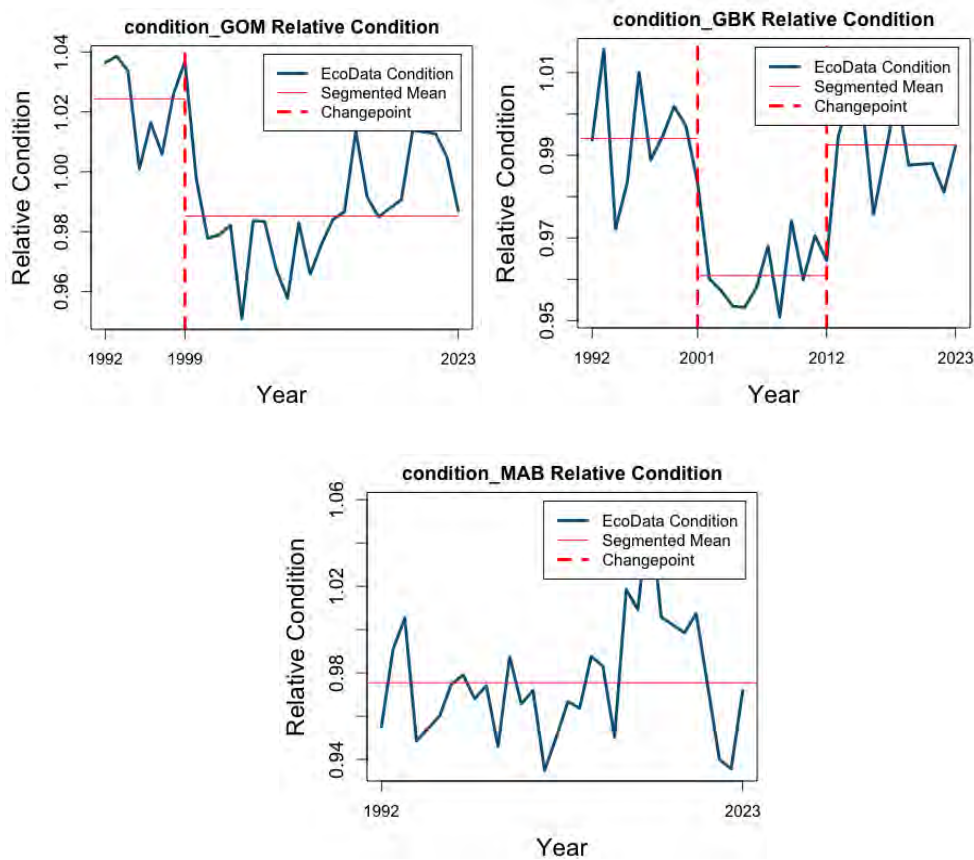


Figure 3.9. Relative Condition Changepoint Results. Relative Condition changepoint estimates for Gulf of Maine (GOM), Georges Bank (GBK), and Mid-Atlantic Bight (MAB) (used as a proxy for Southern New England/Mid-Atlantic) using the State of the Ecosystem's Fish Relative Condition Indicator from *ecodata* and *EnvCpt* package for analysis.

The Pearson correlation analysis for winter flounder relative condition showed a high positive correlation between Georges Bank and Gulf of Maine stocks and a lower correlation with the Mid Atlantic Bight (proxy for Southern New England/Mid-Atlantic stock, Fig. 3.10). However, the general trends of each stock's relative condition over time show a general cohesiveness between all stocks in the time series (Fig. 3.11).

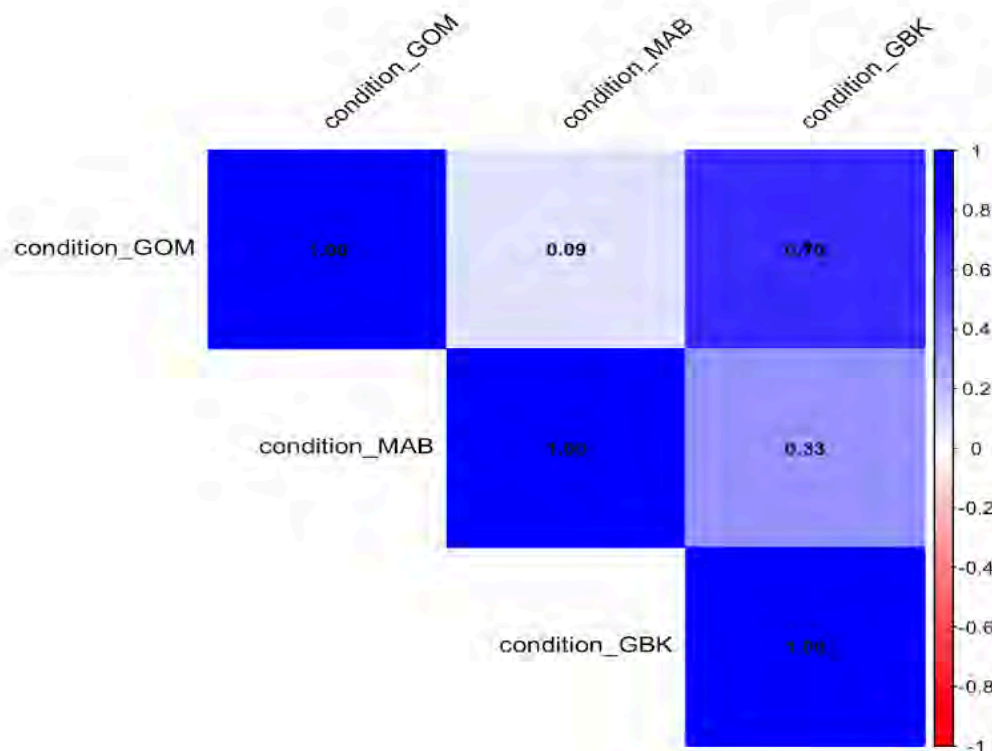


Figure 3.10. Correlation Analysis Results on Condition. Pearson correlation analysis plot of relative fish condition in Gulf of Maine (GOM), Georges Bank (GBK), and Mid-Atlantic Bight (MAB) (used as a proxy for Southern New England/Mid-Atlantic).

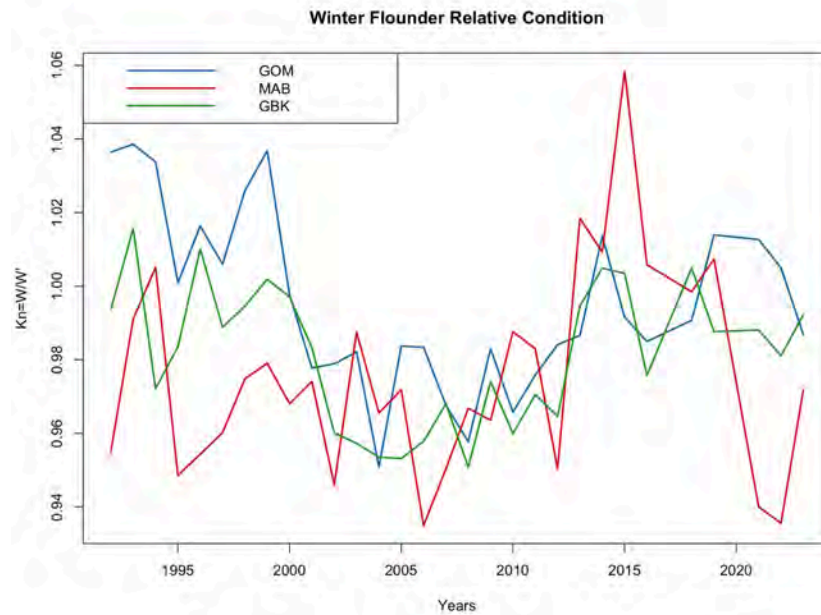


Figure 3.11. Relative Condition by Stock. Line plot of each stock area's temporal difference in relative fish condition using the Mid-Atlantic Bight (MAB) as a proxy for Southern New England/Mid-Atlantic, data were excerpted from the State of the Ecosystem's Fish Relative Condition Indicator (*ecodata*).

Distribution

The Center of Gravity (COG) of winter flounder depth varied seasonally, with a changepoint detected in the fall of 2009 (Table 3.1) and no changepoints identified in the spring (Fig. 3.12). Both seasonal time series show an overall declining trend in depth (Fig. 3.12). COG of winter flounder latitude also varied seasonally, with no changepoints detected in either spring or fall, however, both series display an overall increasing trend, indicating a gradual northward shift in distribution over time (Fig. 3.12).

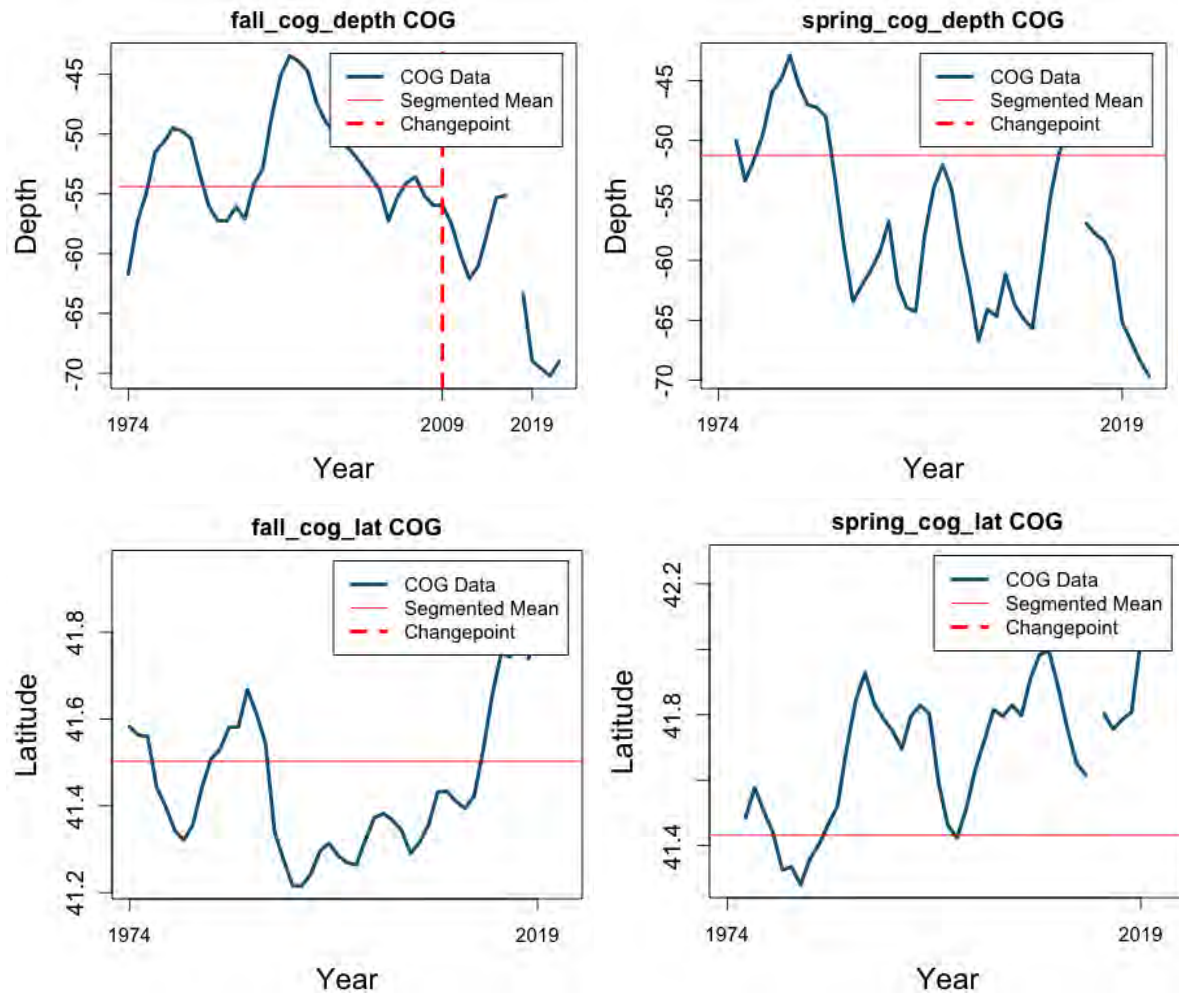


Figure 3.12. Center of Gravity Changepoint Results. Center of Gravity (COG) species-wide changepoint estimates for winter flounder distribution in both depth and latitude (lat) for fall and spring using the EnvCpt package.

Discussion

General Trends and Observations

Using changepoint analysis, I identified temporal differences in winter flounder stock dynamics (i.e., recruitment, growth, and distribution). In addition, Pearson correlation analysis across the three winter flounder stocks revealed patterns of coherence and differences in U.S. flounder stock dynamics. My results suggest that winter flounder exhibit stock-specific responses to regime shifts on the Northeast Continental US Shelf, with the timing and nature of change aligning with known

oceanographic processes in the region, despite not directly testing these environmental variables in this analysis.

A review of the changepoints found across all stocks confirm the non-stationarity of winter flounder population dynamics, with mean shifts detected in every analyzed stock dynamic parameter (recruitment, growth, and distribution). However, these changepoints were not consistent across all 3 regions in when and where mean shifts occurred. Correlation analysis showed that coherence of recruitment indices within winter flounder stocks is limited (Fig. 3.2), but there is some correlation in weight at older ages between Southern New England/Mid-Atlantic and Georges Bank (Fig. 3.8) and in condition between Georges Bank and the Gulf of Maine (Fig. 3.10).

Another key finding of this study was that each stock exhibited unique response parallels to known decadal-scale shifts in oceanographic processes and broad-scale regime shifts (Table 3.2). Gulf of Maine winter flounder experienced the most changepoints during the mid-1980's, while Georges Bank winter flounder was primarily impacted by the more recent changepoints in the mid-2010's. In contrast, the Southern New England/Mid-Atlantic stock was most influenced by changepoints in the mid-1990's (Table 3.2). The temporal patterns and timing of changepoints identified across winter flounder stocks generally align with previously identified regime shifts in the northwest Atlantic.

The Gulf of Maine exhibited stability in recruitment with no changepoints detected in Age 1 abundance or R/SSB. Dynamics in the Gulf of Maine were more so defined by changepoints in growth (1985 for WAA 1) and relative condition (1999). The Gulf of Maine winter flounder stock seems to have responded in parallel to the Arctic Oscillation shifts of the mid to late 1980s, with the freshening of the North Atlantic possibly leading to changes in growth efficiency as a result of long-term changes in the plankton community (Greene 2012, MERCINA 2012).

Georges Bank winter flounder exhibited changepoints in different aspects of stock dynamics in the mid-2010s that align with the elevated sea-surface temperature regime shift in 2010 (Mills et al. 2024; Table 3.2). This stock exhibited both negative (i.e., declines in age 1 recruitment) and positive responses, an overall increase in growth and rebound in relative condition (2012) (Fig. 3.7, Fig. 3.9). The Southern New England/Mid-Atlantic stock experienced the earliest and most complex changes, mostly found in the mid-1990s (Table 3.2). This is likely a reflection of severe thermal stress at the southern range limit of winter flounder. This stock experienced severe shifts, with a 1983 changepoint that led to a sharp decline in Age 1 recruitment, followed by another changepoint in 1992 that shifted recruitment to a higher mean but did not return to historic values (Fig. 3.1). WAA exhibited contrasting trends across age groups. Younger age groups experienced decreased WAA while Age 2+ groups experienced positive growth trends following the 1990s changepoints (Fig 3.7). These 1990s changepoints align with the late arrival of Arctic Oscillation freshened water (Greene 2012), suggesting that these large-scale environmental shifts have both positive and negative effects on winter flounder.

Table 3.2. Changepoint Decades for Winter Flounder. Years of changepoint occurrences from EnvCpt changepoint detection analysis. Colors represent decade of changepoint year: Blue – 1980s; Orange – 1990s; Yellow – 2000s; Purple – 2010s. GBK is Georges Bank, GOM is Gulf of Maine, and SNEMA is Southern New England/Mid-Atlantic.

STOCK RESPONSE VARIABLE	GOM		GBK		SNEMA	
Distribution: Depth	Fall 2009 (↓)					
Distribution: Latitude	(↑)					
Age 1 Recruitment	2014		2016		1983	1992
Recruits per Spawner			1993	2014		
Relative Condition	1999		2001	2012		
Weight at Age 1	1985	2011	2009		1998	
Weight at Age 2	1985	2012	2010		1993	1999
Weight at Age 3	1983		2014		1993	
Weight at Age 4	1983		2015		1991	2012
Weight at Age 5	1984	2009			1991	2012
Weight at Age 6	1986	2009			1991	

Limitations of the Approach

Lack of correspondence within and among stocks was most apparent in the recruitment indices of winter flounder. This could be partly due to the specific surveys used to index stock productivity in this analysis. Evaluation of additional survey indices to inform this analysis could potentially influence the results of this changepoint analysis. Observation error may be another contributor to the noisy recruitment indices and lack of identifiable changepoints in some recruitment time series. In addition, while range-wide distribution indices provide a big picture view of winter flounder distribution shifts,

stock-specific distribution indices may reveal important population-scale latitude and depth change points and are worth evaluating in the future. Along similar lines, it is recommended that further research is conducted to evaluate age-based condition temporal changes among winter flounder stocks.

Although changepoint analysis is considered a useful tool for quantifying shifts in temporal data, it has some inherent limitations, especially when interpreting results as well-defined regime shifts. Recent studies have demonstrated that current methods can be unreliable and inaccurate for detecting regime shifts in marine systems (Haines et al. 2025). Hillebrand et al. (2020) suggested that breakpoint analysis methods are not fully capable of identifying the intrinsic, system-level changes that characterize a true regime shift. How the model characterizes a valid changepoint (or regime shift) is essential to determine the detection or non-detection's validity (Haines et al. 2025). As such, the assumptions made of model fit inherently influence breakpoint identification. Some changepoint results in this particular study appear to have been driven by the large influence of one or two years in the time series, which should affect the overall understanding of whether or not a breakpoint is truly present.

The results of this analysis are influenced by both the model parameters and the temporal extent of the data analyzed. My decisions in the methods section to set up my changepoint analysis are imperative and relevant to how the model's determined if a changepoint(s) had occurred and when. It also depends on the time-scale of the data input. More years of data can mean more changepoints being identified due to the innate non-stationarity of fish population dynamics. Conversely, shorter time scales may lack the statistical robustness to determine a valid shift.

Furthermore, an identified regime shift in a changepoint analysis may simply reflect natural variability in climate and ecosystem drivers occurring simultaneously, rather than a true regime shift (Friedland et al. 2020). It is essential to note that even with changing thermal conditions, a regime shift

doesn't always occur in the natural world (Friedland et al. 2020). Therefore, while this study compares winter flounder changepoints to previously identified regime shifts, it is important to examine all aspects of the focal ecosystem to determine whether a regime shift has occurred (Friedland et al. 2020).

Changepoint analysis can still be an important aspect of fisheries management, because it enables the determination of whether the baseline of fish productivity has changed significantly over time, and provides managers with a more holistic understanding of the stock.

Potential Applications

Despite extensive precautionary management of the fishery over the past 40 years to mitigate the effects of overfishing, winter flounder stocks have yet to return to their historical levels of abundance. This suggests that external drivers beyond fishing mortality are limiting the recovery of the fishery, underscoring the need to update biological reference points to reflect new ecosystem baselines.

Ongoing environmental change in marine ecosystems has been increasingly recognized as a major factor impacting fish population recovery (Britten et al. 2017). The non-stationary behavior in most fish stocks worldwide means that they may be unable to recover to their previous historic abundance (Britten et al. 2017). The potential to recover for a fish stock depends on the population's ability to increase in biomass, which is a fundamental constraint (Duarte et al. 2020).

These results highlight the need for dynamic biological reference points and adaptive management tailored to each stock's productivity regime, while still maintaining precautionary measures to ensure the long-term sustainability of the fishery in a rapidly changing ecosystem. More broadly, this analytical framework can help quantify shifts in productivity, identify regime changes, and detect cross-stock patterns, ultimately guiding management strategies for winter flounder.

Results from this changepoint study can help identify the scales of change in external environmental drivers affecting winter flounder productivity. For instance, if another large Great Salinity

Anomaly occurs in the future, Greene (2012) predicted that a regime shift will occur in the lower trophic levels similar to the one observed at the beginning of the 1990s. Typically, fish recruitment is less likely to be impacted by a regime shift that primarily affects lower trophic levels (Perretti et al. 2017). However, it is still crucial to monitor whether a regime shift has affected fish recruitment, given the significant consequences of recruitment failures for fisheries and fishery communities (Perretti et al. 2017).

This research provides empirical evidence of stock-specific responses to regime shifts in winter flounder dynamics, highlighting the need for adaptive management. A future multispecies analysis, most likely including the entire groundfish complex in the Northeast US, would be beneficial for assessing the widespread effects of ecosystem regime shifts on fish productivity (Perretti et al. 2017). Overall, this method helps to quantify potential changes in the current process of defining biological reference points for fisheries stock assessment, identify past or present changepoints or regime shifts, and evaluate potential patterns within and across each winter flounder stock. This encourages progress towards Ecosystem-Based Fisheries Management (EBFM) which takes a more holistic approach to fisheries management. Based on the results of this analysis, I recommend that the winter flounder stock assessment consider a more recent, moving-window approach to determine biological reference points for all three stocks. Before this is accomplished, however, additional productivity indices will need to be evaluated alongside the NEFSC and MADMF bottom trawl surveys. I also recommend future exploration of changepoints using additional recruitment indices from nearshore and estuarine habitats, particularly for Southern New England/Mid-Atlantic and the Gulf of Maine stocks, to further resolve potential shifts in productivity. This research should stand as a guide for management priorities for the winter flounder fishery and how strategies for recovery can be actively adapted to each stock-specific productivity dynamic.

CHAPTER 4

MODELING CLIMATE AND ECOSYSTEM DRIVERS OF WINTER FLOUNDER POPULATION DYNAMICS

Introduction

Winter flounder, once a sought-after fishery resource both commercially and recreationally, is considered an indicator species of ecosystem change due to its unique life-history traits and habitat use (NOAA 2024). As a demersal flatfish species, it relies on estuaries and nearshore habitat for spawning; therefore, its productivity is innately vulnerable to warming temperatures, hypoxia, and human interference in critical habitat (Able et al. 2014). A climate vulnerability analysis of fish species in the Northeast US gave winter flounder a “very high” vulnerability score, driven by high biological sensitivity (resilience and adaptability of the species) and climate exposure (exposure to changing environmental factors that could affect the species; Hare et al. 2016).

With the growing body of knowledge surrounding the effects of climate change on fish stocks and the evolution of more flexible modeling platforms for stock assessment, there has been a growing push to integrate climate and ecosystem knowledge into stock assessments of managed species. Recent fisheries stock assessments have incorporated the analysis of ecosystem drivers of fisheries stock dynamics, in some cases leading to specific drivers being incorporated into the official stock assessment model. Groundfish species, such as American plaice, Atlantic cod, and yellowtail flounder, have all undergone studies of ecosystem drivers as part of their stock assessment process (NCLIM 2025, NEFSC 2025). This helps promote an Ecosystem Approach to Fisheries Management (EAFM; MAFMC 2019), moving towards a more holistic understanding of how the ecosystem, directly or indirectly, impacts the population and productivity of a fish species.

This chapter aims to quantify the relationships between winter flounder population dynamics and climate and ecosystem drivers, as suggested by the ecosystem profile (Chapter 2), across the three

US stocks: Gulf of Maine, Georges Bank, and Southern New England/Mid-Atlantic. Bottom temperature and sea surface temperature were two of the most recurring and well-defined drivers of winter flounder productivity in all stocks. Other suggested drivers were warm core rings (warm eddy offshoots from the Gulf Stream) and other oceanographic processes like the Atlantic Multidecadal Oscillation and North Atlantic Oscillation. These large-scale climate indices control the underlying dynamics of the Northeast US Continental Shelf ecosystem, as well as the phenology of species life history (Greene et al. 2013). All of these ecosystem and climate drivers were implemented into this exploratory analysis.

Often, non-linear relationships exist between environmental drivers and fish population dynamics. For example, temperature may have a positive effect on an individual's growth until it reaches an optimal thermal threshold, beyond which the effect becomes sharply negative (Pörtner & Knust 2007). Using a generalized linear model (GLM) to analyze ecological drivers and their potential effects on fish stock dynamics is not recommended in this case, as the results do not capture the often-nuanced relationships under study. Instead, this study utilizes generalized additive models (GAMs), which are more flexible than GLMs and employ smoothing spline functions to characterize non-linear relationships (Hastie & Tibshirani 1990).

This chapter's objectives are to quantitatively identify and evaluate the key environmental mechanisms that drive winter flounder stock-specific dynamics (age-1 recruitment, recruits per spawner, weight at age, relative condition, and mean depth and latitude). The purpose of this research is to understand the nature and strength of these environmental influences on stock dynamics with the aim of informing more accurate stock assessment and effective management.

Methods

Data Sources

Stock Response Variables

Data from the NEFSC bottom trawl survey were used to characterize recruitment (age-1 abundance, recruits per spawner), growth (weight-at-age, condition), and distribution (center of gravity and latitude) of winter flounder stocks. These metrics were calculated as described in Chapter 3. The MADMF spring bottom trawl survey provided additional abundance indices for age 1 only in the Southern New England/Mid-Atlantic and Gulf of Maine regions.

Given the particular importance of bottom temperature as a driver of winter flounder stock dynamics in Chapter 2, all time series were truncated to 1990 - 2025 to account for the start year of the bottom temperature dataset.

Environmental Variables

Environmental indices used in this analysis included bottom temperature (BT), sea surface temperature (SST), Gulf Stream Index, Atlantic Multidecadal Oscillation, North Atlantic Oscillation, and Warm Core Ring Index.

Sea surface temperature time series (Stock Specific and Basin Scale):

Sea surface temperature was sourced from the NOAA Daily Optimum Interpolation Sea Surface Temperature (DOISST; Huang et al. 2020;

<https://psl.noaa.gov/data/gridded/data.noaa.oisst.v2.highres.html>). The dataset extends from 1981 to the present. The data were formatted as monthly mean SST by winter flounder stock area.

The same long-term monthly sea surface temperature dataset was formatted as monthly mean SST spanning winter flounder stock areas for relating the distribution metrics that spanned the range of winter flounder in US waters.

Bottom temperature time series (Stock Specific and Basin Scale):

Bottom temperature (BT) was sourced from NOAA (Pontavice et al. 2023; <https://noaa-edab.github.io/tech-doc/bottom-temperature---glorys.html>). BT was derived from GLORYS, (Global Ocean Data Assimilated Models) and downloaded from the CMEMS (Copernicus Marine Service, <https://marine.copernicus.eu/>). Anomalies were calculated using a reference period from 1990 to 2020. The weighted mean was used by the area of each GLORYS grid cell to obtain the monthly mean bottom temperature by winter flounder stock area (Source: Joe Caracappa, NOAA). This same dataset was formatted as a monthly mean bottom temperature at the Northeast US Shelf scale for relating to winter flounder distribution metrics which span their range in US waters.

Gulf Stream Index (Basin Scale):

The Gulf Stream Index (GSI) time series was sourced from NOAA's ecodata and is the degrees latitude above the average Gulf Stream position based on ocean temperature at 200 m depth at areas between 55°W to 75°W (Joyce and Zhang 2010). Positive values represent a more northerly Gulf Stream, and negative values represent a more southerly Gulf Stream.

(<https://noaa-edab.github.io/ecodata/reference/gsi.html>)

Warm core ring time series (Basin Scale):

Gangopadhyay et al. (2020) analyzed a census of warm-core rings of the Gulf Stream from 1980 to 2017. This yearly census of Gulf Stream warm-core ring formation from 1980 to 2017 was sourced from this study and manually transformed to display the number of warm-core ring events per year across the time series. The number of warm-core ring formations was found to influence Georges Bank winter flounder stock dynamics (Kerr et al. 2022). (<https://www.bco-dmo.org/dataset/810182>)

North Atlantic Oscillation (Basin Scale):

The North Atlantic Oscillation (NAO) index is based on the difference in surface sea-level pressure between the Subtropical High and the Subpolar Low (NOAA 2025). A positive trend in NAO indicates a warming effect, and a negative NAO trend is linked to colder conditions.

(<https://www.ncei.noaa.gov/access/monitoring/nao/>)

Atlantic Multidecadal Oscillation (Basin Scale):

The Atlantic Multidecadal Oscillation index was accessed from NOAA and calculated from the Kaplan SST anomaly dataset (Enfield et al. 2001). This dataset is an index of North Atlantic air temperatures, and covers 1856 to January 2023. The “AMO unsmooth, long: Standard PSL Format” was used for the GAMs analysis, meaning that the data were raw and non-averaged, without any time-series smoothing applied, covering the entire historical period available, and in a standardized file format used by the NOAA

Physical Sciences Laboratory. (<https://psl.noaa.gov/data/timeseries/AMO/>)

Temporal Characterization of Environmental Variables:

Environmental drivers used for the GAMs analysis were summarized as 6 and 12-month means prior to the start of the NMFS spring and fall bottom trawl survey. The fall survey generally starts in September; therefore, the 12-month means spanned October to September, and the 6-month means spanned April to September. The spring survey generally begins in February; therefore, 12-month means spanned March to February, and 6-month means spanned September to February. This lag approach is based on methods used in Fredston-Hermann (2020) and ensures that the environmental data used in this analysis precedes the fisheries-independent survey data.

Statistical Analysis

Temporally lagged environmental indices were related to season-specific indicators of winter flounder stock dynamics using generalized additive models (GAMs). GAMs are a nonparametric form of

generalized linear models (GLMs) that can iteratively fit scatter-plot smoothers to nonlinear relationships with multiple explanatory variables (Hastie & Tibshirani 1990). The initial equations of GAMs are described in Table 2 and includes all candidate explanatory variables prior to their subsequent elimination in a backward elimination GAM function using the *mgcv* package in R (Wood 2023; version 1.9-1). The backward fitting technique used covariate (smoother) significance ($p < 0.05$) and AIC to select the best-fitting model for each response variable. Gaussian error distributions were adopted for analyses of log-transformed recruitment indices (both age-1 abundance and R/SSB), weight at age 1, condition, and distribution indices, as they follow normal bell-shaped distributions. The scaled t (*scat*) error family was used for weight at ages 2-7 (plus group) due to heteroskedasticity in the error terms.

To obtain the deviance explained for each individual smooth variable, the deviance explained of all significant variables together, excluding the chosen variable, was subtracted from the deviance explained of the full final model. This reduced model used the same smoothing parameters as the final model. This calculation is a commonly used approximation of individual drivers' deviance explained and should not necessarily add up to the final model's deviance explained.

Table 4.1. Explanatory Variables Used in GAMs. Explanatory variables examined in generalized additive models (GAMs) using environmental and stock data of winter flounder. GSI = Gulf Stream Index, AMO = Atlantic Multidecadal Oscillation, NAO = North Atlantic Oscillation, WCR = Warm Core Ring Index, BT = Bottom Temperature, SST = Sea Surface Temperature, SSB = Spawning Stock Biomass. Environmental variables were lagged 6 months and 12 months prior to the start of the widely used seasonal bottom trawl survey used for GAMs calculations (NMFS).

Recruitment	Distribution	Growth
GSI (6-month mean)	GSI (6-month mean)	GSI (6-month mean)
GSI (annual mean)	GSI (annual mean)	GSI (annual mean)
AMO (6-month mean)	AMO (6-month mean)	AMO (6-month mean)
AMO (annual mean)	AMO (annual mean)	AMO (annual mean)
NAO (6-month mean)	NAO (6-month mean)	NAO (6-month mean)
NAO (annual mean)	NAO (annual mean)	NAO (annual mean)
WCR (6-month mean)	WCR (6-month mean)	WCR (6-month mean)
WCR (annual mean)	WCR (annual mean)	WCR (annual mean)
BT (6-month mean)	BT (6-month mean)	BT (6-month mean)
BT (annual mean)	BT (annual mean)	BT (annual mean)
SST (6-month mean)	SST (6-month mean)	SST (6-month mean)
SST (annual mean)	SST (annual mean)	SST (annual mean)
SSB (annual mean) (in age 1 recruitment GAM only)	SSB is by stock only, not included in distribution GAMs	SSB (annual mean)

Table 4.2. Equations used in GAMs. Generalized additive model (GAM) equations developed for each winter flounder seasonal stock dynamic process, including all candidate explanatory variables explored. Each variable was assigned 5 knots to standardize models. The REML method was also applied to all models. The term s is a spline smoother and the following acronyms index environmental time series: GSI = Gulf Stream Index; AMO = Atlantic Multidecadal Oscillation; NAO = North Atlantic Oscillation; WCR = Warm Core Ring Index; BT = Bottom Temperature; SST = Sea Surface Temperature; SSB = Spawning Stock Biomass.

Stock Dynamic	Initial GAM Equation
Recruitment	$Recruits/SSB = s(SST) + s(BT) + s(GSI) + s(AMO) + s(NAO) + s(WCR)$
Recruitment	$Age\ 1\ Abundance = s(SST) + s(BT) + s(GSI) + s(AMO) + s(NAO) + s(SSB) + s(WCR)$
Distribution	$Mean\ Depth = s(GSI) + s(AMO) + s(NAO) + s(BT) + s(SST) + s(WCR)$
Distribution	$Mean\ Latitude = s(GSI) + s(AMO) + s(NAO) + s(BT) + s(SST) + s(WCR)$
Growth	$Weight\ at\ Age(1 - 11+) = s(BT) + s(SST) + s(GSI) + s(AMO) + s(NAO) + s(SSB) + s(WCR)$
Growth	$Condition\ Index = s(SST) + s(BT) + s(GSI) + s(AMO) + s(NAO) + s(SSB) + s(WCR)$

Results

Recruitment

Winter flounder recruitment exhibited variable responses to environmental drivers and climate forcing depending on the stock. Overall, temperature and circulation-related predictors emerged as the most influential drivers of recruitment, but the direction of these relationships varied by stock region.

Recruitment of Gulf of Maine winter flounder exhibited relationships with environmental drivers. Bottom temperature (12-month lag) was identified as a significant driver influencing age 1 recruitment based on the NEFSC fall survey, explaining 23% of variance (Fig. 4.1, Table 4.3). In addition, the Gulf Stream Index (6-month lag) was identified as having the largest partial effect on the MADMF spring Age 1 abundance index of winter flounder, explaining 39% of variance (Fig. 4.1, Table 4.3). Both of these factors exhibited a positive effect on winter flounder recruitment, with the shape of the curve indicating a possible threshold effect. Gulf of Maine winter flounder recruits per spawner (NEFSC fall survey) also showed a significant relationship with the GSI (6-month lag) with a varied trend in the response curve with the lowest R/SSB at intermediate GSI (18% deviance explained, Fig. 4.1, Table 4.3). SSB was not a significant predictor of Gulf of Maine winter flounder recruitment (Table 4.3).

Georges Bank winter flounder recruitment responses to environmental drivers were comparatively weaker than the other stocks. No final GAMs for recruitment (age 1 abundance) identified significant relationships with environmental variables (Table 4.3). Recruits per spawner (NEFSC fall survey) exhibited a positive relationship with both AMO (12-month lag: 15% deviance explained) and GSI (12-month lag: 8% deviance explained; Fig. 4.2, Table 4.3). In addition, the Georges Bank winter flounder spring index of recruits per spawner exhibited a strong, positive relationship with the WCR index (12-month lag), with 46% deviance explained by the trend (Fig. 4.2, Table 4.3).

Southern New England/Mid-Atlantic winter flounder recruitment was associated with both climate and thermal indices. SST (12-month lag) was an influential driver of age 1 abundance, explaining 22% of the variance and having a negative relationship with age-1 abundance from the MADMF spring survey (Fig. 4.3, Table 4.3). SST (12-month lag) was also a prominent driver of Age 1 abundance derived from the NEFSC spring survey, explaining 25% of the full model deviance, with a predominantly negative influence on recruitment (Fig. 4.3, Table 4.3). In contrast, the fall NEFSC survey Age 1 abundance index exhibited significant positive relationships with AMO (12-month lag; 19.1% deviance explained), NAO (12-month lag; 20% deviance explained), and WCR (12-month lag; 8% deviance explained; Fig. 4.3, Table 4.3). SSB was another significant positive driver for this particular survey index, explaining the most variance out of all explanatory variables (46% deviance explained; Fig. 4.3, Table 4.3). SST (12-month lag) was also a significant factor for Southern New England/Mid-Atlantic recruits per spawner, with 18% deviance explained in the fall and 25% in the spring with a positive relationship (Fig. 4.3, Table 4.3).

Table 4.3. Recruitment GAMs Summary. Summary of final recruitment models for winter flounder, including significant variables, deviance explained (DE) of full models and single predictors, error distribution family, P values of the smooth terms, and characterization of overall relationship trends (i.e., general directional trend over where the majority of the data observations occur in each rug plot).

Stock	Response Variable	Family	DE	Significant Predictors with Individual DE	P Values	Overall Relationship Trend
GOM	Age 1 NMFS Fall (log)	gaussian	0.23	BT (12mo, 0.23)	0.013	Positive
	Age 1 MADMF Spring (log)	gaussian	0.39	GSI (6mo, 0.39)	<0.001	Positive
	Fall R/SSB	gaussian	0.18	GSI (6mo, 0.18)	0.043	Varied
GBK	Fall R/SSB	gaussian	0.21	GSI (12mo, 0.08), AMO (12mo, 0.15)	0.043, 0.048	Positive Positive
	Spring R/SSB	gaussian	0.46	WCR (12mo, 0.46)	<0.001	Positive
SNEMA	Age 1 NMFS Fall (log)	gaussian	0.57	AMO (12mo, 0.19), NAO (12mo, 0.20),	<0.001, <0.001,	Positive Positive

Table 4.3 continued

				WCR (12mo, 0.08), SSB (0.46)	0.018, <0.001	Positive Positive
	Age 1 NMFS Spring (log)	gaussian	0.25	SST (12mo, 0.25), GSI (6mo, 0.07)	0.008, 0.047	Varied Positive
	Age 1 MADMF Spring (log)	gaussian	0.21	SST (12mo, 0.21)	0.001	Negative
	Fall R/SSB	gaussian	0.27	SST (12mo, 0.16), AMO (12mo, 0.10)	0.046, 0.028	Varied Positive
	Spring R/SSB	gaussian	0.25	SST (12mo, 0.25)	0.002	Positive

Gulf of Maine Recruitment

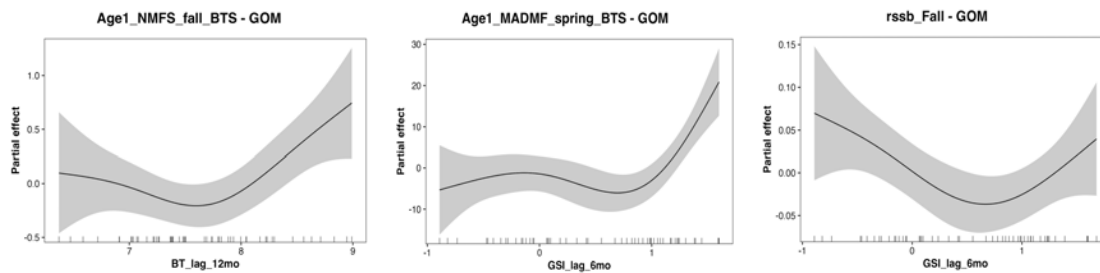


Figure 4.1. Gulf of Maine Age 1 GAM Results. Gulf of Maine Age 1 Abundance (no/tow) and R/SBB GAM analysis plots with significant predictors identified.

Georges Bank Recruitment

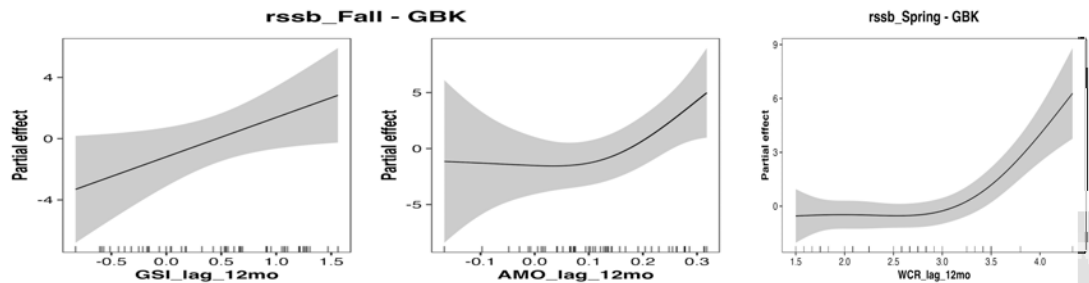


Figure 4.2. Georges Bank Recruits Per Spawner GAM Results. Georges Bank R/SBB GAM analysis plots with significant predictors identified (no models run for Age 1 abundance had significant results).

Southern New England/Mid-Atlantic Recruitment

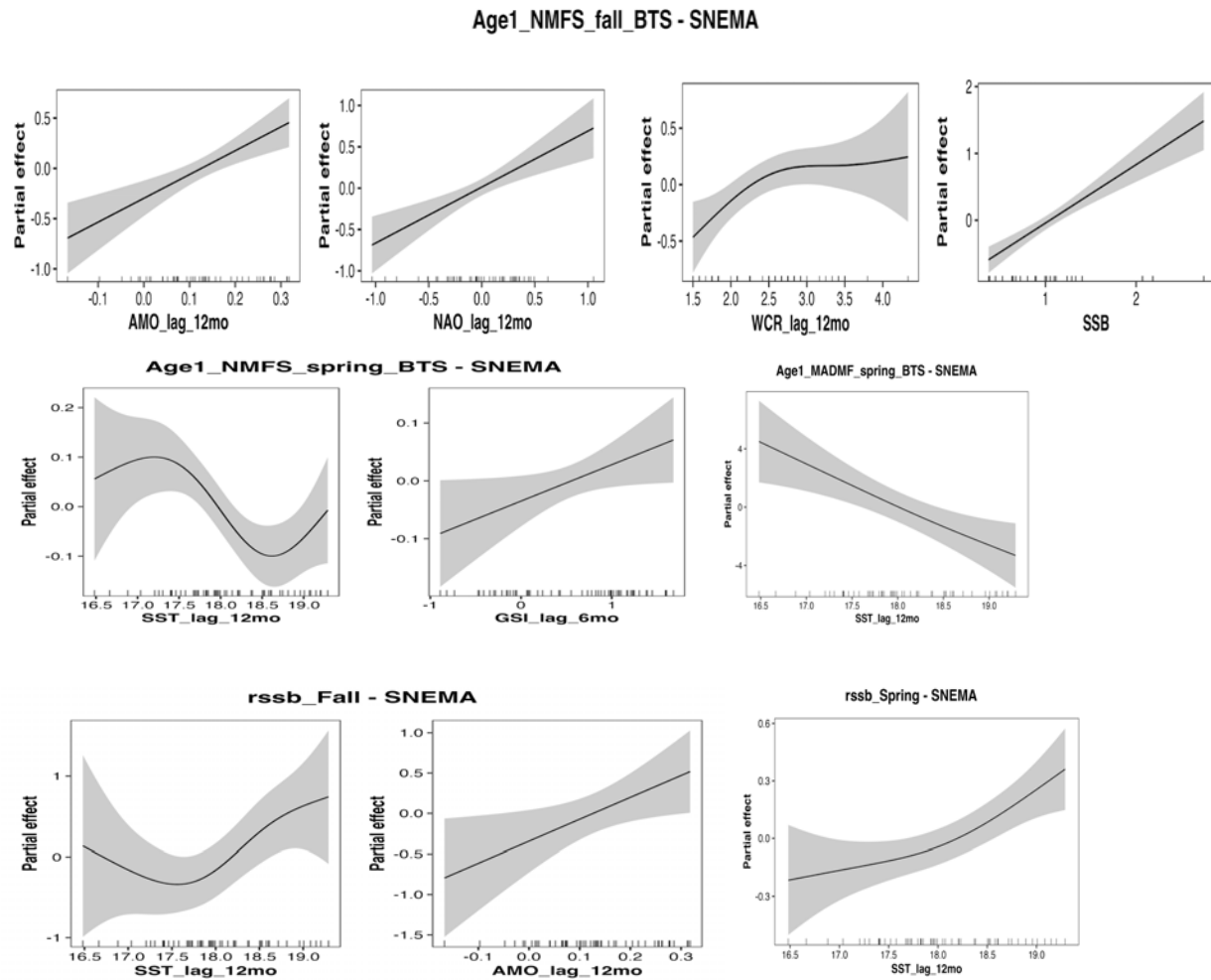


Figure 4.3. Southern New England/Mid-Atlantic Recruitment GAM Results. Southern New England/Mid-Atlantic Age 1 Abundance (no/tow) and R/SBB GAM analysis plots with significant predictors identified.

Growth

GAM results for winter flounder show distinct environmental and density-dependent drivers of growth across stock regions and life stages. Growth responses were mostly explained by variance in temperature, large-scale climate oscillations, Gulf Stream movement, and SSB.

In the Gulf of Maine, growth of early age classes was strongly linked to thermal and oceanographic processes. For weight-at-age (WAA) 1, the final model (62% total variance explained 62%) was driven mostly by BT (12-month lag), which showed a positive relationship with 33% deviance explained (Fig. 4.4, Table 4.4). SSB was an additional predictor (1% deviance explained) with a negative relationship, suggesting slight density-dependent growth (Fig. 4.4, Table 4.4). For WAA 2 (full model deviance explained 68%), BT (12-month lag; 8.6% deviance explained), GSI (12-month lag; 14.4% deviance explained), and the NAO (12-month lag; 3% deviance explained) were all identified as significant positive drivers (Appendix F, Table 4.4). SSB was a consistent negative predictor across WAA 1 to 4, and 6 (the WAA 5 model for Gulf of Maine was not significant and was not included in the final model table, Table 4.4). WAA 7 plus winter flounder (62% deviance explained) was driven by SSB (25% deviance explained), BT (12-month lag; 8.3% deviance explained) and WCR (12-month lag; 7.6% deviance explained; Fig. 4.4, Table 4.4). In contrast to positive trends at younger ages, BT had a negative influence on WAA at older ages and SSB had a varied relationship, although WCR had a positive influence. Relative condition of Gulf of Maine winter flounder served as another metric of growth and was significantly related to a sole predictor, WCR (12-month lag), with 61% deviance explained (Fig. 4.7, Table 4.4). The partial effect of the increased frequency of WCRs caused a negative trend in relative condition (Fig. 4.7).

Georges Bank winter flounder growth was largely driven by oceanographic processes. For the WAA 1 model (52% deviance explained), GSI (6-month lag; 27% deviance explained) showed a positive relationship, while SSB (25% deviance explained) showed a varied relationship (Fig. 4.5, Table 4.4). WAA 2 (52% deviance explained) exhibited a positive relationship with BT (12-month lag; 6.5% deviance explained) (Appendix F, Table 4.4). SSB (5.4% deviance explained) exhibited a varied relationship (Appendix F, Table 4.4). For WAA 3 (64% deviance explained), SSB was the most significant factor (25% deviance explained; Appendix G, Table 4.4). WCR (12-month lag) maintained a positive relationship

(11.2% deviance explained), while BT (6-month lag; 4%) and GSI (12-month lag; 3.3% deviance explained) both showed varied effects (Appendix G, Table 4.4). The WAA 4 model exhibited the highest deviance explained (71%) of all the WAA models (Appendix H, Table 4.4). It was dominated by SSB with 23% variance explained and a negative effect, and WCR (12-month lag), with 18% deviance explained and a positive relationship (Appendix H, Table 4.4). GSI (6-month lag) showed a varied relationship with 9.1% deviance explained (Fig. 4.5, Table 4.4). WAA 4 and 5 were both driven by SSB and WCR, (both 12-month lag) with WCR having a positive partial effect and SSB having a negative effect for both age groups (Appendix H and I, Table 4.4). BT (6-month lag) was present in the WAA 5 model with a negative relationship and explaining 6.3% variance (Appendix I, Table 4.4). For WAA 7 plus in Georges Bank, (final model 61% deviance explained), both BT (12-month lag; 8% deviance explained) and GSI (6-month lag; 20% deviance explained) had negative relationships (Fig. 4.5, Table 4.4). SSB showed a varied relationship with 15% deviance explained (Fig. 4.5, Table 4.4). Relative condition of Georges Bank winter flounder was driven by WCRs (12-month lag) with 61% deviance explained with a varied relationship, followed by BT (6-month lag; 3.5% deviance explained; positive effect) (Fig. 4.7, Table 4.4).

In the Southern New England/Mid-Atlantic stock, growth responses were more variable across ages. For WAA 1, (53% deviance explained), AMO (12-month lag; 18% deviance explained) showed a negative relationship, while WCR (12-month lag; 18% deviance explained) also showed a negative response (Fig. 4.6, Table 4.4). WAA 2 was driven by a sole predictor, WCR (12-month lag), explaining 64% of variance and driving a negative trend (Appendix F, Table 4). WAA 3 (16% deviance explained) had a single driver, NAO (12-month lag) that had a varied effect (Appendix G, Table 4.4). The final WAA 3 model had the weakest explanatory power of all Southern New England/Mid-Atlantic WAA models (Table 4.4). WAA 4 (46% deviance explained) had SSB (negative) and BT (12-month lag, varied) as drivers, explaining 23% and 18% of variance, respectively (Appendix H, Table 4.4). WAA 5 (37% deviance explained)

included three drivers: GSI (12-month lag; 16% deviance explained), AMO (6-month lag; 13% deviance explained), and NAO (6-month lag; 12% deviance explained), all of which had a positive relationship with winter flounder WAA (Appendix I, Table 4.4). WAA 6 indicated two significant predictors, WCR (12-month lag; positive) that explained 33% of variance and GSI (12-month lag; varied), which explained 11% of variance in the model (Appendix J, Table 4.4). The WAA 7 Plus group model had three significant covariates with varied and negative relationships: SSB, AMO (12-month lag), and GSI (6-month lag), explaining 9.5%, 4.8%, and 3.3% of variance, respectively (Fig. 4.6, Table 4.4). The relative condition final model had 33% deviance explained, with GSI and SSB as the main predictors (Table 4). SSB explained 22% of the overall variance with a varied trend, while GSI (12-month lag) explained 28% of variance with a positive trend (Fig. 4.7, Table 4.4).

Table 4.4. Growth GAMs Summary. Summary of final growth models for winter flounder, including significant variables, deviance explained (DE) of full models and single predictors, error distribution family, P values of the smooth terms, and characterization of overall relationship trends (i.e., general directional trend over where the majority of the data observations occur in each rug plot).

Stock	Target	Family	DE	Significant Predictors with individual DE	P Values	Overall Relationship Trend
GOM	Weight at Age1	gaussian	0.62	BT (12mo, 0.33), NAO (6mo, 0.004), SSB (0.01)	<0.001, 0.034, 0.017	Positive Positive Negative
	Weight at Age2	scaled t	0.68	BT (12mo, 0.09) GSI (12mo, 0.14) NAO (12mo, 0.03) SSB (0.13)	0.010, <0.001, 0.033, <0.001	Positive Positive Positive Negative
	Weight at Age3	scaled t	0.54	GSI (12mo, 0.12), NAO (12mo, 0.11), WCR (12mo, 0.083), SSB (0.074)	0.003, <0.001, 0.008, 0.002	Positive Positive Varied Negative
	Weight at Age4	scaled t	0.31	AMO (12mo, 0.088), NAO (12mo, 0.062), SSB (0.032)	0.002, 0.004, 0.003	Positive Positive Negative
	Weight at Age6	scaled t	0.59	WCR (12mo, 0.21), SSB (0.17)	0.004, 0.003	Varied Negative
	Weight at Age7 Plus	scaled t	0.62	BT (12mo, 0.083), WCR (12mo, 0.076), SSB (0.25)	0.025, 0.007, <0.001	Negative Varied Varied
GBK	Weight at Age1	gaussian	0.52	GSI (6mo, 0.27), SSB (0.29)	<0.001, <0.001	Positive Varied

	Weight at Age2	scaled t	0.52	BT (2mo, 0.065), GSI (6mo, -0.14*), WCR (12mo, 0.01), SSB (0.054)	0.003, 0.027, <0.001, 0.014	Positive Positive Positive Varied
	Weight at Age3	scaled t	0.64	BT (6mo, 0.04), GSI (12mo, 0.033), WCR (12mo, 0.11), SSB (0.25)	0.050, 0.014, <0.001, <0.001	Varied Varied Positive Negative
	Weight at Age4	scaled t	0.71	GSI (6mo, 0.09), WCR (12mo, 0.18), SSB (0.23)	0.007, <0.001, <0.001	Varied Positive Negative
	Weight at Age5	scaled t	0.66	BT (6mo, 0.063), WCR (12mo, 0.22), SSB (0.26)	0.047, <0.001, <0.001	Negative Positive Negative
	Weight at Age6	scaled t	0.49	BT (12mo, 0.18), AMO (12mo, 0.06)	<0.001, 0.031	Negative Positive
	Weight at Age7 Plus	scaled t	0.61	BT (12mo, 0.08), GSI (6mo, 0.20), SSB (0.15)	0.011, 0.002, 0.009	Negative Negative Varied
SNEMA	Weight at Age1	gaussian	0.53	AMO (12mo, 0.18), WCR (12mo, 0.18)	0.005, 0.008	Negative Negative
	Weight at Age2	scaled t	0.64	WCR (12mo, 0.64)	<0.001	Negative
	Weight at Age3	scaled t	0.16	NAO (12mo, 0.16)	0.009	Varied
	Weight at Age4	scaled t	0.46	BT (12mo, 0.18), SSB (0.23)	0.016, <0.001	Varied Negative
	Weight at Age5	scaled t	0.37	GSI (12mo, 0.16), AMO (6mo, 0.13), NAO (6mo, 0.12)	0.022, 0.004, 0.023	Positive Positive Positive
	Weight at Age6	scaled t	0.45	GSI (12mo, 0.11), WCR (12mo, 0.33)	0.043, <0.001	Varied Positive
	Weight at Age7 Plus	scaled t	0.44	GSI (6mo, 0.033), AMO (12mo, 0.048), SSB (0.095)	<0.001, <0.001, 0.001	Negative Varied Varied
GOM	Relative Condition	gaussian	0.61	WCR (12mo, 0.61)	<0.001	Varied
GBK	Relative Condition	gaussian	0.71	BT (6mo, 0.035), WCR (12mo, 0.61)	0.024, <0.001	Positive Varied
SNEMA	Relative Condition	gaussian	0.33	GSI (12mo, 0.28), SSB (0.22)	0.002, 0.030	Positive Varied

*Negative deviance explained implies that there is strong collinearity or fit instability for that variable □

Gulf of Maine Weight at Age 1 and 7 (Plus Group)

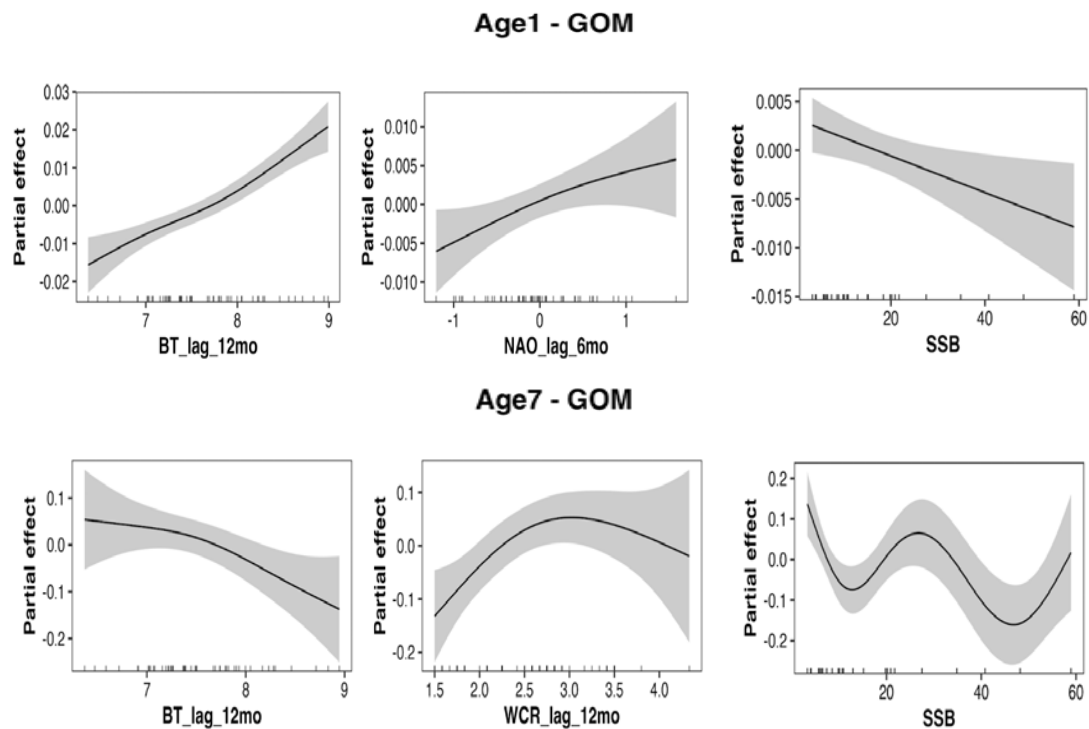


Figure 4.4. Gulf of Maine Weight at Age 1 and 7 GAM Results. Gulf of Maine Weight at Age 1 and 7 Plus final GAMs analysis results with significant predictors identified.

Georges Bank Weight at Age 1 and 7 (Plus Group)

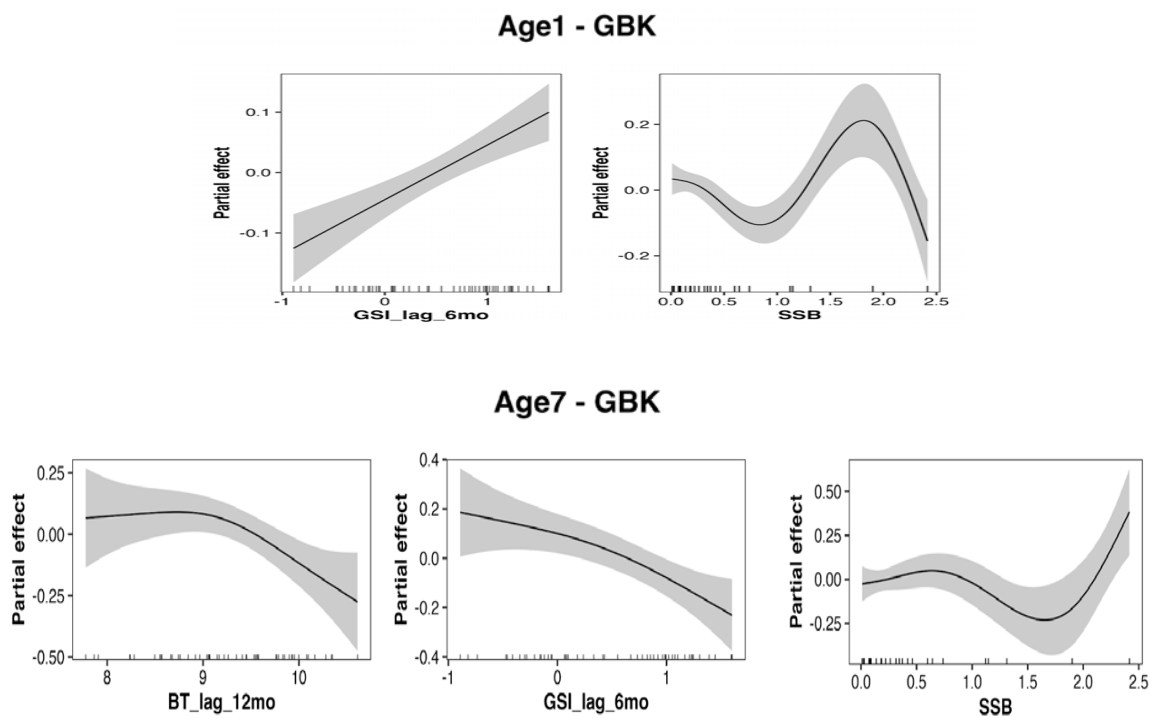
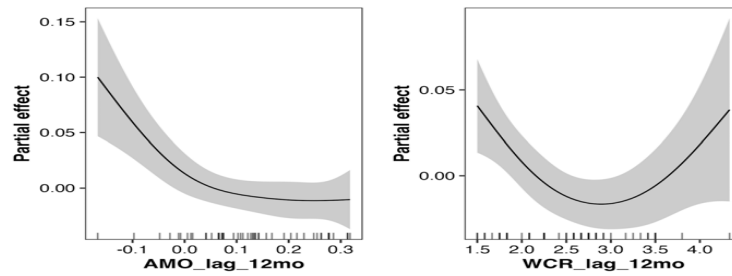


Figure 4.5. Georges Bank Weight at Age 1 and 7 GAM Results. Georges Bank Weight at Age 1 and 7 Plus final GAMs analysis results with significant predictors identified.

Southern New England-Mid/Atlantic Weight at Age 1 and 7 (Plus Group)

Age1 - SNEMA



Age7 - SNEMA

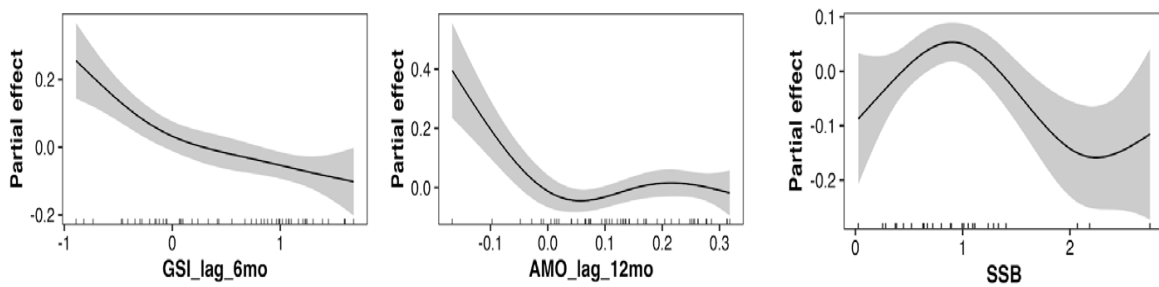


Figure 4.6. Southern New England/Mid-Atlantic Weight at Age 1 and 7 GAM Results. Southern New England/Mid-Atlantic Weight at Age 1 and 7 Plus final GAMs analysis results with significant predictors identified.

Winter Flounder Relative Condition

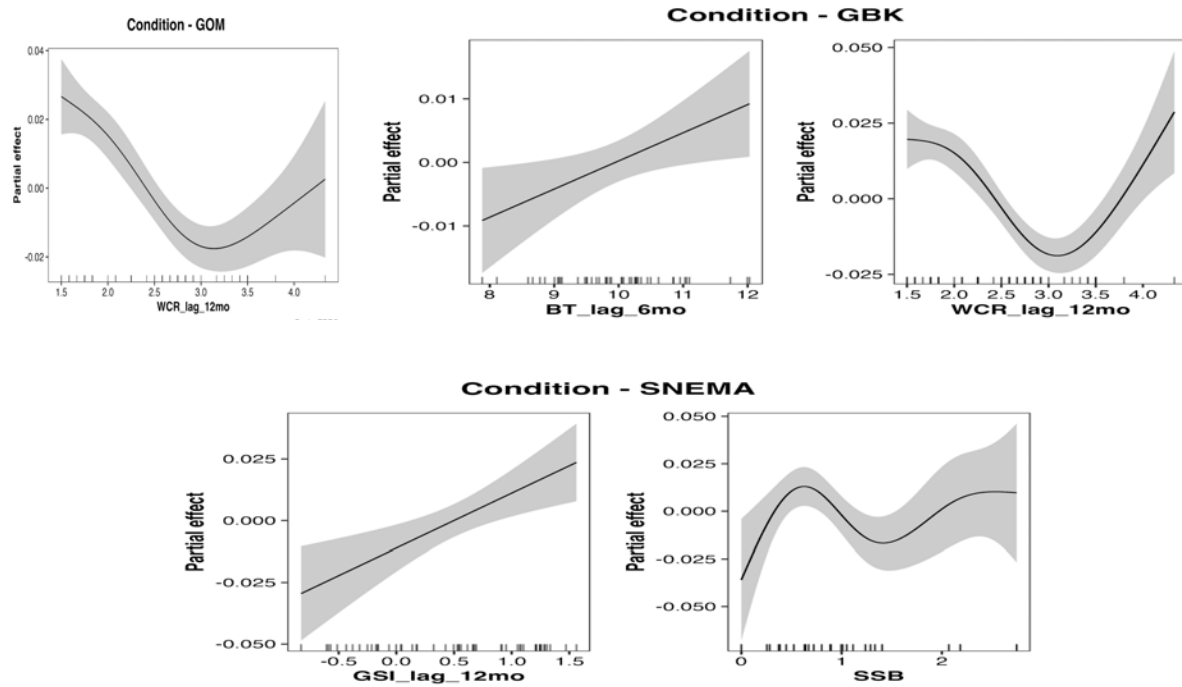


Figure 4.7. Relative Condition GAM Results. Final GAM results of Relative Condition of Winter Flounder with significant predictors identified.

Distribution

The final winter flounder species-wide distribution GAMs showed strong relationships between climate drivers and spatial shifts of winter flounder with seasonally specific behaviors (Table 5). Most identified drivers were associated with increasing depth, as well as a northward shift in the distribution of winter flounder.

The final models for mean depth had strong explanatory power, explaining 66% (fall) and 50% (spring) of the total variance (Table 4.5), which demonstrates the sensitivity of winter flounder to environmental drivers influencing their seasonal vertical distribution. Fall depth was influenced by four interacting environmental drivers. SST (6-month lag) was the largest contributor (16% deviance explained), but showed a varied trend (Fig. 4.8, Table 4.5). This suggests that a threshold exists for winter flounder's response to warming surface waters. Once crossed, winter flounder mean depth increased.

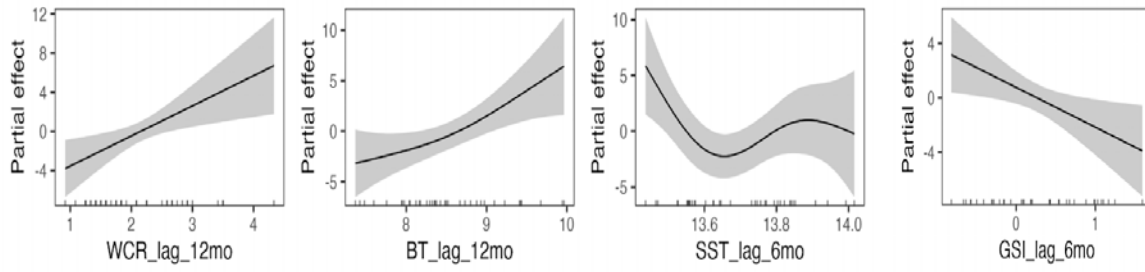
Both WCRs (12-month lag; 4% deviance explained) and BT (12-month lag; 9% deviance explained) showed a positive relationship on winter flounder depth (Fig. 4.8, Table 4.5), implying that the frequency of WCRs and increased BT also increased winter flounder mean depth distribution. Conversely, the GSI (6-month lag; 7% deviance explained) exhibited a negative relationship (Fig. 4.8, Table 4.5), implying that a more northern Gulf Stream can shift winter flounder populations to shallower waters. The spring depth model was dominated by SST (12-month lag), which individually explained 48% of the variance (Fig. 4.8, Table 4.5). The strong positive relationship between SST and the NAO index (6-month lag, 20% deviance explained) suggests strong coupling of environmental drivers that influence winter flounder mean depth, pushing the center of gravity towards deeper waters (Fig. 4.8, Table 4.5).

Winter flounder's latitudinal models show a significant linkage between climate forcing and a poleward shift in species range. The fall mean latitude model was the most predictive model in all distribution results, accounting for 79% of the variance (Fig. 4.9, Table 4.5). This model was almost entirely driven by the influence of SST (6-month lag), which individually explained 76% of the variance (Fig. 4.9, Table 4.5). The response of increasing SST on winter flounder latitudinal distribution shows evidence of a threshold beyond which movement is driven northward (Fig. 4.9, Table 4.5). The AMO (8% deviance explained) has a varied effect, associated with shifts northward up to a point followed by a shift in directionality (Fig. 4.9, Table 4.5). The spring latitude model (51% deviance explained) was also driven primarily by SST (12-month lag), which individually accounted for 50% of the variance (Fig. 4.9, Table 4.5). SST was a positive driver of winter flounder latitudinal movement northward (Fig. 4.9, Table 4.5). The NAO index was also a significant driver, with 17% of the deviance explained and a varied trend (Fig. 4.9, Table 4.5), suggesting that there is a threshold of increased thermal pressure impacting winter flounder latitudinal movement in the spring.

Table 4.5. Distribution GAMs Summary. Summary of final distribution models for winter flounder, including significant variables, deviance explained (DE) of full models and single predictors, error distribution family, P values of the smooth terms, and characterization of overall relationship trends (i.e., general directional trend over where the majority of the data observations occur in each rug plot).

Response Variable	Family	DE	Significant Predictors with Individual DE	P Values	Overall Relationship Trend
Fall COG Depth (abs value)	gaussian	0.66	WCR (12mo, 0.04) BT (12mo, 0.09) SST (6mo, 0.16) GSI (6mo, 0.07)	0.0011, 0.030, 0.022, 0.023	Positive (Deeper) Positive (Deeper) Varied Negative (Shallower)
Spring COG Depth (abs value)	gaussian	0.50	SST (12mo, 0.48), NAO (6mo, 0.20)	<0.001, 0.026	Positive (Deeper) Positive (Deeper)
Fall COG Lat	gaussian	0.79	SST (6mo, 0.76), AMO(6mo, 0.08)	<0.001, 0.030	Varied Varied
Spring COG Lat	gaussian	0.51	SST (12mo, 0.50), NAO (6mo, 0.17)	<0.001 0.043	Positive Varied

Fall COG Depth



Spring COG Depth

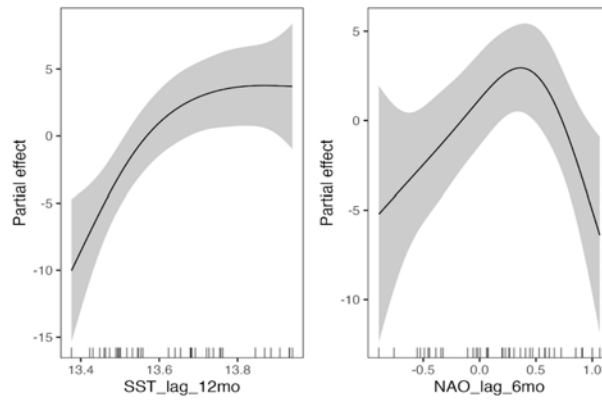


Figure 4.8. Depth Center of Gravity GAM Results. Center of Gravity of winter flounder depth in the fall (top) and spring (bottom) GAM analysis results. The absolute value of the negative depth values were taken prior to the analysis, therefore, a positive trend = increasing depth (deeper), and a negative trend = decreasing depth (shallower).

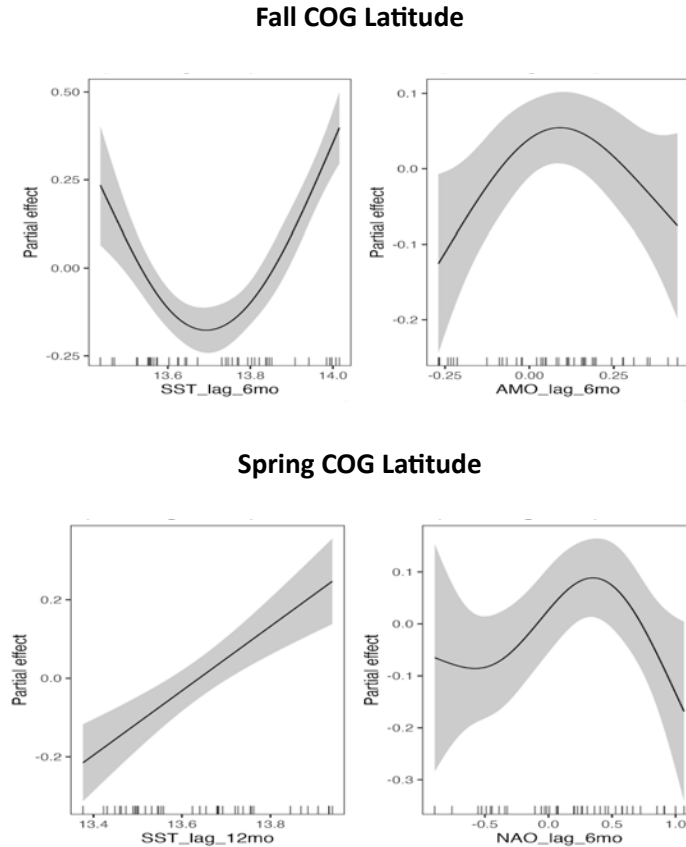


Figure 4.9. Latitude Center of Gravity GAM Results. Center of Gravity of winter flounder latitude in the fall (top) and spring (bottom) GAM analysis results. A positive trend = shift northward, whereas a negative trend = shift southward.

Discussion

The Northeast U.S. continental shelf ecosystem supports abundant and diverse living marine resources that many coastal communities in New England rely upon. Over the last 40 years, the Northwest Atlantic has undergone unprecedented change, impacting both marine and human communities (Pershing et al. 2015, Townsend et al. 2023). This study used GAM analysis to examine the potential drivers of winter flounder stock dynamics (i.e., recruitment, growth, and distribution) in US waters. Overall, the results indicate that winter flounder are responsive to dynamic ocean conditions and have stock-specific relationships with environmental drivers and density dependence. Results from this study suggest that there is no sole climate/ecosystem driver with complete control over winter flounder

stock dynamics and productivity. While some drivers have subtle effects on the fishery resource, others are more impactful, and their combined effect has the potential to change the trajectory of winter flounder stock productivity.

Gulf of Maine winter flounder stock dynamics are influenced by both thermal factors and oceanic circulation. The relationship that both the GSI and BT have on recruitment in this stock suggests that recruitment success is tied to oceanic currents. Since winter flounder larvae are pelagic (Pearcy 1962) and are more influenced by ocean current movement, drivers of circulation could have an effect on dispersal and phenology of younger year classes. Results also showed environmental effects on age-specific growth in the Gulf of Maine. The strong, positive effect of BT on younger fish (Age 1) growth contrasts sharply with the negative response to BT at the oldest age classes. This suggests a thermal tolerance to growth, and that winter flounder being exposed to variable temperatures at different points in their life history can affect their fitness and function in the ecosystem (Pörtner 2010). There is also evidence of density dependence in this stock, with SSB significantly influencing the growth and distribution trends of Gulf of Maine winter flounder. Together, these findings highlight that Gulf of Maine winter flounder are increasingly responding to both thermal and circulation changes, which have the potential to alter recruitment, growth potential, and habitat use under a changing climate.

Georges Bank winter flounder showed a high sensitivity to the WCR index in all aspects of stock-specific dynamics analyzed in this study, as well as clear density dependence in their growth. In the recruitment model, the high deviance explained by the number of WCRs suggests a strong coupling between physical oceanographic variability and environmental drivers influencing winter flounder recruitment. The positive association between WCRs and recruits per spawner could mean that WCRs are a consistent facilitator of export and flow of warm water eddies from the Gulf Stream, where spawning winter flounder are located in Georges Bank (Aretxabaleta et al. 2005). Another important

driver with a positive influence on winter flounder recruitment was the AMO, which is known to link fish productivity with long-term shifts in zooplankton community structure (Greene et al. 2012). This suggests that a warmer AMO regime could improve Georges Bank recruitment by positively impacting early-age winter flounder food sources. Winter flounder growth for Ages 3, 4, and 5 in Georges Bank is positively correlated with the number of WCRs and negatively correlated with SSB, suggesting strong density dependence, as well as a large-scale flow-regime influence on growth.

The Southern New England/Mid-Atlantic stock is at the southern limit of winter flounder's spatial distribution, and therefore exhibits strong responses to thermal and physical drivers. The finding that SST is a primary negative driver of Age 1 recruitment in Southern New England/Mid-Atlantic supports studies indicating that estuarine temperature variability can lead to reduced recruitment success (Able et al. 2014). Additionally, both NAO and AMO had a positive effect on Southern New England/Mid-Atlantic recruitment, indicating that multiple drivers are associated with recruitment success in this region. Environmental effects on age-specific growth in Southern New England/Mid-Atlantic were also apparent in my results. For example, the relationship between the number of WCRs and WAA 2 to 6, moving from a negative to strongly positive effect over a few year classes shows winter flounder's physiological sensitivity to ecosystem drivers throughout their life history.

While thermal and circulation patterns have stock-specific effects on certain life history dynamics of winter flounder, ecosystem drivers have also been identified as a mechanism for the spatial contraction of winter flounder over time. The analysis of the environmental drivers of species-wide distribution shifts (seasonal COG depth and latitude) provides clear evidence of winter flounder's range inhabiting more northern, deeper waters. Additionally, this analysis identifies the primary ecosystem drivers that impact winter flounder seasonally. SST was highlighted as the most influential driver of

winter flounder latitudinal shifts, including a threshold for spatial movement response from the species. Concurrently, the vertical habitat use of winter flounder in the water column is highly dynamic, with multiple interacting drivers identified. While the spring mean depth model showed how warming conditions drive the species to move deeper, the complexity in the drivers identified in the fall model suggests a thermal trade-off. While increasing BT and WCRs promote deeper distribution shifts, the latitudinal position of the Gulf Stream has a contrasting partial effect, suggesting that a more northerly Gulf Stream can cause winter flounder populations to shift to shallower waters. Overall, the distribution analysis of winter flounder confirms that the species is utilizing both latitude and depth spatial areas to survive in a rapidly changing ecosystem.

Reviewing the results of this GAM analysis, winter flounder stock dynamics appear to be influenced by density-dependent processes in addition to ecosystem drivers. This was apparent in the recruitment and growth final models, where SSB had a mostly negative or varied (indicating a possible threshold) partial effect. Compensatory density dependence implies that a population's growth rate slows at high densities and subsequently increases at lower densities (Rose et al. 2002). Compensatory density dependence can act to stabilize populations, whereas depensatory density dependence tends to accelerate population decline for depleted populations (Rose et al. 2002). This study reveals a predominantly negative relationship between SSB and stock dynamics, such as growth and recruitment, supporting the presence of compensatory density dependence. This pattern suggests that reductions in biomass could lead to increased individual growth and recruitment rates; therefore, managers might expect population biomass to increase following periods of lower stock abundance. Density dependence, coupled with the identified environmental variables driving winter flounder productivity, is contributing to the species' inability to recover to its historic abundance following overfishing conditions.

Climate drivers are not the only ecosystem aspects that can impact winter flounder stock dynamics. With continued warming of the Gulf of Maine and surrounding regions, future research is needed to better understand the full effects of increased competition and predation on winter flounder stocks. In some situations, climate is not the sole factor responsible for declining populations. Beaumont et al. (2008) attributes the decline in winter flounder at the southern extent of their range partly to broader ecosystem shifts that include resident demersal species being replaced by pelagic species due to both climate and overfishing. This could also be contributing to the retreat of winter flounder from their southern species limit. Winter flounder may be experiencing decreased fitness due to a combination of climate variation and resource competition (Nicholson 1933). This suggestion aligns with ecosystem-based fisheries management (EBFM), in which multiple fish stocks and their ecosystem drivers can be analyzed together in stock assessments, leading to more ecosystem-informed management decisions (Large et al. 2015).

Limitations of this Study

While GAMs are a very useful tool to show the non-linear and sometimes indirect relationship between environmental drivers and fish stock dynamics, there are a few limitations to the method. One caveat of this approach is the potential for collinearity and correlations between environmental predictors in the model. This is seen with most thermal and oceanographic-related drivers. The oceanic indices (GSI, WCR, AMO, and NAO) and the local stock variables of SST and BT are driven by the same large-scale atmospheric patterns. Therefore, high concavity is expected in this type of analysis. Due to the specific life history of winter flounder that is captured in spring and fall surveys, these similar environmental variables were grouped together in the backward-elimination GAM function. Results of a correlation analysis that compared the potentially colinear environmental predictors to one another using a threshold of 0.7 showed that only SST and BT were highly correlated (0.90 and above depending

on the lag comparison), as well as the 12- and 6- month lags of the same variable. No final models included both BT and SST as significant predictors. Another modification was made to the function to prevent the final model from including both lagged versions of the same variable, thereby further maximizing the individual explanatory power of each significant driver. The exploration of the significant effects of variables lagged at different time intervals has the potential to provide a clearer understanding of the scale at which environmental drivers affect winter flounder productivity. Further analysis is recommended, using different lag times with an underlying ecological basis (e.g., SST lagged according to spawning times for each stock).

Given the potential for concurvity among the environmental drivers chosen in this analysis, the final interpretation of the results should be specifically framed. Results should indicate correlation, not causation, between environmental drivers and winter flounder stock dynamics. As such, the individual deviance explained reported for each predictor in the results of this analysis should not be treated as the isolated effect of a sole variable. Instead, the final interpretation of this study should be focused on the collective explanatory power of the final models. The total deviance explained should be interpreted as the influence of a suite of environmental drivers working together to impact winter flounder stock dynamics, as this acknowledges the inherent connection between these environmental drivers and the specific ecosystem sensitivities within winter flounder's unique life history strategies.

A recommendation for further analysis of environmental effects on winter flounder productivity is to explore the relationships using different survey indices of recruitment, growth, and stock-specific distribution. Results may show different non-linear relationships that should also be considered in stock assessment.

Application to Stock Assessment and Management

Failure to account for the non-linear, variable, and coupled effects of environmental and density drivers, as highlighted by this GAM analysis, introduces significant and lasting uncertainty into the stock assessment and modeling process for scientists and fisheries managers. The relationship among these many drivers and their effects on winter flounder during critical life stages must be addressed to accurately represent and analyze winter flounder populations in stock assessments. Specific recommendations based on this analysis that would be useful to the stock assessment modeling process are to explore GSI and BT for the Gulf of Maine, WCRs for Georges Bank, and SST and SSB on Southern New England/Mid-Atlantic. These variables provided the most variance explained across stock dynamics processes in the final models of this analysis.

Given these often-varied effects on winter flounder population dynamics, winter flounder populations are at risk of being inaccurately modeled in stock assessments. This highlights the importance of this study in gaining a more holistic understanding of the impacts of changing ocean conditions on the winter flounder fishery. This research sets a precedent for mitigating further uncertainty in the stock assessment process, thereby achieving a sustainable fishery, while providing economic stimulation and maintaining stability within the fishery community for the foreseeable future.

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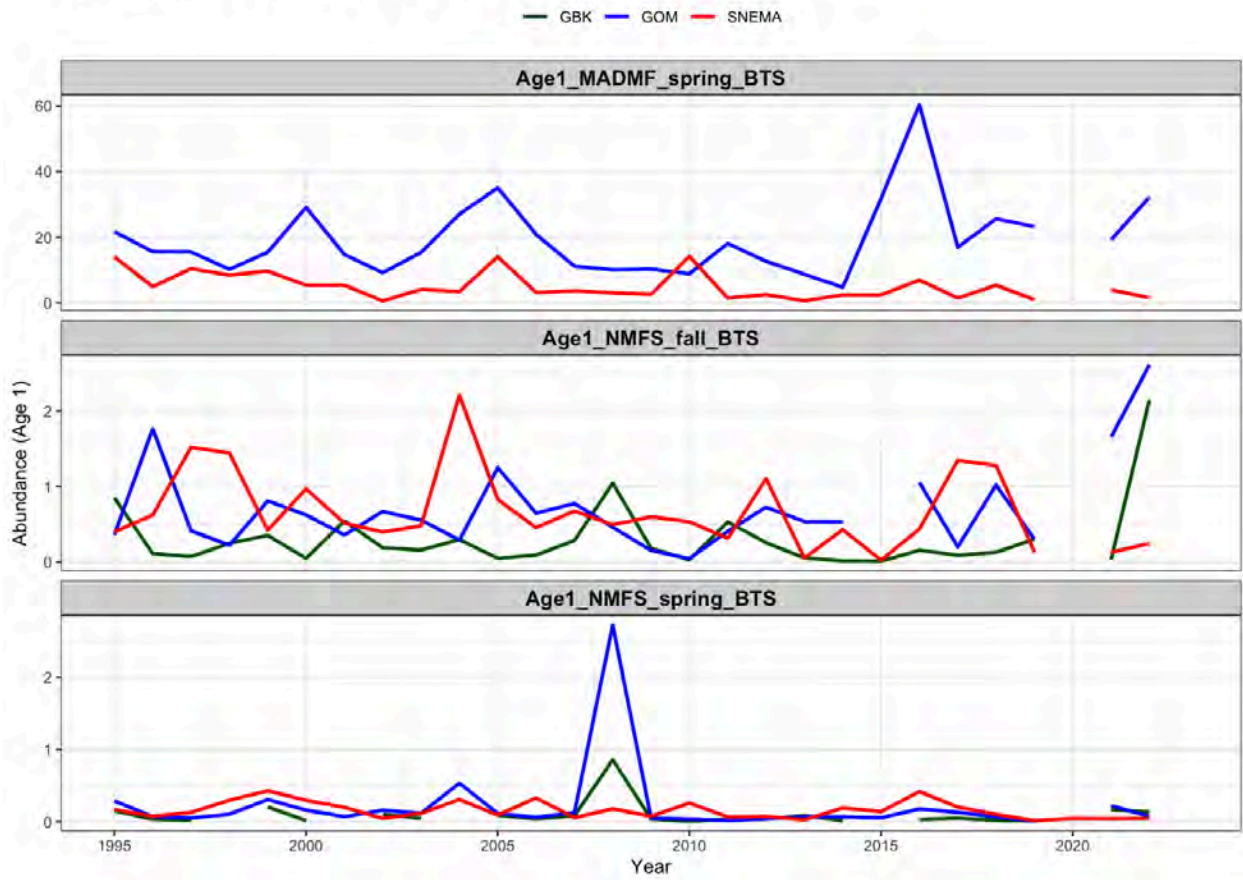
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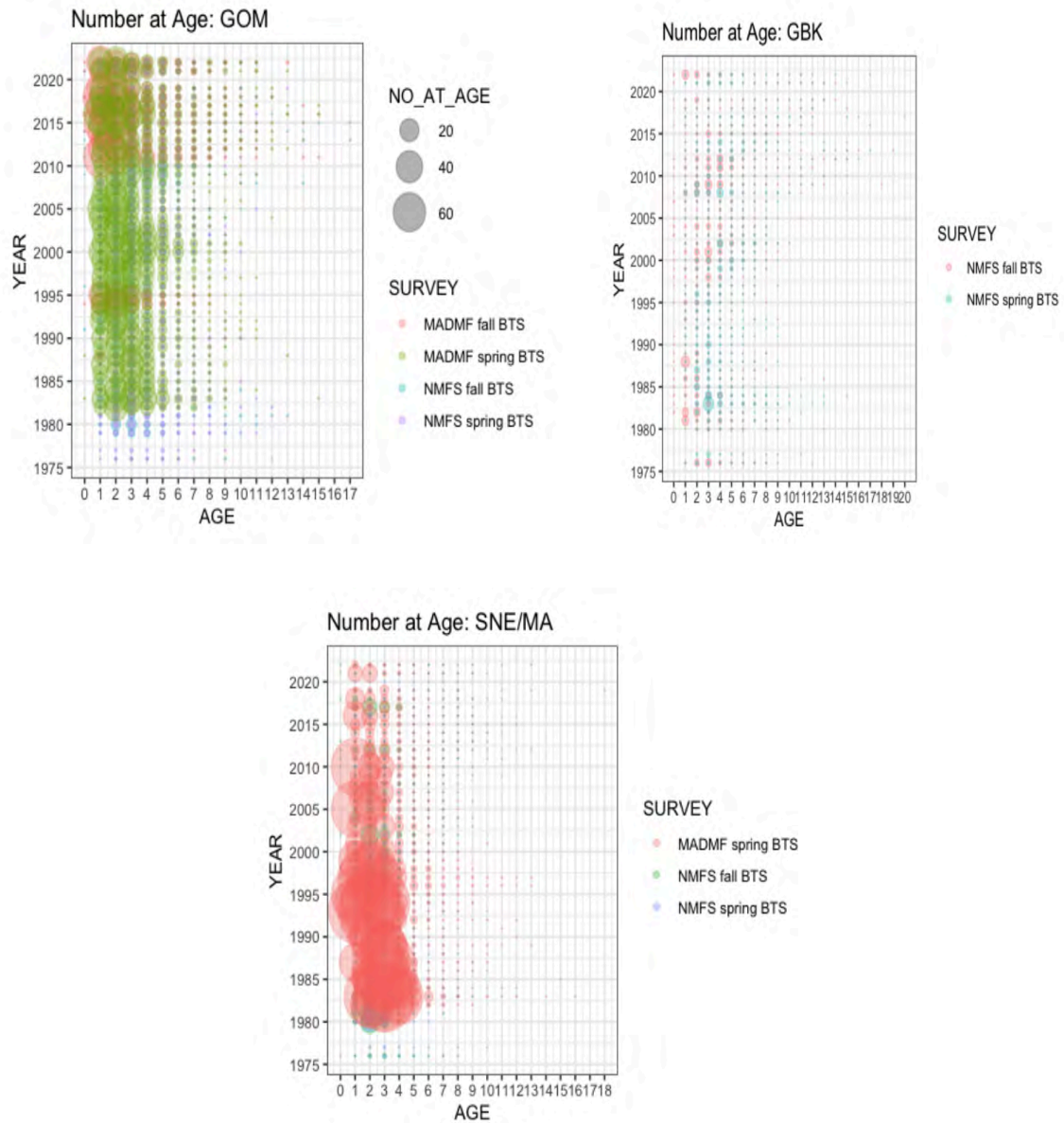
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APPENDIX

Age-1 Abundance Across Surveys by Stock



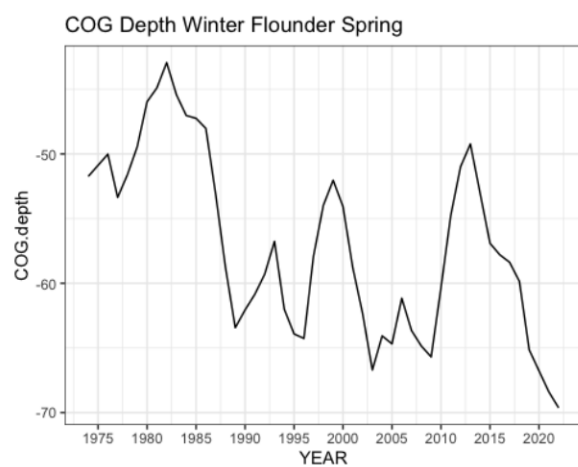
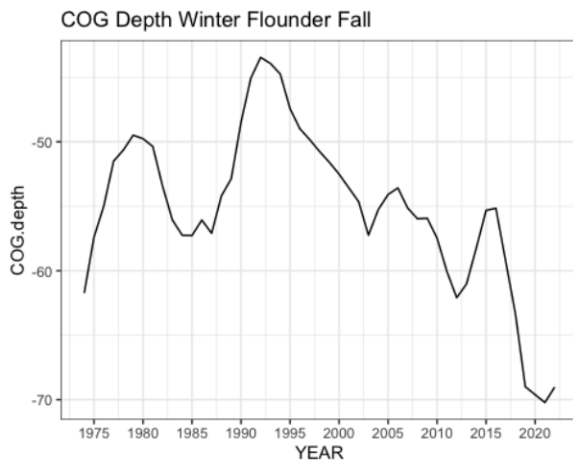
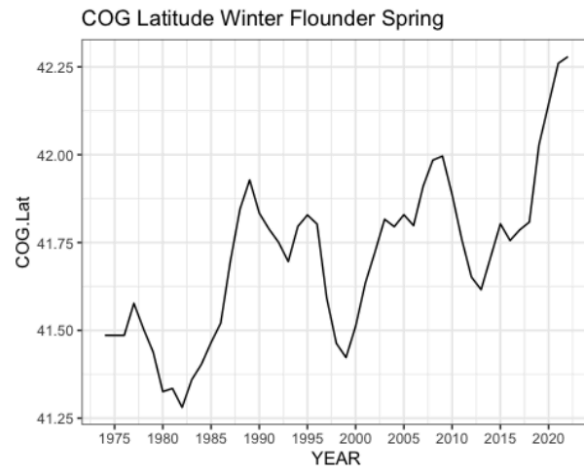
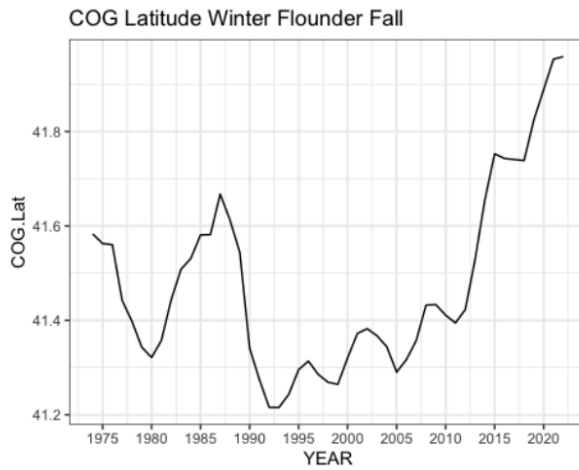
Appendix A. Numbers at Age 1 of Winter Flounder. Numbers at age 1 (abundance) recruitment indices for all winter flounder stocks by survey index.



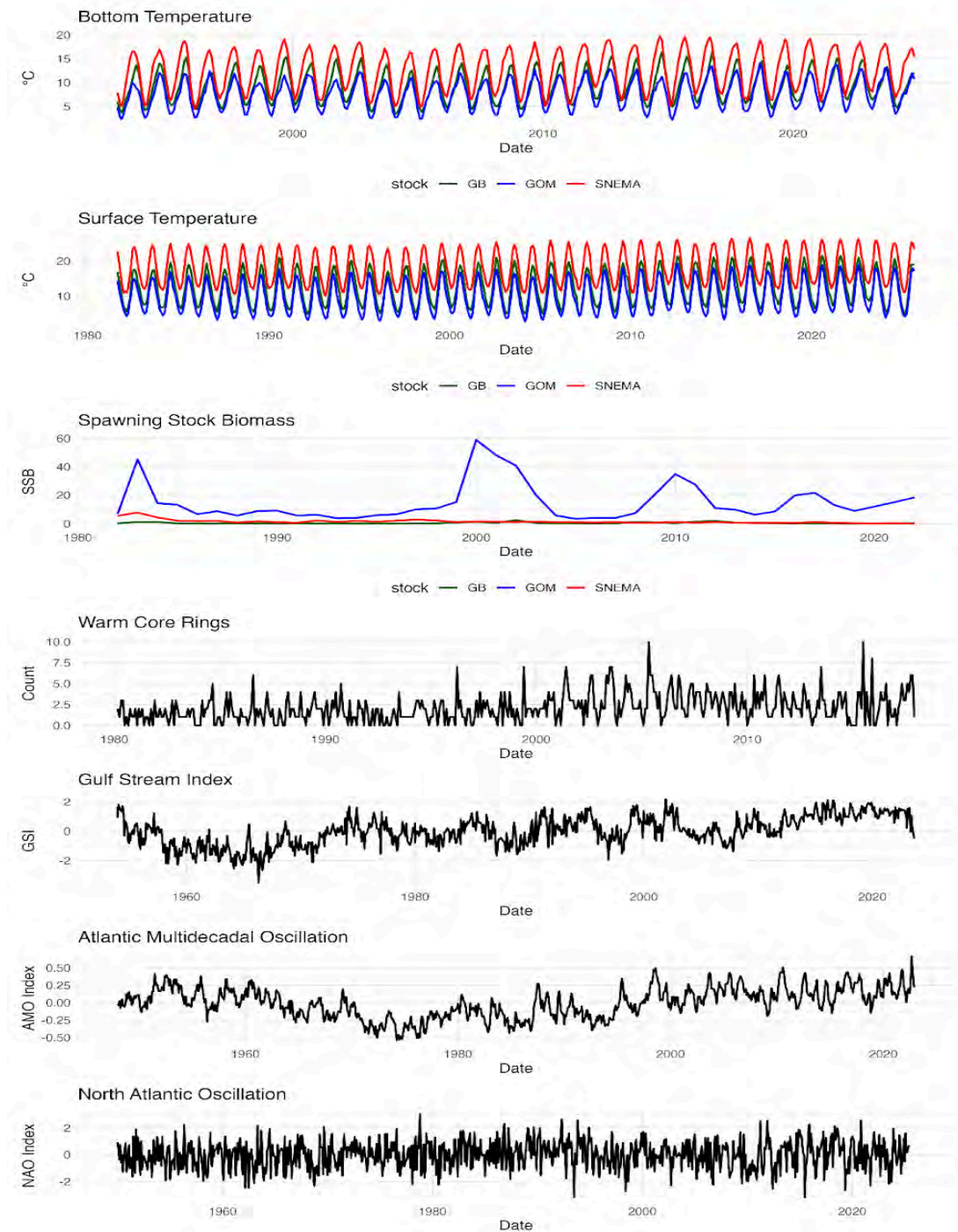
Appendix B. Numbers at Age of Winter Flounder. Numbers at Age for all three winter flounder stocks, labeled by survey index.



Appendix C. Weight at Age of Winter Flounder. Weight at Age (average kg/tow) of each winter flounder stock. "Age 7" represents the Age 7 Plus group

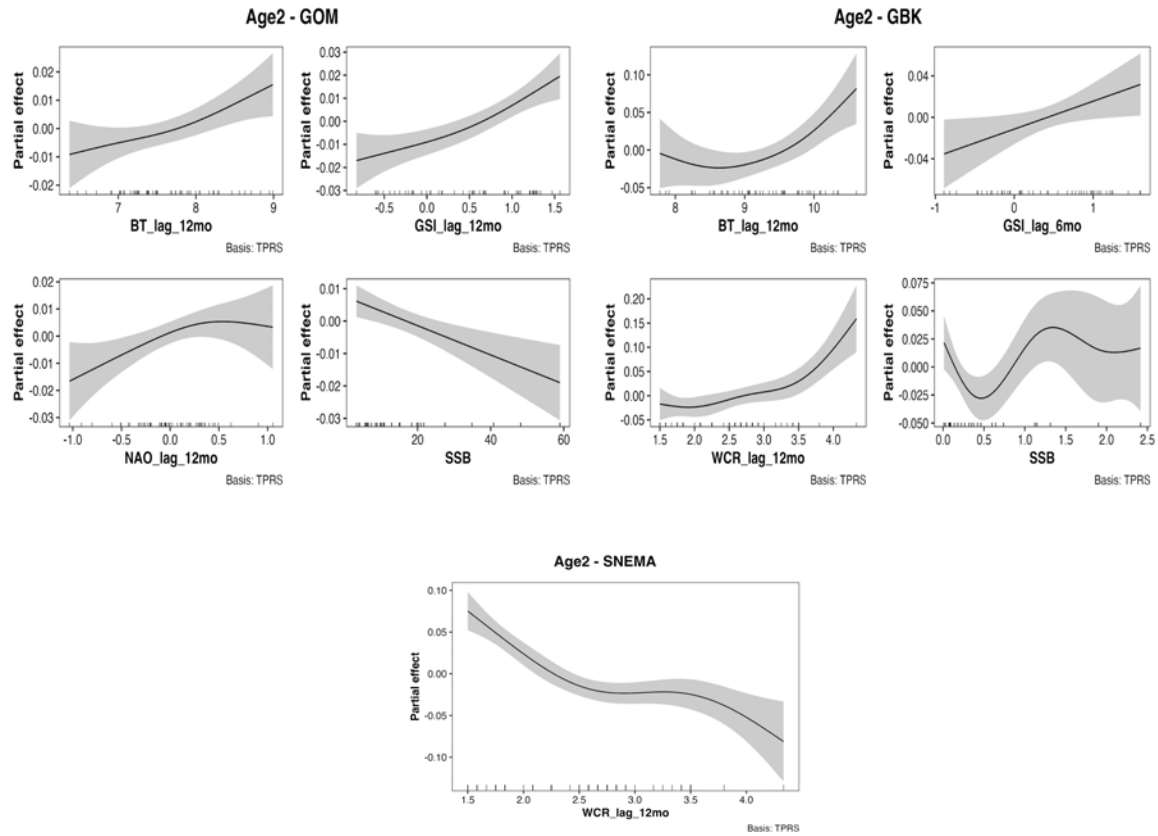


Appendix D. Distribution of Winter Flounder. Distribution plots of species-wide winter flounder distribution, sourced from DisMap (NOAA).



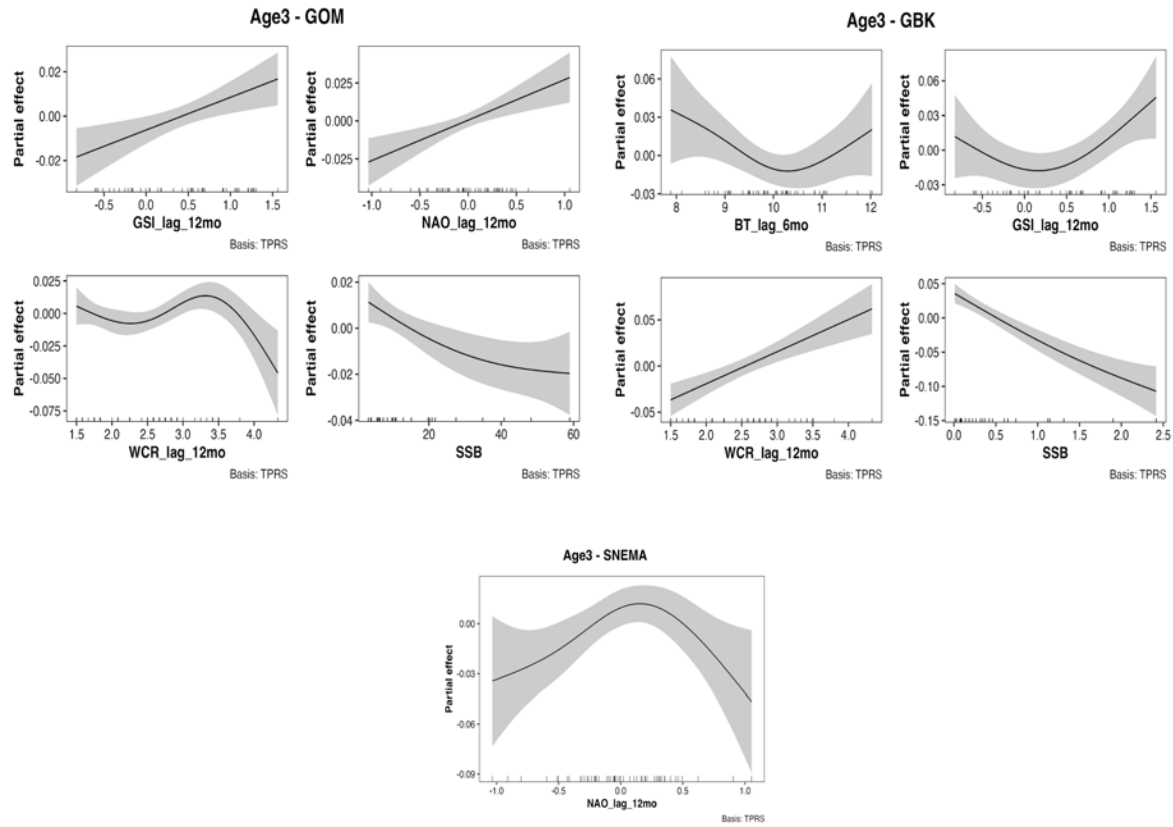
Appendix E. Predictor Variables in GAM Analysis. A comparison of all predictor variables used in the Chapter 4 GAMs analysis.

Weight at Age 2



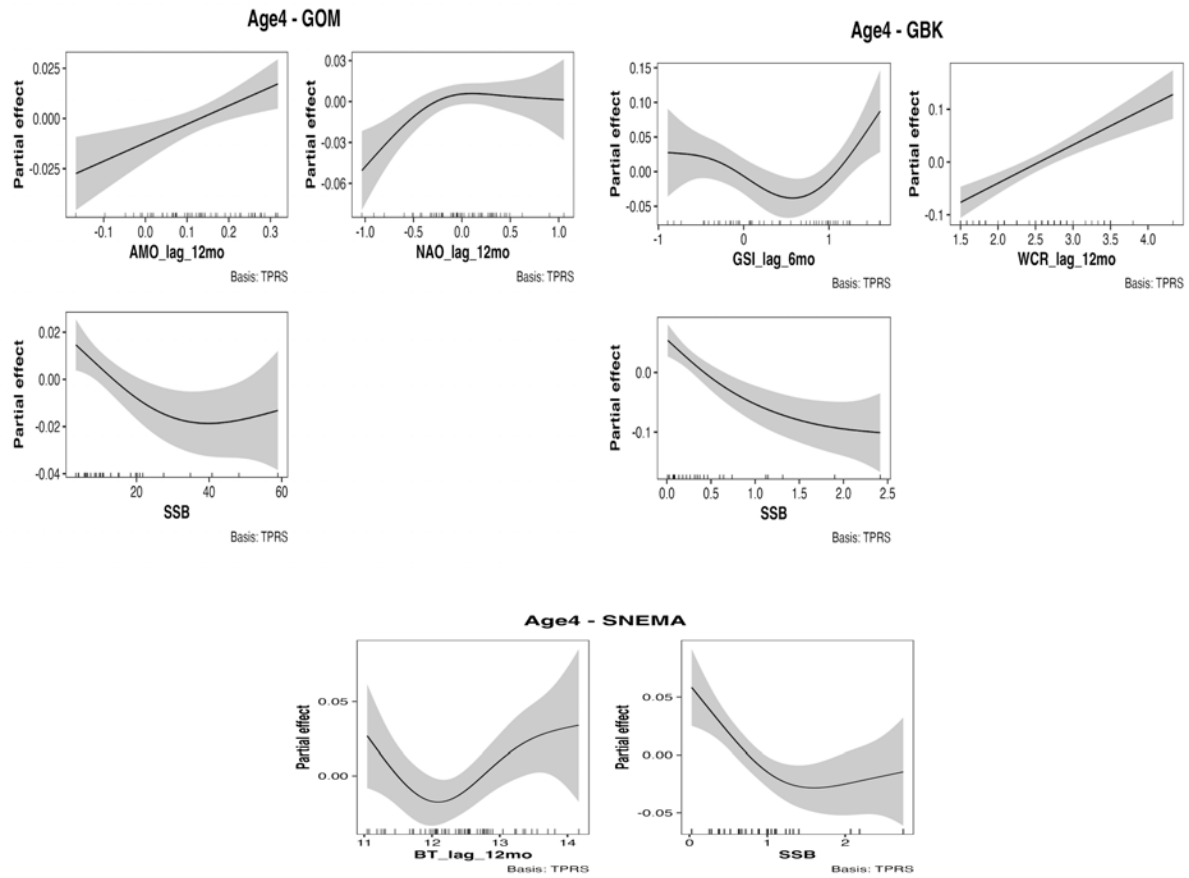
Appendix F. Weight at Age 2 GAM Results. Weight at Age 2 GAMs final model results of all three stocks: Gulf of Maine (GOM), Georges Bank (GBK), and Southern New England/Mid-Atlantic (SNEMA).

Weight at Age 3



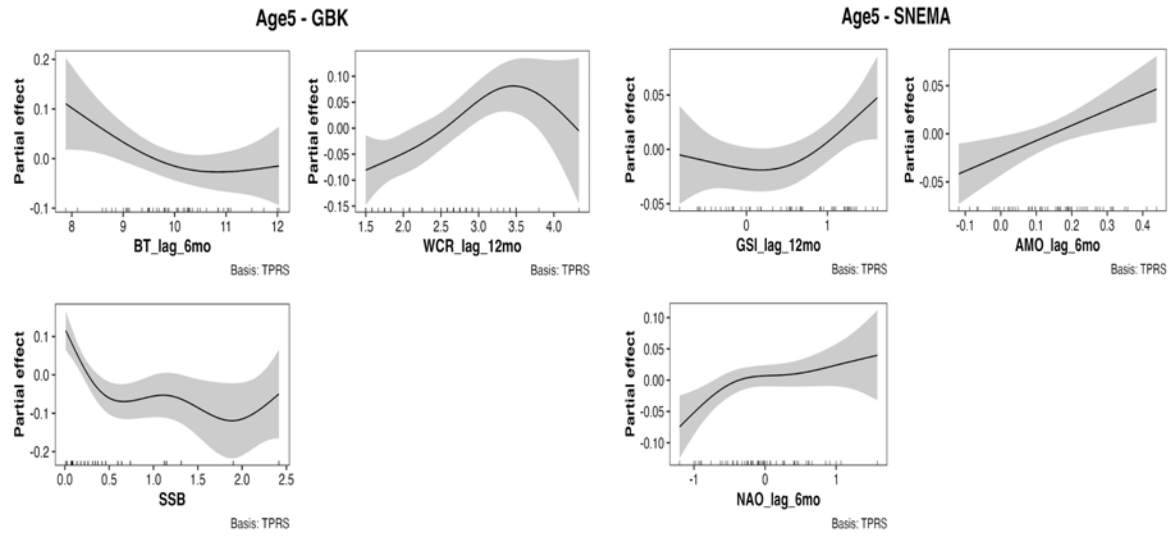
Appendix G. Weight at Age 3 GAM Results. Weight at Age 3 GAMs final model results of all three stocks: Gulf of Maine (GOM), Georges Bank (GBK), and Southern New England/Mid-Atlantic (SNEMA).

Weight at Age 4



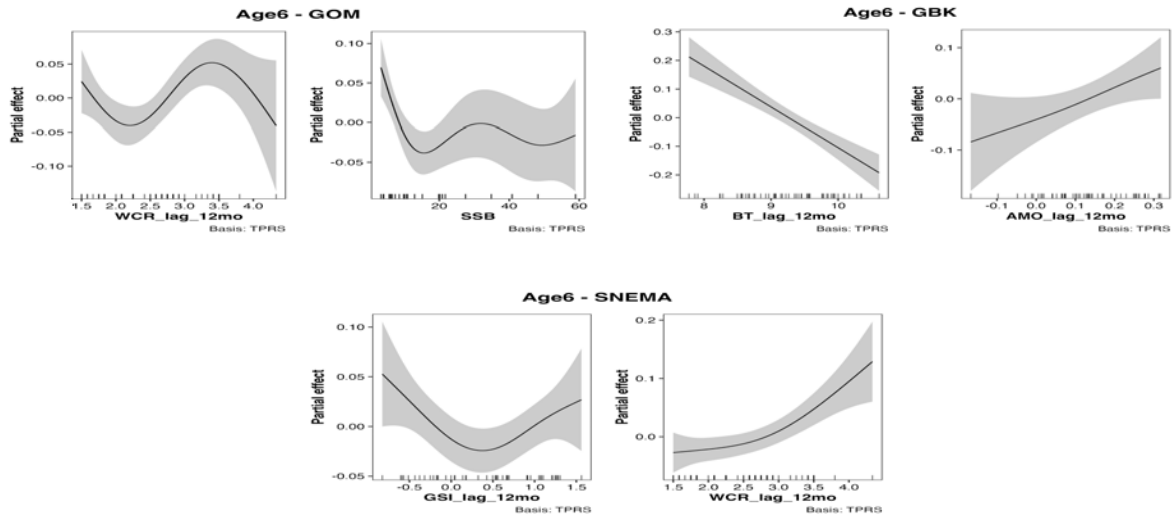
Appendix H. Weight at Age 4 GAM Results. Weight at Age 4 GAMs final model results of all three stocks: Gulf of Maine (GOM), Georges Bank (GBK), and Southern New England/Mid-Atlantic (SNEMA).

Weight at Age 5

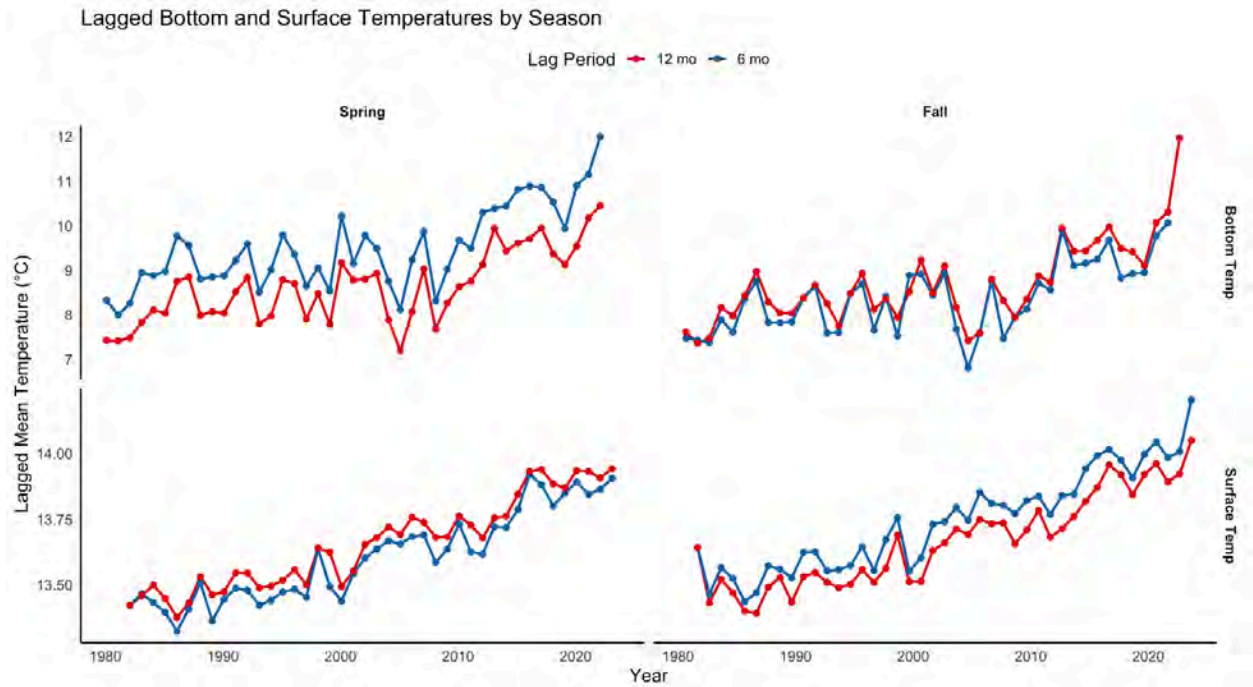


Appendix I. Weight at Age 5 GAM Results. Weight at Age 5 GAMs final model results of all three stocks: Gulf of Maine (GOM), Georges Bank (GBK), and Southern New England/Mid-Atlantic (SNEMA).

Weight at Age 6



Appendix J. Weight at Age 6 GAM Results. Weight at Age 6 GAMs final model results of all three stocks: Gulf of Maine (GOM), Georges Bank (GBK), and Southern New England/Mid-Atlantic (SNEMA).



Appendix K. Basin-Scale Bottom and Sea Surface Temperature. Basin-scale Fall and Spring lagged bottom temperature and sea surface temperature (by NEFSC bottom trawl survey start dates) used in the winter flounder distribution GAMs analysis.

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MEMORANDUM

TO: Winter Flounder Management Board

FROM: Winter Flounder Technical Committee

DATE: July 20, 2026

SUBJECT: Analysis of Proposal for an Increase in SNE/MA Recreational Bag Limit

At the February 3, 2026 meeting, the Winter Flounder Management Board (Board) tasked the Winter Flounder Technical Committee (TC) with analyzing available data to assess the potential for increasing the daily bag limit in the recreational Southern New England/Mid-Atlantic (SNE/MA) winter flounder fishery. This task was in response to both public input and Board member request. An increase in the daily bag limit aims to provide greater incentive for both private and for-hire anglers to target winter flounder which are currently held to a 2 fish per day trip limit in state waters. The TC met via webinar on March 17, May 15, and June 16, 2026 to review and provide input on the Board requests. To address the Board task, the TC 1) discussed potential stock implications and 2) analyzed Marine Recreational Information Program (MRIP) data, both of which are described in this memo.

In summary, the TC does not recommend an increased bag limit for SNE/MA winter flounder at this time, due to a high risk of adverse impacts to the SNE/MA winter flounder population. Any increased fishing effort/targeting of SNE/MA winter flounder would likely negatively impact the stock which is currently at time series low biomass and showing no signs of recovery. Additionally, the TC does not believe the available MRIP data, which is highly imprecise due to very low intercepts, is appropriate to conduct an accurate bag limit analysis on the SNE/MA stock.

Stock Implications

The Atlantic States Marine Fisheries Commission (Commission) and New England Fishery Management Council (Council) have had complementary management plans for winter flounder since 1992. Cooperative management between state and federal waters is necessary because of the unique migration patterns and spawning site fidelity of this species. When winter flounder migrate to inshore state water spawning grounds, they become concentrated in certain areas, making it easy for anglers to locate and remove a substantial portion of them. Concentrated fishing effort on spawning females, the reproductive portion of the population, can result in a larger net loss to the population than the landings may suggest with the potential loss of reproductive subpopulations. In addition, fishing induced disruptions on spawning can reduce spawning success and subsequent recruitment. These nearshore grounds are also vulnerable to water pollution and habitat loss. Tagging studies have consistently shown

spawning-site fidelity in winter flounder, meaning that individuals will often return to the location where they were hatched, or close by. This suggests that reproductive subpopulations of winter flounder may be vulnerable to localized depletion which results in reductions in spawning success and productivity. In their discussions, the TC notes that an increase of targeting winter flounder due to a higher bag limit could increase that potential for localized depletion, particularly where relatively larger spawning aggregations still occur. Doing so can result in further reduction in stock productivity.

The SNE/MA winter flounder stock was recently in a rebuilding plan with a rebuild date of 2023. The projections and biological reference points (BRP) calculations for the 2022 assessment updates used a truncated stanza for recruitment, incorporating values from 2002-2021. Previous assessments had used the entire time-series of recruitment, which included historical recruitments that are well beyond the current productivity of the stock. For example, recruitment estimates in recent years have been up to 20 times lower than some of the recruitment estimates from the beginning of the time series. The truncated recruitment stanza used in the 2022 management track led to a much lower biomass target and, as a result, the overfished status of the stock changed. Although the stock was considered rebuilt by the 2023 deadline, the perception of the health of the SNE/MA stock has not changed. SNE/MA spawning stock biomass continues to be estimated at record lows.

Winter flounder discard mortality is estimated at 15% from the recreational hook and line fishery and any fish landed in excess of the current 2 fish limit would increase total fishing mortality (F). Therefore, any increase in recreational effort targeting winter flounder would be expected to increase overall mortality. The TC feels that this option is inconsistent with the originally intended purpose of Addendum I and Amendment 1 to reduce fishing pressure and mortality on spawning fish and promote rebuilding of spawning stock biomass.

Marine Recreation Information Program (MRIP) Data Analysis

The TC conducted a review of MRIP data, and in particular of MRIP data at the intercept level, to explore what information is currently available for SNE/MA winter flounder. This exploration has been split into three directives:

- 1) A comparison of effort and harvest pre- and post- the 2010 reduction in bag limit.
- 2) PSEs of estimates of harvest.
- 3) A comparison of discards and releases to landed fish.

Management measures relevant to this analysis include:

- Amendment 1 (2005): Established minimum size limit, shortened seasons, and lowered trip/bag limits.
- Addendum 1 to Amendment 1 (2009): Established the two-fish recreational bag limit.
- Addendum 2 (2012): Expanded the recreational season to the entire year.

Addendum I to the Winter Flounder FMP established a daily bag limit of 2 fish in the recreational SNE/MA fishery. This low bag limit was implemented in response to results of the 2008 Winter Flounder Stock Assessment which concluded that the SNE/MA winter flounder stock was severely depleted, with spawning stock biomass at only 9% of the target biomass (NEFSC 2008). The

measures for the SNE/MA stock were designed to achieve the lowest possible F rate while minimizing economic and social impacts and dead discards, and prevent an influx of effort into state waters. Zero possession limits were considered by the Board, but were deemed problematic for two main reasons—discarding may increase with zero possession limits and fisheries-dependent data beneficial to the assessment would not get collected.

The two-fish bag limit was established in 2009 but different states may have had it earlier and it may have been implemented at different times. For this analysis we assume a 2010 implementation.

Directive 1: Effort and Harvest Pre- and Post- Bag Limit

The TC received MRIP intercept data pulled by Paul Nitschke of NEFSC. A custom MRIP query was used as the SNE/MA winter flounder stock splits Massachusetts. These data (adjusted observed catch, CLAIM) are used here to summarize positive trips, defined as trips where at least one winter flounder was observed landed. The number of observed trips and catch were pulled by the TC as a first step to determine whether there was adequate data to be able to perform a robust bag limit analysis.

The number of trips with observed SNE/MA winter flounder, the total observed catch of winter flounder, and the mean observed catch per angler have all decreased between 1982 and 2025 (Table 1). Observations began to sharply decline around 2000 and have remained extremely low since approximately 2007. The number of observed SNE/MA winter flounder trips averaged approximately 460 between 1982 and 1999, and averaged 43 between 2000-2025. A mean of 2,600 SNE/MA winter flounder were observed annually between 1982-1999, but fell to a mean of 119 winter flounder between 2000-2025. In the most recent 10 years (2016-2025), the annual mean observed catch in SNE/MA fell to approximately 22 winter flounder. The mean observed catch per angler ranged between 5.21 winter flounder per angler in 1982 and 0.51 winter flounder per angler in 2025. The mean observed catch per angler of SNE/MA winter flounder averaged approximately 3.4 between 1982 and 1999 and fell to 1.55 between 2000-2025.

Based on the limited available data in any given year, particularly in the last 26 years, the TC did not believe there was enough data to perform a bag limit analysis similar to those conducted for stocks such as black sea bass. However, these data may still be informative to the Board based on trends in recreational effort and catch.

In their discussion of the annual data, the TC noted that the number of observed trips, catch, and the mean catch per angler of SNE/MA winter flounder all began a steep decline well before the implementation of the 2-fish bag limit in ~2010 (Table 1; Figure 1). The mean number of fish per angler fell below 2 fish around 2005, prior to the implementation of the bag limit. This provides evidence that the 2-fish bag limit is likely not the only factor limiting winter flounder recreational effort and catches in the SNE/MA.

Observed number of trips, total catch, and mean winter flounder caught per angler were also explored by MRIP wave and by state, summed across all years 1982-2025 (Tables 2 & 3). A

majority of trips and catch (approximately 68% and 70%, respectively) of SNE/MA winter flounder were observed in waves 2 and 3 (March-April and May-June) when aggregated spawning and post-spawn fish are most available to in-shore anglers. The TC noted unusually low numbers of observed trips and catch of SNE/MA winter flounder from Massachusetts, compared to other neighboring states.

The TC also explored breaking down the available data on observed trips by mode, summed across all years (1982-2025; Table 4). A majority of observed recreational trips and catch in SNE/MA were from the private/rental boat mode (53% of observed trips and 72% of total observed catch), followed by the shore mode (14%). The for-hire sector (i.e., charter boats and headboats) only constituted 4% and 1% of the total observed SNE/MA winter flounder trips and catch, respectively.

When these data are further broken down by year (limited to 2000-2025 so trends are more apparent), the number of observed trips and total catch from the private/rental boat and shore modes both show declines prior to the implementation of the 2 fish bag limit (Figure 2). The number of observed headboat trips and catch also suggest a decline prior to the implementation of the bag limit in 2010.

Lastly, the TC explored the available MRIP catch data broken out to all three catch types (i.e., Type A, Type B1, and Type B2) and year (Table 5; Figures 3 & 4). Similarly to observed harvest, reported harvest and releases also show a steep decline well prior to the implementation of the 2-fish bag limit in ~2010. Reported harvest began declining around 1994, and releases began declining around 1995. Thus, anglers were not only harvesting less fish, but were also releasing less fish before the adoption of the lower bag limit in 2010.

Directive 2: PSE on Harvest Estimates

The TC next explored PSE (percent standard error) estimates on available MRIP data. MRIP does not provide PSE values for data parsed to a fine scale (e.g., by stock, by fishing mode). The formula to calculate PSE is the square root of variance over the estimate, multiplied by 100. The key challenge is understanding the scale at which to calculate PSE. It must be done according to survey design and primary sampling unit. The state-level data available from the MRIP public website includes PSE, but this does not allow separation of Massachusetts sites by stock. The TC collaborated with various partners to utilizing existing R code to calculate PSE values for MRIP data parsed to various scales.

Figures 5 & 6 show annual PSE values for all harvest types by state and mode, respectively. Overall, PSE values for all harvest types, including total catch, harvest (A+B1), and releases (B2), by state and mode, have been above 30% PSE since approximately 2002, and a majority of PSEs have fallen above 50% since approximately 2006. The MRIP program suggests PSE values between 30 and 50 be 'treated with caution'. PSE values greater than 50 are highly imprecise and MRIP 'does not support its use'. The TC does not believe such highly imprecise data would be appropriate for use in a bag limit analysis.

Directive 3: Size Composition Analysis

Other sources of uncertainty in available data include the length distribution of recreational discards. Recreational discards are typically a small component of total catch, and the SNE/MA winter flounder stock assessment suffers from very little length information used to characterize recreational discards (Table 6).

For this analysis a cumulative discard length distribution over all available years was used to characterize recreational discards. Size information is used to understand what proportion of discards are of legal size. Comparing discards and releases to landed fish may be used to address which fish might be kept if a bag limit liberalization occurs.

The MRIP size data contain individual fish measurements from intercept interviews. Paul Nitschke provided MRIP length data from the 2025 SNE/MA winter flounder management track stock assessment. Note that sample sizes are sparse in recent years (Table 6). Data are only available from 2005 through 2024 as that was what was available from the stock assessment. Reduced sampling of recreational fishery information could be an issue for the stock assessment moving forward.

Again, the TC does not believe a bag limit analysis is possible with the sparse data and therefore just made observations on the raw information. Overlaid length frequency distributions of kept and released fish across pre- and post-bag limit regulatory periods show an increase in released legal sized fish post-bag limit implementation (Figure 7). This suggests the potential for increased recreational harvest of legal sized fish with an increased bag limit. More small fish were kept in the 2005–2009 period, before the two-fish bag limit was instated (Table 7; Figure 8). This suggests the bag limit has been effective at reducing harvest of smaller fish.

The proportion of legal fish that were released by year indicates a very slight increase in the percent of legal fish that are released in recent years (Figure 9). However, this seems only minimally related to the decrease in bag limits when viewing data from 2008 through 2015 across that transition time period.

References

- Northeast Fisheries Science Center (NEFSC). 2008. Report of the 3rd Groundfish Assessment Review Meeting (GARM III). US Dept Commer, Northeast Fish Sci Cent National Marine Fisheries Service, 166 Water Street, Woods Hole, MA.
<https://www.nefsc.noaa.gov/publications/crd/crd0815/crd0815.pdf>
- NEFSC. 2025. Southern New England Mid-Atlantic Winter Flounder 2025 Management Track Assessment Report. US Dept Commer, Northeast Fish Sci Cent National Marine Fisheries Service, 166 Water Street, Woods Hole, MA. Compiled 09-30-2025.

Tables and Figures

Table 1. Observed trips and catch by year from SNE/MA states. ‘N Trips’ shows the number of MRIP intercepts that occurred within the given year with observed winter flounder. ‘Total Obs. Catch’ shows the total number of fish directly observed during MRIP intercepts each year. ‘Mean per Angler’ shows the average number of winter flounder caught per intercept event each year.

Year	N trips	Total obs. Catch	Mean per angler
1982	431	3,551	5.21
1983	517	3,570	4.06
1984	664	5,526	4.97
1985	511	4,354	4.93
1986	688	3,636	3.67
1987	383	2,466	3.83
1988	648	3,600	3.22
1989	922	3,892	3.02
1990	813	3,915	3.28
1991	565	2,995	3.14
1992	370	1,495	2.63
1993	485	1,760	2.29
1994	297	1,254	2.62
1995	186	919	2.88
1996	273	1,249	2.84
1997	222	1,150	3.11
1998	151	900	3.53
1999	153	579	2.42
2000	71	220	2.48
2001	158	678	2.36
2002	93	269	2.24
2003	116	605	3.72
2004	114	326	2.21
2005	71	164	1.9
2006	42	110	1.96
2007	31	55	1.51
2008	39	85	1.99
2009	31	71	1.82
2010	37	61	1.38
2011	33	66	1.55
2012	38	77	1.61
2013	16	18	1.11
2014	34	49	1.34
2015	18	23	1.25
2016	33	41	1.14
2017	35	46	1.2
2018	27	30	0.99
2019	5	5	0.8
2020	30	33	1.02
2021	16	16	0.96
2022	9	27	1.55
2023	7	7	0.9
2024	12	12	0.82
2025	3	2	0.52

Table 2. Observed SNE/MA winter flounder catch by wave 1982-2025 (Wave 2 = March-April; Wave 3 = May-June; Wave 4 = July-August; Wave 5 = September-October; Wave 6 = November-December). ‘N Trips’ shows the number of MRIP intercepts with winter flounder present that occurred within the given wave. ‘Total Obs. Catch’ shows the total number of fish directly observed during MRIP intercepts each wave. ‘Mean per Angler’ shows the average number of winter flounder caught per intercept event each wave (for events when winter flounder were present).

Wave	N Trips	Total Obs. Catch	Mean Per Angler
2	3,695	18,917	3.33
3	2,673	16,094	3.53
4	655	2,613	2.49
5	1,231	5,255	2.84
6	1,144	7,027	4.05

Table 3. Observed catch by state 1982-2025. ‘N Trips’ shows the number of MRIP intercepts that occurred within the given state with winter flounder present. ‘Total Obs. Catch’ shows the total number of fish directly observed during MRIP intercepts in each state. ‘Mean per Angler’ shows the average number of winter flounder caught per intercept event in each state (for events when winter flounder were present).

State	N Trips	Total Obs. Catch	Mean Per Angler
Massachusetts	357	1,618	3.14
Rhode Island	1,132	5,687	3.06
Connecticut	1,457	7,642	3.15
New York	4,878	25,159	3.34
New Jersey	1,541	9,686	3.89
Delaware	8	18	1.39
Maryland	5	21	1.85
Virginia	20	75	1.74

Table 4. Observed SNE/MA winter flounder recreational catch by fishing mode, 1982-2025. ‘N Trips’ shows the number of MRIP intercepts that occurred among fishing modes. ‘Total Obs. Catch’ shows the total number of fish directly observed during MRIP intercepts among each mode. ‘Mean per Angler’ shows the average number of winter flounder caught per intercept event among each mode. The NA mode consists of trips where mode was either Headboat or Private/Rental Boat prior to 2013.

Mode	N Trips	Total Obs. Catch	Mean Per Angler
Charter Boat	19	38	1.71
Headboat	362	541	1.41
Private/Rental Boat	5,051	36,225	3.96
Shore	2,398	6,986	2.40
NA	1,568	6,116	3.33

Table 5. Catch in numbers of fish by harvest type and year across the entire SNE/MA winter flounder stock. Catch is split into Type A (observed harvest), Type B1 (reported harvest), and Type B2 (releases), using adjusted claim values. These values do not account for the number of anglers on a trip.

Year	Type A (Claim)	Type B1 (Harvest)	Type B2 (Release)
1982	6,732	1,495	1,380
1983	5,364	1,588	2,183
1984	6,485	1,634	2,606
1985	4,887	994	2,159
1986	4,452	2,637	2,502
1987	3,455	1,176	1,610
1988	4,529	2,169	2,299
1989	5,756	2,362	2,654
1990	4,661	3,127	3,443
1991	3,301	3,161	3,037
1992	1,802	1,318	1,540
1993	2,132	1,272	2,635
1994	1,427	619	1,500
1995	1,092	707	1,356
1996	1,407	928	1,100
1997	1,285	825	1,260
1998	994	530	1,001
1999	656	565	681
2000	287	656	574
2001	713	434	764
2002	346	153	433
2003	661	324	258
2004	346	151	107
2005	192	60	211
2006	172	69	207
2007	106	58	107
2008	210	136	155
2009	113	154	283
2010	124	82	223
2011	104	94	155
2012	79	75	106
2013	96	60	91
2014	143	58	124
2015	164	61	196
2016	140	45	216
2017	150	69	83
2018	227	55	136
2019	133	121	91
2020	254	64	149
2021	87	148	150
2022	167	68	49
2023	75	53	56
2024	49	34	34
2025	281	193	217

Table 6. Number of individual SNE/MA winter flounder measured in MRIP observations by year and release disposition.

Year	Kept	Released
2005	208	21
2006	146	3
2007	70	5
2008	101	11
2009	101	12
2010	81	14
2011	71	5
2012	98	11
2013	22	2
2014	54	1
2015	27	0
2016	51	3
2017	50	8
2018	40	9
2019	6	0
2020	39	9
2021	16	10
2022	21	4
2023	16	3
2024	18	3

Table 7. Number and percentage of SNE/MA winter flounder measured in MRIP observations by release disposition and length.

Regulatory period	Disposition	Legal (≥ 12in)	Sublegal (< 12in)	Total N
2005-2009	Kept	96%	4%	626
	Released	32.7%	67.3%	52
Post-2010	Kept	98.4%	1.6%	610
	Released	64.6%	35.4%	82

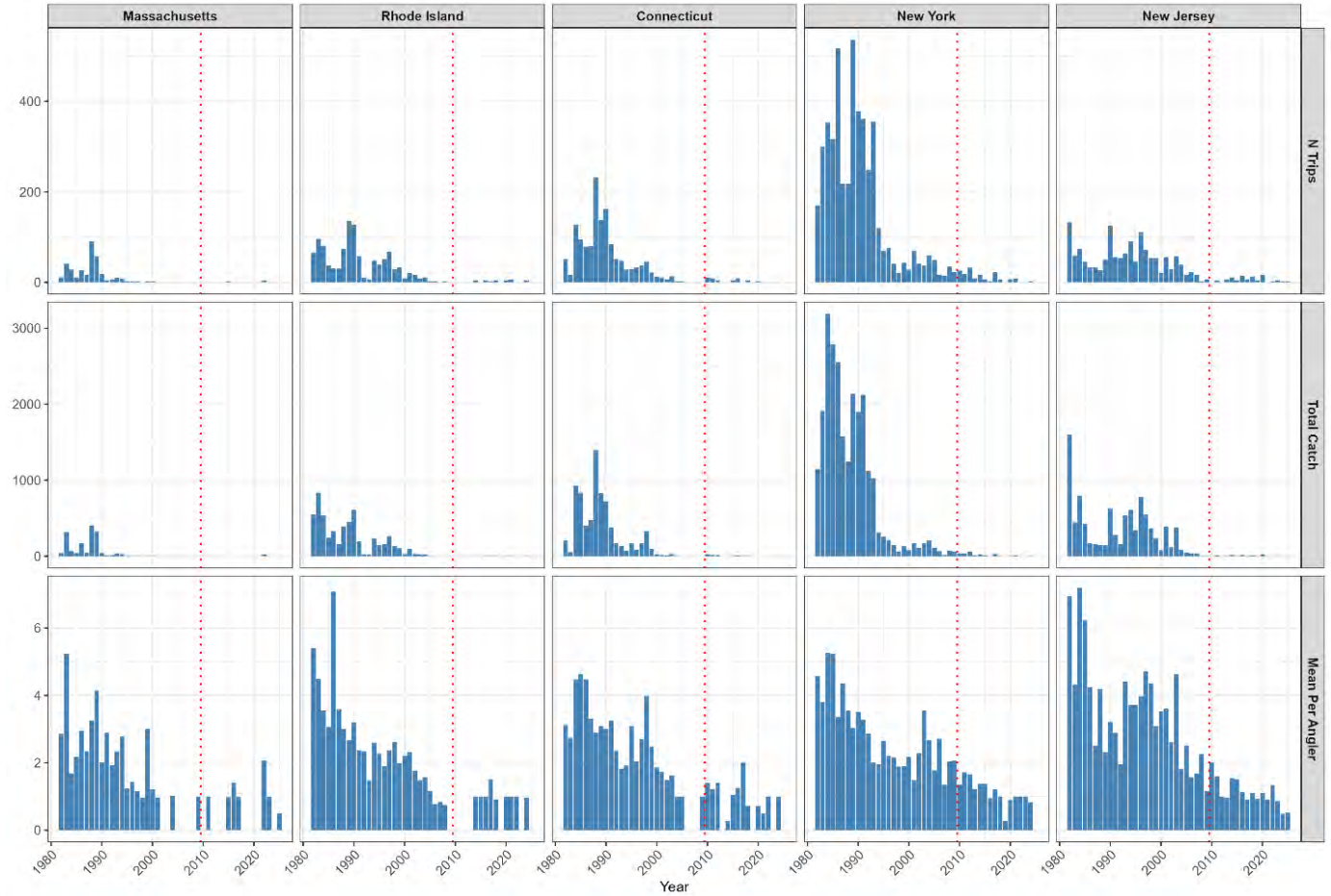


Figure 1. Observed number of trips, total catch in numbers of fish, and mean number of fish per angler of SNE/MA winter flounder by state and year. Massachusetts only includes trips observed within the SNE/MA area. Delaware, Maryland, and Virginia are excluded from the plot below because landings were minimal. The timing of the two-fish bag limit (vertical red dotted line) varied by state but all states had adopted it by 2010.

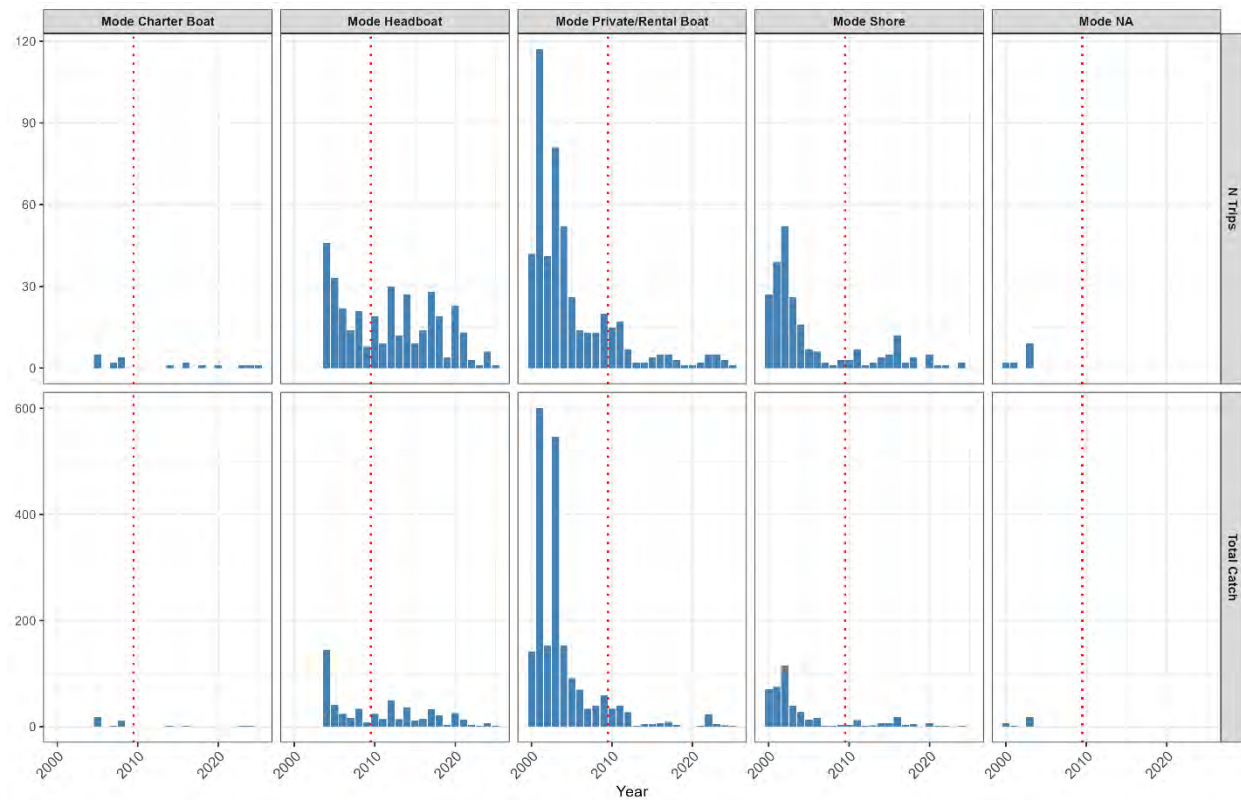


Figure 2. Number of trips and observed catch by year and mode 2000-2025. Filtered to years ≥ 2000 so that trends are more apparent. The timing of the two-fish bag limit varied by state but all states had adopted it by 2010 (denoted by the red dotted line).

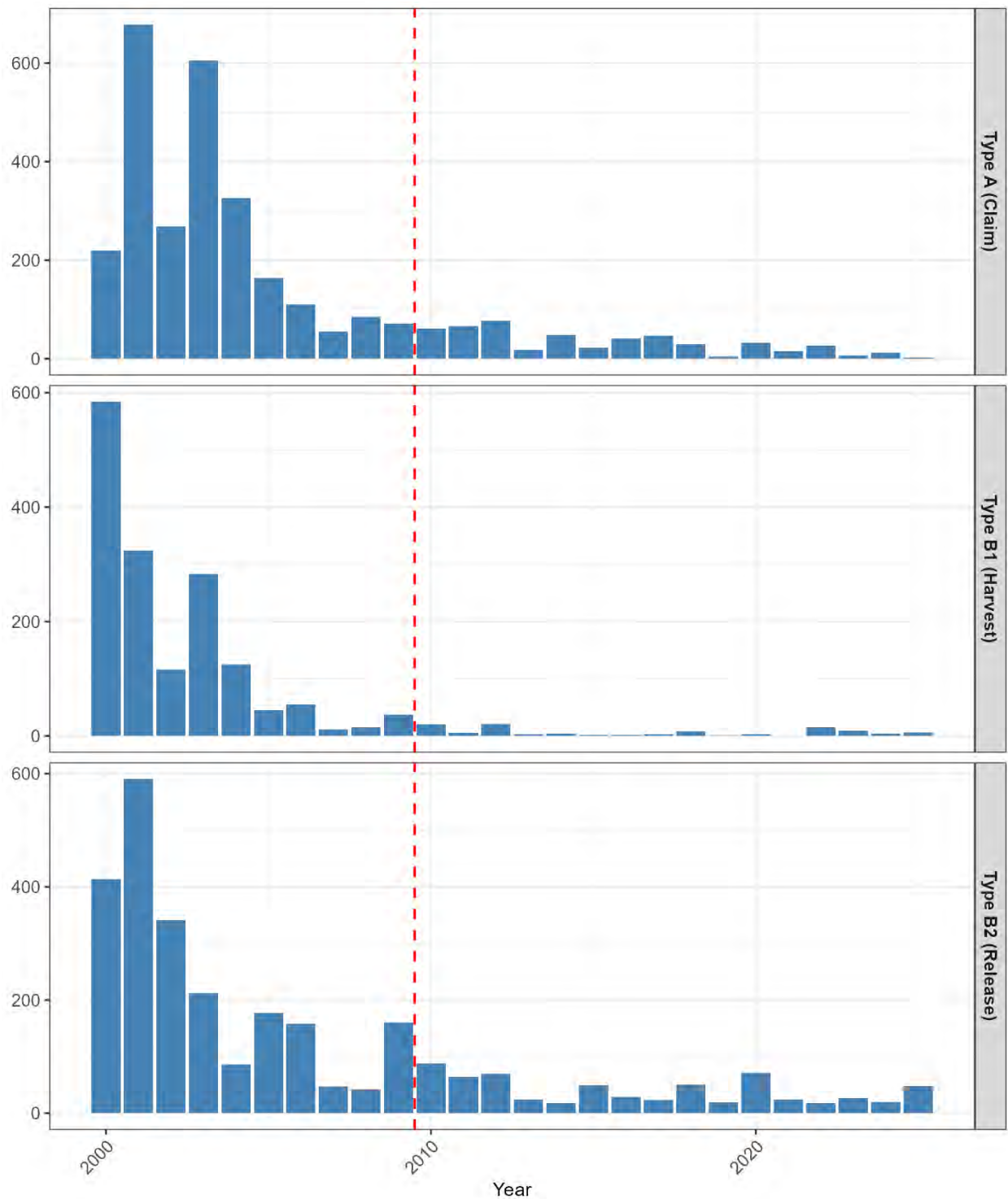


Figure 3. Winter Flounder catch by catch type and year. Catch is split into Type A (observed harvest), Type B1 (reported harvest), and Type B2 (releases), using adjusted values. Filtered to years ≥ 2000 so that trends are more apparent. The dashed red line indicates approximate bag limit change (2 fish, ~ 2010).

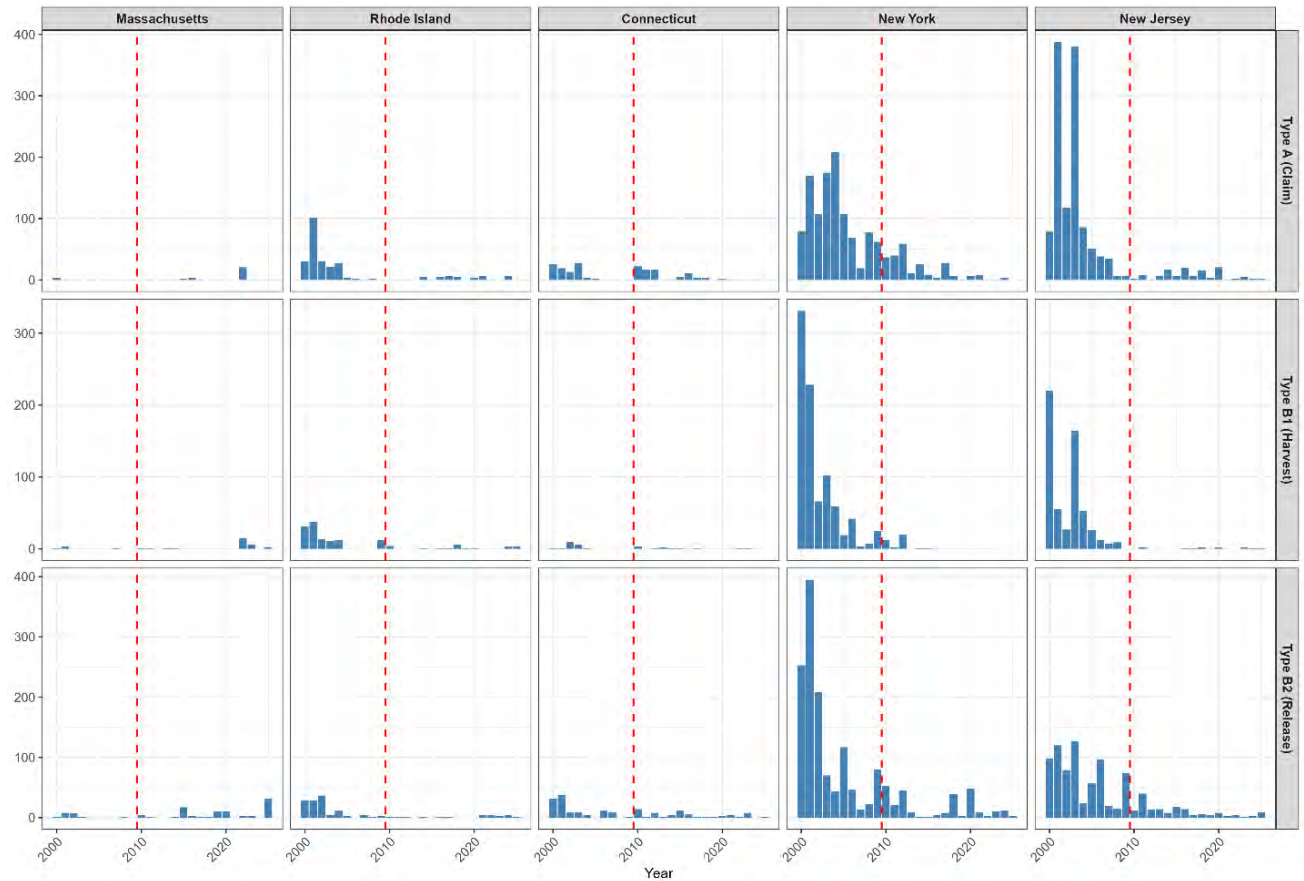


Figure 4. Winter Flounder catch in numbers of fish by catch type, state and year. Catch is split into Type A (observed harvest), Type B1 (reported harvest), and Type B2 (releases), using adjusted values. Filtered to years ≥ 2000 so that trends are more apparent. Delaware, Maryland, and Virginia excluded due to minimal landings. The dashed red line indicates approximate bag limit change (2 fish, ~2010).

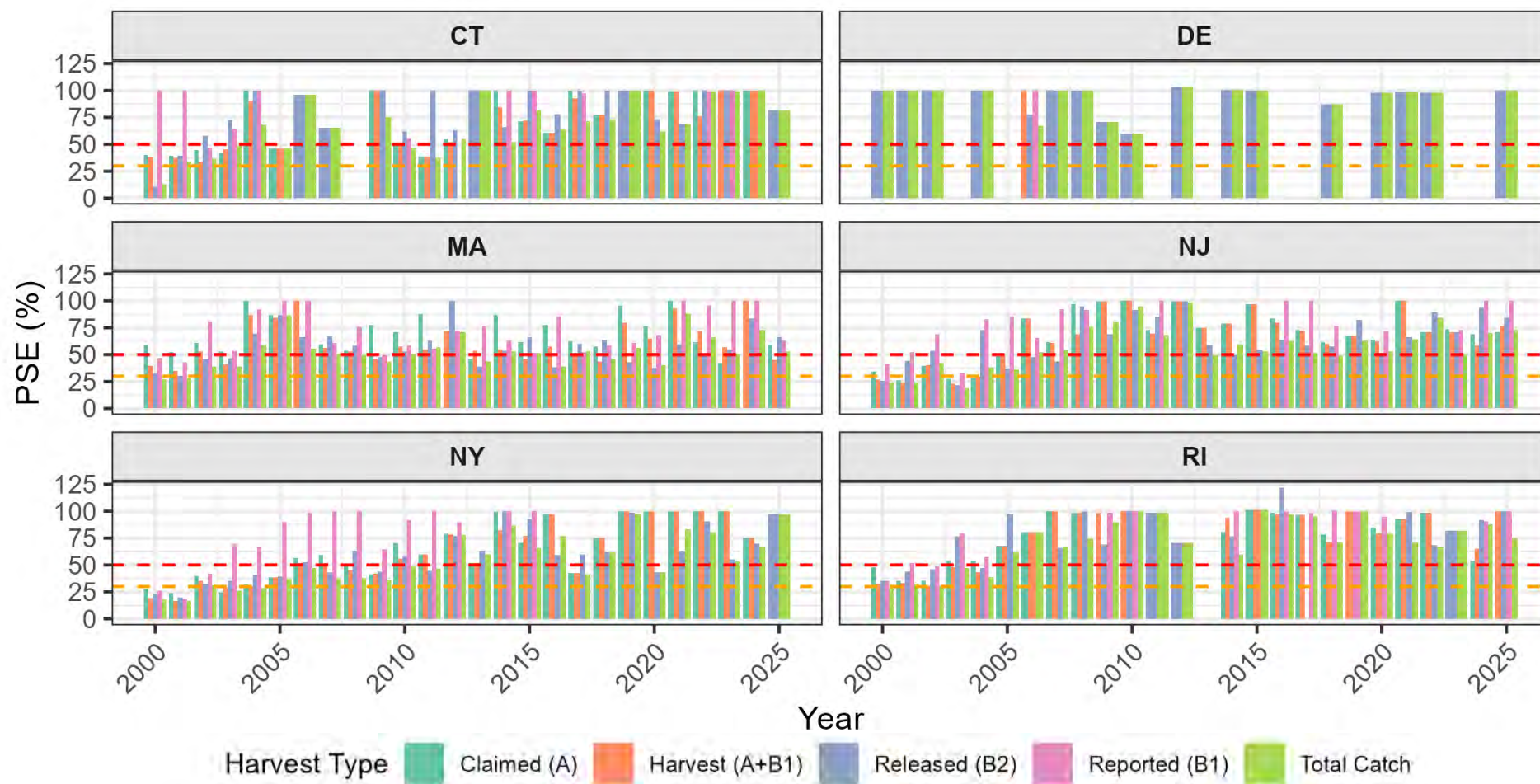


Figure 5. Percent Standard Error (PSE) values for SNE/MA winter flounder by state, harvest type, and year (2000-2025). Dashed orange line indicates PSE value of 30; dashed red line indicates PSE value of 50.

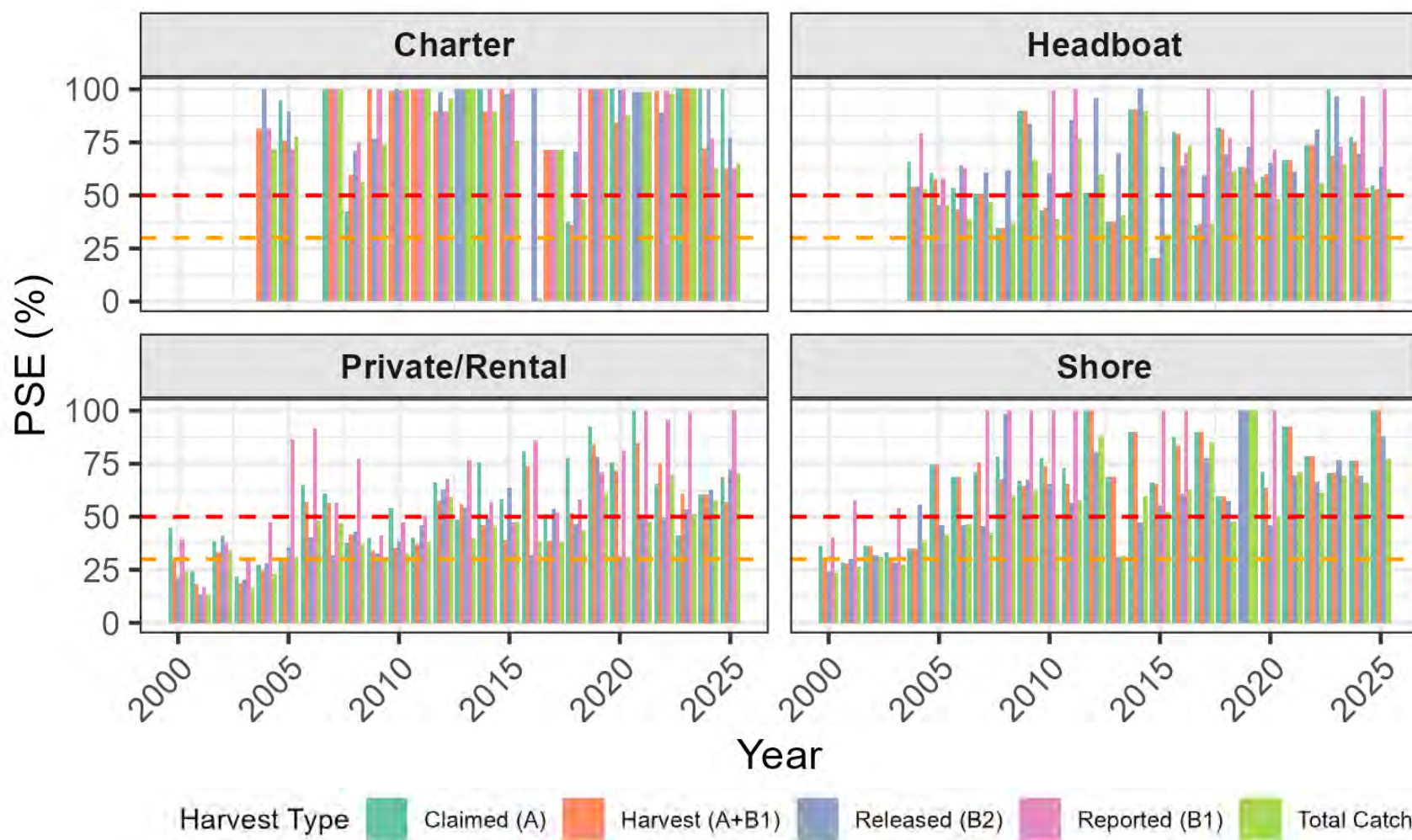


Figure 6. PSE values for SNE/MA winter flounder by fishing mode, harvest type, and year (2000-2025). Dashed orange line indicates PSE value of 30; dashed red line indicates PSE value of 50.

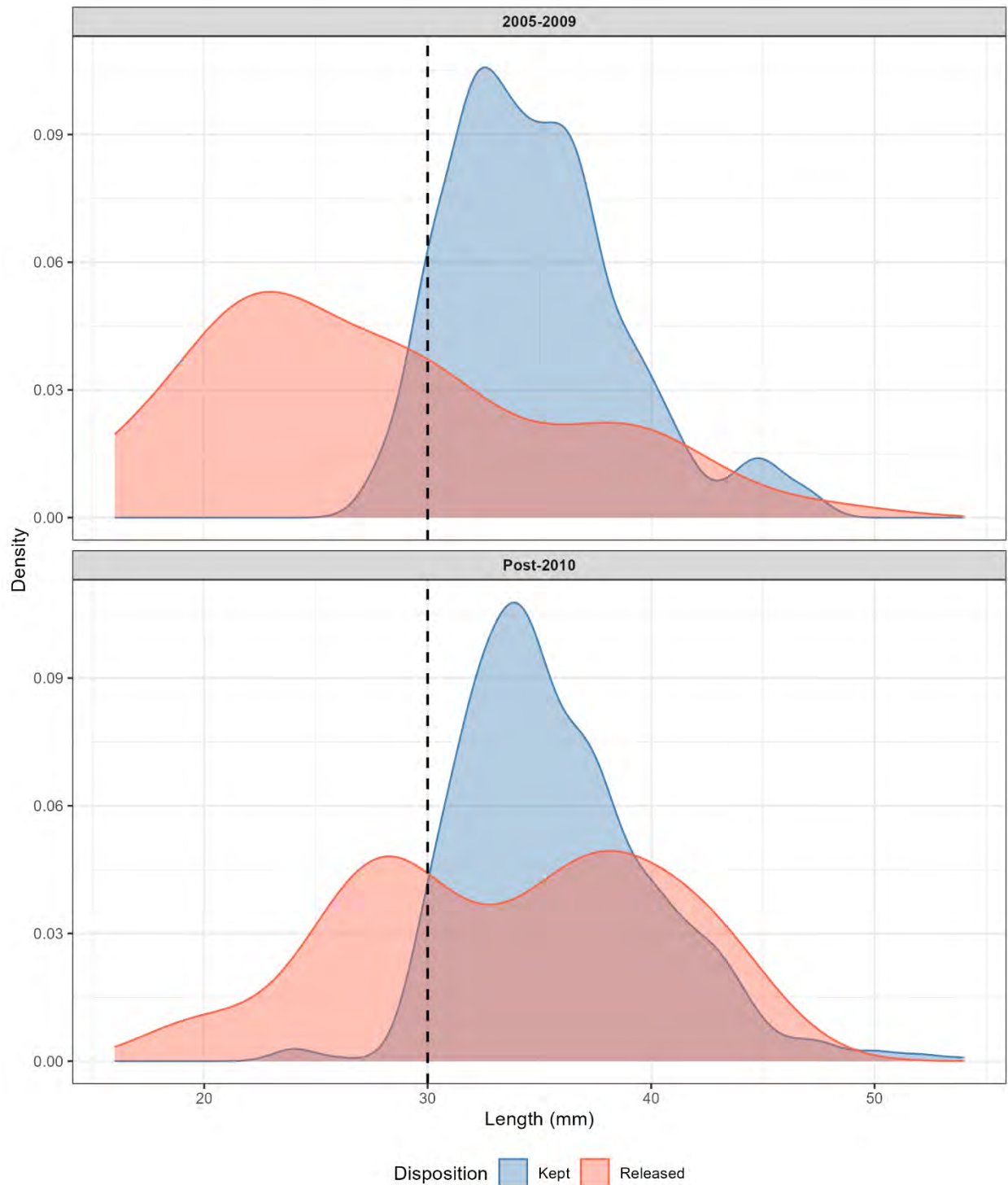


Figure 7. Overlaid length frequency distributions of kept and released fish across pre- and post- bag limit regulatory periods. The dashed vertical line indicates the 12-inch (304.8mm) minimum size limit. This directly shows whether released fish were sublegal or legal sized.

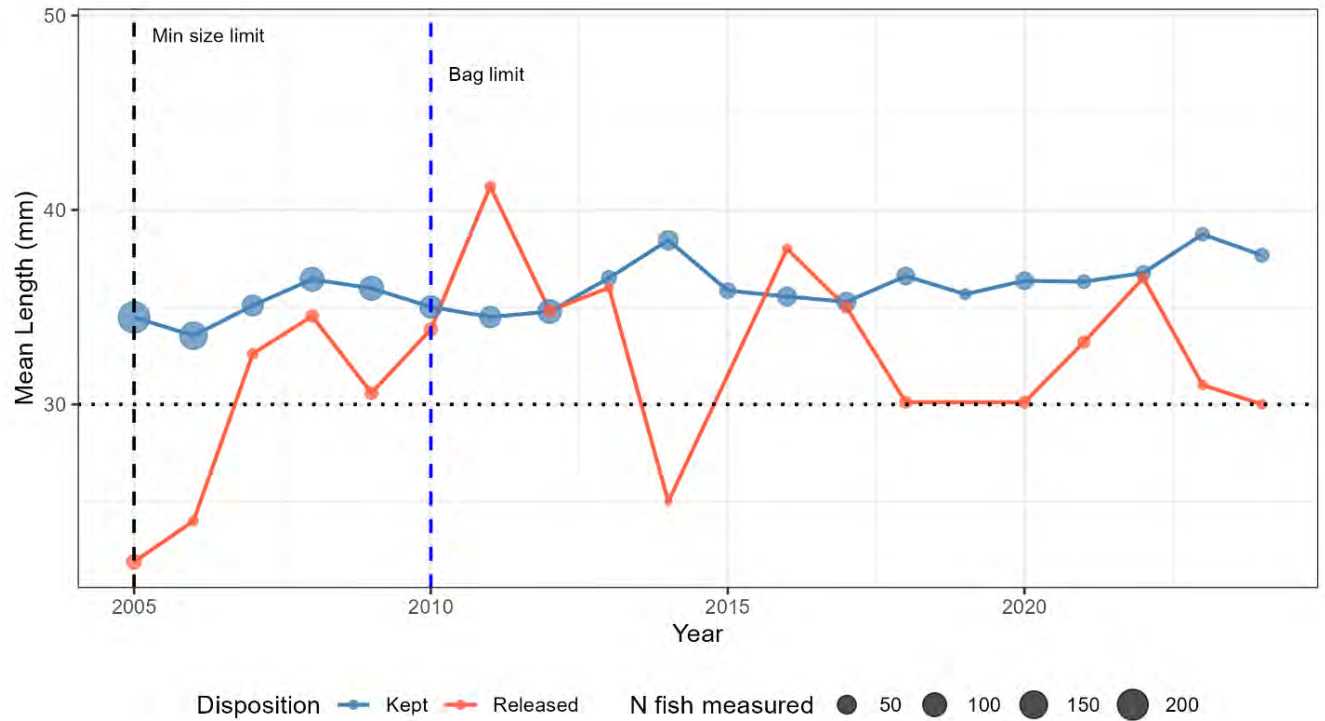


Figure 8. Mean length of kept vs. released winter flounder by year. The vertical black dashed line denotes when the minimum size limit (12-inches) was implemented, and the vertical blue dashed line denotes when the 2 fish bag limit was implemented. The size of each individual data point denotes the approximate number of fish measured. Note the small sample size of released fish across all years.

Proportion of Legal-Sized Winter Flounder That Were Released, by Year

Point size proportional to number of legal fish measured

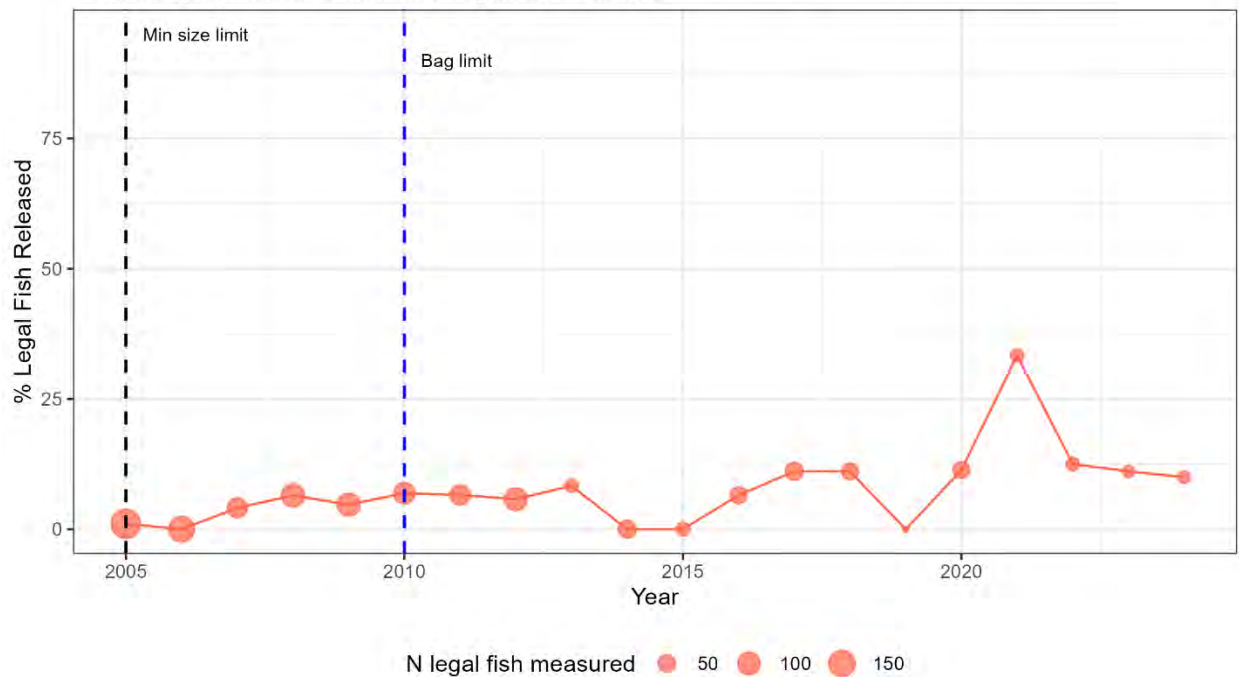


Figure 9. Percentage of legal-sized fish (≥ 12 inches) that were released rather than kept by year. The vertical black dashed line denotes when the minimum size limit (12-inches) was implemented, and the vertical blue dashed line denotes when the 2 fish bag limit was implemented. The size of each individual data point denotes the number of fish measured. A high value suggests anglers were already catching legal fish but releasing them, which is directly relevant to bag limit liberalization. If the bag limit were increased, some of these fish could be retained.

Atlantic States Marine Fisheries Commission

Tautog Management Board

August 4, 2026

2:45 – 4:45 p.m.

Draft Agenda

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

1. Welcome/Call to Order (<i>M. Gates</i>)	2:45 p.m.
2. Board Consent	2:45 p.m.
• Approval of Agenda	
• Approval of Proceedings from May 2026	
3. Public Comment	2:50 p.m.
4. Consider Approval of Draft Addendum I for Public Comment: Measures to Address Changes in Stock Status for New Jersey-New York Bight and Delaware-Maryland-Virginia Stock Units (<i>J. Boyle</i>) Action	3:00 p.m.
5. Review Risk and Uncertainty Decision Tool Scores (<i>K. Drew</i>) Possible Action	4:30 p.m.
6. Other Business/Adjourn	4:45 p.m.

The meeting will be held at The Westin Crystal City, 1800 Richmond Highway, Arlington, VA; 703.486.1111, and via webinar; click [here](#) for details

MEETING OVERVIEW

Tautog Management Board

August 4, 2026

2:45 - 4:45 p.m.

Chair: Matt Gates (CT)	Technical Committee Chair: Sandra Dumais (NY)	Law Enforcement Committee Representative: Brian Scott (NJ)
Vice-Chair: Rich Wong (DE)	Advisory Panel Chair: Vacant	Previous Board Meeting: May 4, 2026
Voting Members: MA, RI, CT, NY, NJ, DE, MD, VA, NMFS (9 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from May 2026

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

4. Consider Approval of Draft Addendum I for Public Comment: Measures to Address Changes in Stock Status for New Jersey-New York Bight and Delaware-Maryland-Virginia Stock Units (3:00-4:30 p.m.) Action

Background

- In response to the 2025 assessment update, the Board initiated an addendum to address the changes in stock status for NJ-NYB and DMV.
- The Plan Development Team (PDT) incorporated the Board's guidance from May into the Draft Addendum (**Supplemental Materials**).

Presentations

- Overview of Draft Addendum I to Amendment 1 by J. Boyle

Board Actions for Consideration

- Approve Draft Addendum II to Amendment 3 for public comment

5. Review Risk and Uncertainty Decision Tool Scores (4:30-4:45 p.m.) Possible Action

Background

- In October 2025, the Board requested the TC run the Risk and Uncertainty Decision Tool in the projections to determine harvest reductions necessary to reach the F target.
- In May 2026, the Board reviewed the results of the Risk and Uncertainty Tool, which includes a series of scores that represent Board priorities, and requested the opportunity to update the Board scoring (**Briefing Materials**).

Presentations

- Results of Board Survey of Risk and Uncertainty Tool Scores by K. Drew

6. Other Business/Adjourn

**DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
TAUTOG MANAGEMENT BOARD**

**The Westin Crystal City
Arlington, Virginia
Hybrid Meeting**

May 4, 2026

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

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INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of October 2025** by consent (Page 1).
3. **Move to continue forward with the addendum process and not delay for the re-calculated MRIP data** (Page 9). Motion by Jay McNamee; second by Emerson Hasbrouck. Motion passed (Page 13).
4. **Move to adjourn** by consent (Page 19).

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

ATTENDANCE

Board Members

Bob Glenn, MA, proxy for D. McKiernan (AA)	Emerson Hasbrouck, NY (GA)
Ray Kane, MA (GA)	Monica Martinez, NY (LA)
Sarah Peake, MA, proxy for Rep. Armini (LA)	Joe Cimino, NJ (AA)
Jason McNamee, RI (AA)	Richard Wong, DE, proxy for J. Clark, DE (AA)
David Borden, RI (GA)	Roy Miller, DE (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Craig Pugh, DE, proxy for Rep. Carson (LA)
Matthew Gates, CT, proxy for S. Madsen (AA)	Michael Luisi, MD, proxy for K. Charbonneau (AA)
Bill Hyatt, CT (GA)	David Sikorski, MD, proxy for Del. Stein (LA)
Robert LaFrance, CT, proxy for Rep. Gresko (LA)	Joe Grist, VA (Acting AA)
Jesse Hornstein, NY, proxy for M. Gary (AA)	Chris Wright, NMFS

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

Ex-Officio Members

Sandra Dumais, Technical Committee Chair	Brain Scott, Law Enforcement Committee Rep.

Staff

Bob Beal	Caitlin Starks	Katie Drew
Toni Kerns	Tracey Bauer	Jeff Kipp
Tina Berger	James Boyle	Samara Nehemiah
Madeline Musante	Chelsea Tuohy	Jainita Patel

The Tautog Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Monday, May 4, 2026, and was called to order at 9:00 a.m. by Chair Matthew Gates.

CALL TO ORDER

CHAIR MATTHEW GATES: Good morning, everybody. We're going to get started with Tautog Board. My name is Matt Gates; I'm the Administrative Proxy for Connecticut. I'm joined up here by Commission staff, James Boyle, Tautog Plan Coordinator. Katie Drew, the Stock Assessment Scientist, Mr. Beal and Ms. Kerns. On my left is Law Enforcement Representative Brian Scott of New Jersey. I think Toni is going to go over who is joining us online.

MS. TONI KERNS: I believe today we just have Monica Martinez online, and she is the new Commissioner from New York; so welcome, Monica. We're super happy to have you here with us, and Sandy Dumais is the TC Chair; who is also online.

APPROVAL OF AGENDA

CHAIR GATES: The first thing we've got to do as usual is approval of the agenda. Does anyone have any proposals to changes to the agenda? All right; seeing none we'll call that approved.

APPROVAL OF PROCEEDINGS

CHAIR GATES: Next, does anyone have any edits to the proceedings of the 2025 Annual Meeting back in October? Okay, I don't see any, nobody online. Okay, thanks, I think we can approve the minutes.

PUBLIC COMMENT

CHAIR GATES: Start of each Board meeting we provide the opportunity for the public to make comments on items not on the agenda. Any individuals wishing to speak at this time should

use, either the webinar raise your hand, or in the room you can raise your hand. If anybody wants to speak from the public now, now is your chance. I don't see anybody so we'll move on.

REVIEW TECHNICAL COMMITTEE REPORT ON BOARD TASKS

CHAIR GATES: The first item to deal with today is the Technical Committee Report. Sandy Dumais from New York will provide that, Committee Chair.

MS. SANDY DUMAIS: Good morning, everyone. This morning, we are going to report on the Board task to the Technical Committee, including the projections to reach the fishery mortality target. The run through of the risk and uncertainty tool, and the analysis we looked at, the Delaware, Maryland and Virginia fishery independent data.

Also, we will request guidance from the Board regarding the timing of the next step, with regard to the recalibrated MRIP estimates that are coming out later this summer.

HARVEST PROJECTIONS TO REACH FISHING MORTALITY TARGET

MS. SANDY DUMAIS: Start right in with the projections. In the 2025 Stock Assessment it showed that overfishing was occurring in New York Bight and DelMarVa Region, and DelMarVa was also overfished. Mass and Rhode Island and Long Island Sound were not overfished and not overfishing. To address overfishing in New York Bight and DelMarVa the Board requested that the TC look at projections that had a 50% probability of achieving the F target in 2028 or 2030.

RISK & UNCERTAINTY DECISION TOOL

MS. SANDY DUMAIS: The Board also requested that the TC use the Risk and Uncertainty Decision Tool to calculate an ultimate probability for achieving the F target. The SAS used the recent three-year average catch for 2025 and 2026, and then they calculated what level of catch was needed in 2027 and 2028, or '27 to 2030 that would be able to reach a 50%

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The Board will review the minutes during its next meeting.

probability of being at or below the F target in 2028 or 2030.

Calculated the percent projection by comparing the level of catch needed for 2027-2030 to the three-year average catch of 2022-2024. This graph shows the recreational removals for each of the regions. The dash line is the average, the 2022-2024 average, and it shows that for DelMarVa they are slightly above the recreational removals are slightly above. The New York/ New York Bight is slightly below the three-year average.

The red triangles are the preliminary 2025 estimates. Those are most likely in most cases, if not all cases going to keep going up as those estimates are updated to be finalized. For New York Bight, in order to reach the probability of reaching F target 50% by 2028, the percent reduction of removals needed was estimated to be 44% reduction, and to reach the target by 2030 it was 40% reduction.

DELAWARE-MARYLAND-VIRGINIA FISHERY- INDEPENDENT DATA

MS. SANDY DUMAIS: For the DelMarVa Region there was estimated to be no removals needed, probably because they have some very strong year classes coming that are entering the exploitable biomass the next few years. Here are the projections. For New York Bight, if New York Bight stays at status quo, it is estimated that the SSB target is going to continue to decline and go down below the threshold and the target, a threshold eventually.

With DelMarVa at status quo the SSB will be still below the threshold, but it's going to continue to increase throughout the timeline. I'm going to pause here to see if there are any questions, clarification or if the Chair would like me to continue with this, or do they want to have some discussion first?

CHAIR GATES: I think we can take any questions now on what Sandy has presented so far, if

anybody has any. I don't see any questions, Sandy, so you can continue.

MS. DUMAIS: For the Risk & Uncertainty Tool. The TC provides scores for the uncertainty and risk parameters including stock status, model uncertainty, management uncertainty, environmental uncertainty and ecosystem importance. The results give a recommended probability for F being at or below the F target in 2028 or 2030.

It is generally higher than 50% for both regions, it is higher than 50% for both regions. The TC calculates reductions associated with those probabilities. I will say that we did not ask the Board. The Board also provides weighting to the different things. They had done that in 2021; we did not ask them to repeat that process so they remained the same. Now the Committee on Economics and Social Sciences, CESS provides scores on socioeconomic considerations, commercial and recreational importance of the fishery in each region, as well as the short term and long-term impacts of the reductions associated with the TC scores.

This generally tends to push them back up against the estimates that have gone through the first run through, but we'll see what the results for that were. The TC CESS scores are weighted based on scores provided by the Board and we did not ask them to repeat that. For New York Bight, the projections, the probability of reaching the F target in 2028 and 2030 were 64% and their percent reduction needed to reach those was 50% for 2028 and 44% for 2030.

For the DelMarVa Region the probability of reaching the F target was 66% and the reductions needed for 2028 was 8% and 2030 was 4%. As we all know, the fishery management plan mandates a 50% reduction and we cannot go below 50%. I'm going to pause here again to see if there is any discussion regarding what was just presented.

CHAIR GATES: Any questions from the Board? No, I don't see any questions, so you can continue, Sandy, thank you.

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The Board will review the minutes during its next meeting.

MS. DUMAIS: The TC took a look at some of the fishery independent surveys that are beginning to come up in the DelMarVa Region, and the Stock Assessment Model only uses 1 fishery dependent CPUE index. Since none of the fishery independent indices have been available during the benchmark assessment it has captured tautog reliably.

But Maryland/Delaware have started some new surveys that may be more suitable for monitoring tog. This is the Maryland DNR SAV Habitat Survey and they started this in 2012. We've been using standard methods since 2015, and this is a haul seine that targets young of the year tog and SAV habitat.

The survey has been successful in capturing young of the year tog with 65% of all hauls positive for tog. It appears to be well correlated with the assessments estimate of recruitment. You can see from the graph that it seems to be correlating pretty well with the recruitment estimate for the survey.

This is the Delaware Ventless Trap Survey that was started in 2018. The ventless traps are deployed in Delaware Bay and in the ocean. Both are high relief (artificial reefs) and on low relief (sandy bottom). It has a 64% to 83% positive sets in high relief habitat, and it captures both juvenile and adult tog.

Now the index in both regions, the Bay versus the Ocean has been variable and without a significant trend from 2018 to 2025. There is no strong correlation with the assessment estimates of SSB, but the selectivity of the gear may make it harder to compare cost of index with multiple ages. The ocean seems to match slightly better than the Bay.

For SSB that would possibly make sense, considering that they are probably catching less juveniles in the Ocean versus the Bay. Delaware could probably speak better than I, that would be my guess. The TC/SAS recommends bringing both of these indices forward for the next

benchmark assessment. The young of the year index provides empirical support for the model's estimates of increasing recruitment in recent years. The Delaware Index is flatter and does not show the same strong correlation in increasing pattern in SSB that the model is estimating.

The next benchmark is slated to start work in late 2026 or early 2027 with an anticipated peer review of 2029. The high priority objectives for the benchmark are to investigate and resolve the retrospective issues that we've been having with the tog assessment. Incorporate new fishery independent surveys, including the pot and trap surveys and the young of the year index in the DelMarVa Region and to incorporate the new MRIP numbers that we're going to see later this year. Board Guidance, should I pause here?

CHAIR GATES: We can pause here if you like.

MS DUMAIS: Well, there is one more slide that we need to consider, if you don't mind, actually.

CHAIR GATES: All right, go ahead and finish up.

MS. DUMAIS: The question is, do we wait for the MRIP calibrations or not to implement the changes or implement this Addendum? The assessment and the projections will not be updated with the new MRIP data. We are not going to be rerunning the assessment or these projections. The new length frequency catch-per-trip catch by wave data could be used to develop new size limit, bag limit, seasons as options for the Addendum.

However, waiting for the recalibrated data, which is anticipated in August, would delay implementation. The projections that we did at the beginning of this presentation would need to be updated to assume status quo for 2025 through 2027, instead of 2025 through 2026, and that may change the percent reduction needed.

We would still use uncalibrated status quo numbers to align with the assessment. That is, things you need to consider as you're deciding whether to

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implement now or delay until after the MRIP calibration, and that's it, thank you.

CHAIR GATES: Any questions from the Board?
Jason McNamee.

DR. JASON McNAME: Thanks, Sandra, good presentation, a lot of good stuff to cover. I didn't have questions on some of the earlier stuff, I have comments on those, but I'll save those for now. But I was curious about the two surveys and have a couple of questions there. First was on that Maryland SAV Survey and I was wondering.

Is it like purely young of the year or does it catch some 1s and 2s in there as well? Was that survey kind of treated to account for that? I was just kind of curious about that. I have another comment on the ventless, but I'll hold it for now.

CHAIR GATES: Katie, can you field that?

DR. KATIE DREW: Sure, I'll jump in. The Maryland Young of Year Survey is predominantly young of year. I think there may be 1 or 2, but it is filtered down to treat it as a young of year survey.

CHAIR GATES: Yes, go ahead, Jason.

DR. McNAMEE: I just asked a question, having worked on the Rhode Island Seine Survey, which was predominantly young of the year for a long time. We would get some bigger fish once in a while, they kind of snuck up into the shallow areas. Yes, I think it is important to just make sure those are being treated.

Sort of a similar comment for the ventless trap, I agree with the recommendation to keep both of these actually for the next assessment. I think these are great, that they've gotten some more fishery independent information to work with down there, so that is a positive for the species. But I wondered, so the ventless traps, just having seen the other ventless trap surveys

and how they are used for different assessments.

I think there is a number of things. You know I agree with the statement about the selectivity and how that gives that kind of direct comparison to like the MRIP CPUE makes that challenging. The fact that it's not correlated particularly well doesn't concern me too much at this point. Definitely keep it.

But then, getting to kind of the root of my comment/question. You know has that been treated, like bringing in environmental covariates. Also like, I'm not sure how it is set up, if it's in like a trawl kind of thing. But the position of the pot matters. Well, there is like all these things that you can sort of model. That's my question, is it just at this point kind of like a mean or is it modeled?

DR. DREW: At this point it is just the geometric mean that was presented. I think definitely during an assessment we would want to do a real deep dive on both of these to consider standardization or other factors, or how to subset the data to make it as robust and index as possible.

CHAIR GATES: I see Bill Hyatt next.

MR. WILLIAM HYATT: Just a question on the timing, just want to make sure I'm understanding this correctly. If we wait for the recalibrated data it puts things off by a meeting, but still any changes would be expected to be implemented during '27. Am I thinking of that correctly or am I missing something there?

MR. JAMES BOYLE IV: Yes, so the interpretation of Amendment I says that if it has to be implemented a second year, since the Board received the overfishing status at the annual meeting at the end of 2025, it is within the FMP to take final action in 2027 for implementation in 2028. Depending on how fast they can implement then that does create some wiggle room on what meeting you can choose in 2027, but that is the timeline. The timeline, if we wait for the new MRIP data and it is on time in September, this Board could theoretically be looking at a draft for public comment at the annual

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meeting instead of in August, and be going to final action in the winter of 2027.

CHAIR GATES: Next, I saw Emerson.

MR. EMERSON C. HASBROUCK: Thank you, Sandy, for your presentation. My question is similar to Bill's, and I'm not sure if it is more appropriate to ask it here or the next agenda item, but I'm going to ask it now. The timeline, the 3- or 5-year timeline, when does that kick in? Does that kick in when we finalize and approve the Addendum, or does it kick in at the end of this year? Does it kick in at the beginning of 2027? What is the timeline we're working on?

MR. BOYLE: The 3 to 5 years was the timeline requested by the Board, so the TC was running those projections to say to achieve 50% of choosing the F target or 11% which are mutual. By 2028 being 3 years from receiving the overfishing status for 2030 would be 5 years from receiving the overfishing status. That is not in the FMP, it's not in Amendment 1 that it has to be in 3 to 5 years. Whatever the Board wants to see in terms of projections, that is where that timeline comes from.

CHAIR GATES: You have follow-up, Emerson?

MR. HASBROUCK: It's up to our discretion when we start that timeline, and it is also up to our discretion what the timeline is going to be? Am I interpreting that correctly?

MR. BOYLE: Yes, if it's a Board's discretion what the timeline for the probability of achieving the F target being at least 50% is. The measures to achieve that have to be implemented in the second year by Amendment 1, so in 2028.

CHAIR GATES: Jason, you have another question?

DR. McNAMEE: Yes, also back to Bill's comment. Just to remind the Board. It seems like there may not be a severe consequence to

waiting for the MRIP recalibrated numbers, but there then becomes a disconnect, so everything we're kind of working on is old MRIP. That is what was used in the assessment.

They are not going to redo the assessment in this timeframe. They'll be working on it but it won't be ready. Just keep that in mind that if we're inclined to wait for the recalibrated MRIP, at least in my opinion it creates a disconnect between the information that we're working on for the reductions and then this new harvest information. Actually, someone can correct me if that is not right, but I think that is right.

DR. DREW: Right, the projections and the assessment results will all be in the same currency. I think it's just a question of, like when we are evaluating the size limit that would get you to that reduction, then there is a potential that that is not exactly the same data that we used to connect to create that initial estimate. Yes, so I think it's up to the Board to determine, do you want to consider that or not, when you are developing the options versus the projections.

CHAIR GATES: Emerson again.

MR. HASBROUCK: Thank you again, Mr. Chairman, I'll try not to ask too many questions. Similar to what Jay was talking about. Then with the recalibrated data, if it shows a reduction in recreational catch, that could lead to a reduction in SSB, but we're not going to know that until the next assessment sometime in the future, three or four, five year later, in terms of where we are relative to the reference points, is that right?

DR. DREW: There is the potential that what we've seen in the past with the previous recalibration was that, yes, it changed the scale of the population, but it didn't necessarily change status, so that yes, you would estimate SSB is likely going to be lower. But that would also mean recruitment is lower and our reference points will be lower as well.

Would that change alone change status? We can't tell until we do that assessment, until we do the

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next assessment, which again would likely be the benchmark, so we will be wrapping in a lot of other changes, including the new fishery independent data that may also impact stock status and where we are.

CHAIR GATES: Eric Reid.

MR. ERIC REID: Just a simple question. It says the anticipated delivery date is August. How comfortable are we with it will be August, as opposed to a little delay, which we're getting very used to delays on a regular basis.

DR. DREW: I mean this is the most recent timeline estimate that we have from MRIP, which we got a couple weeks ago. I think we are not anticipated to have another Government shutdown in that window for this Agency. But obviously, for sure we can't say 100% it's going to be August, there is a possibility that it will be delayed somewhat. But this is sort of their best guess. This is what they are working towards, based on the information and what they anticipated to happen, at least on their capacity and workload timeline window.

CHAIR GATES: I think if there are no more questions we can move on to Considering the Guidance to Plan Development Team for Draft Addendum I, and I think James has a presentation for us on that.

MR. BOYLE: Yes, I'll just get the discussion started. First, after receiving no objections, here is the approved PDT membership. We'll work with the Technical Committee in drafting and analyzing options to achieve the necessary reductions. The AP met on April 21st to review the 2025 Stock Assessment Update and provide comments ahead of the Board meeting today to consider giving direction to the Plan Development Team for Draft Addendum I.

Two members representing Delaware and New York were able to attend and provide comment. Regarding the assessment, both members had

comments regarding fishery independent surveys. One member, the Delaware member commented that the assessment is missing out on the Delaware pot and trap survey and that Maryland and Virginia both have their own tagging program, which would provide additional data. He also noted that changes in effort were reflective of harvesters targeting blue fin tuna, instead of tautog in 2023 and 2024, before it turning to tautog in 2025 in the wave data. The other member, the newer member commented that the same surveys in the New Jersey/New York Bight are not accounting for the species moving to other areas. Particularly they referenced new habitat created from bridge restoration and are therefore not reflecting the current stock.

Additionally, he advocated for the creation of a commercial rod and reel survey given there is a significant portion of the fishery using that gear both commercially and recreationally. Regarding the Addendum. Both AP members support the status quo for both regions. One, the Delaware member acknowledged that the projected reductions in that region are relatively small, but would not support an increase in the size limit.

Both believe the size limits already allow for ample opportunity for fish to reproduce before harvest. Additionally, the Delaware member commented that management options should allow for them to be applied to any wave, so the fishery may choose when the closures or reductions are applied to make them least destructive.

The New York member also added that the size limit already causes significant post release mortality due to the number of fish being released, and that they are concerned that increasing restrictions in the New Jersey, New York Bight could push effort from New York harvesters into Long Island Sound.

Then finally, my last slide is a quick reminder of the direction in Amendment 1. The FMP stipulates that alternative management measures are implemented the second year after receiving overfishing status as we've just discussed. By that guideline, the Board should take final action in 2026

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or 2027 in time to implement measures for the 2028 fishing year.

As mentioned, if there are no further delays in MRIP recalibration, waiting for those values could push the timeline by one meeting cycle where the Board would be considering the Draft Addendum for public comment at the 2026 Annual Meeting, with potential final action at the 2027 winter meeting.

Additionally, Amendment 1 notes that each region or state must identify specific measures in the management document and not just for the implementation plan phase of the implementation. We're looking for guidance on whether the Board wants to wait to use the new MRIP estimates, and what other management measures to include in the Addendum for analysis. The PDT will then draft those measures along with the Technical Committee, to achieve at least a 50% probability of achieving the F target. With that I can take any questions or discussion.

CHAIR GATES: Any questions for James?

MR. RICHARD A. WONG: Thanks, James, for the presentation. I would strongly urge that we wait to use the recalibrated MRIP data, because for one, I don't think the MRIP Survey has done a very good job with estimating Delaware's harvest. For example, we had wind last fall that just blew and blew and blew. We had much less effort. However, our MRIP harvest estimate went up threefold. There is something we have concerns about. But this new, the recalibration, from what I understand about the new estimates is that they mostly largely effect the shorter waves more than the summer waves, and that certainly applies to our tautog fishery in the south. Most of our effort and harvest is the spring and the fall. It's not in the summertime. I would just urge that we try that we wait for the recalibration.

CHAIR GATES: I see Jason McNamee next.

DR. McNAMEE: First, just a quick question for James. I can put focus for this action on New York/New Jersey Bight and DelMarVa. But do we have to ask for something explicitly in this document. Like if Mass/Rhode Island wanted to do something. Not trying to meet a target or anything like that, but wanted to take some sort of precautionary action, for instance.

Would we need the document to say something with respect to that, or is that something the two states can just sort of develop together and do? I'm trying to sort that out so I don't miss an opportunity to at least put a placeholder in.

MR. BOYLE: I believe that states could do it together, potentially through a conservation equivalency with Amendment 1. But there is in the motion that initiated Addendum I, it was a stipulation that we could have measures for Long Island Sound or Massachusetts/Rhode Island for other reasons. It could go in here as well. I think it would be fine either way. I'll defer to Toni if I'm missing something.

MS. KERNS: Sorry. If states want to be more conservative, you can be more conservative at any point in time that you want to. If you would like to use the Addendum as a public outreach process for the two states, then I would recommend going ahead and working with the PDT to put whatever options you pull together, and we can do that for you. Otherwise, you are going to do your own public process through your states and then send in information to us, so that we know what you're doing.

CHAIR GATES: Follow up, Jason?

DR. McNAMEE: Just a follow up, and to complicate. Thank you for that and to Rich's comments a couple minutes ago. I think all of the kind of attributes that you referenced that I am not disagreeing with. But I have concern about delaying and using the recalibrated MRIP numbers, because I just have this feeling that when the PDT starts to do their work, if they start to do that work with the recalibrated MRIP numbers.

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I just see a million questions kind of spinning up when they are trying to sort of connect now this new data stream that wasn't a part of the assessment and all of the metrics that we're trying to meet. I don't think we gained too much from waiting for that recalibrated MRIP data, and I think there is a lot of risk in doing that. I am not a proponent of waiting for that recalibrated data.

CHAIR GATES: Bill Hyatt.

MR. HYATT: I hear what Jay is saying, and I think it is that if we move ahead now, we're basically using the recalibrated data for everything. If we wait until the annual meeting then we're using the pre-calibrated for one part of the process to determine the problem, and the recalibrated to solve the problem. Jay is saying that there are concerns with that. Is there anything that the Technical Committee or any folks can add regarding those concerns? I think you were saying that in essence it is changing the scale, but the direction stays the same with pre-calibrated or recalibrated. I am just wondering what those concerns are and how significant they might be.

DR. DREW: I think the inclusion of the new MRIP numbers in the assessment, in the assessment and in the update in the projections would have more of an impact than the choice to use recalibrated or non-recalibrated data in the development of the options. But this is just based on previous performance of the last time the MRIP numbers were recalibrated.

We can't say for sure until we see what the final numbers are like, but in terms of, is this going to change the size structure of the catch significantly. Is this going to change the catch per trip significantly? Is this going to change the seasonality of, you know like how much a trip is worth in one wave versus another in terms of reducing catch for season limits.

I think that is probably less significant than when we finally would do the update or the

benchmark with the new data. I think the information that we get by waiting versus not waiting is probably not going to be significant on the options themselves, but would have more of an impact when we finally do the update or the benchmark. Having said that, we haven't seen the numbers yet, so I don't know, it's hard to say at this point.

CHAIR GATES: Bob Glenn.

MR. BOB GLENN: I have another follow up question for Katie. Katie, is it fair to say that the recalibrated MRIP estimates could change the magnitude of the reductions necessary, potentially in either direction?

DR. DREW: It could, but we won't know that until we rerun the assessment with the new data.

MR. GLENN: But it's an unknown, it could. Okay, thank you.

CHAIR GATES: Jesse Hornstein.

MR. JESSE HORNSTEIN: Just so I'm clear. If we waited for the recalibrated MRIP data the projections would be rerun, correct? Is that what Sandy had said earlier?

DR. DREW: We would rerun the projections to assume that we would remain status quo in 2026. Right now, the projections are run, assuming that you would implement at the start of 2026, so the new landings would occur in '26 and '27 and then '28 or 2030. If we wait, we will have to assume status quo for 2026 as well.

However, we would again be using the uncalibrated numbers for this entire process. There would need to be a small adjustment to the projection basically to say, we're staying at that status quo level one year longer. That status quo level is going to be the same as it is in the current projections and the same as it was in the assessment update. It will be a small change to the projection. It may increase the reduction needed, because we wait an extra year to get down to that target '27 or that target '28 value

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as 2030 value. We would need a small update to the projections that will not include the recalibrated data.

CHAIR GATES: I don't see any hands, but we have had sort of two comments on which way to go here and one is to wait and one is to not wait. In order to move this along. Oh, I have one more comment from Mr. Luisi.

MR. MICHAEL LUISI: I don't know if this is going if this is going to turn into a comment or a question; it's 9:40 on Monday morning, so doing the best to try to get started with the week and listening to all of this discussion about the recalibration issue. I just want to make sure that I am clear. The way that I'm hearing it right now, the recalibration is going to happen while we're in this process.

If we decide to delay today or not, we're going to get new information at some point between today and when we take final action. That new information, the way that I am understanding it, is not going to change the options in the document. It's only going to be used by us as a way to look at trends and perhaps ground truth what we're already using to build the Addendum into some type of reduction in the two areas that we're talking about.

I'm sitting here thinking, I don't know why we would delay to wait for information that isn't going to change anything after we get it. We're going to use it as a ground truthing. Maybe we look at the trends to determine if they're similar, even though the scale might be different. You just want to kind of make sure that as these data change that it doesn't blow the whole understanding of our tautog fishery resource out of the picture that we currently have.

If that were to happen, if the new calibrated data don't line up and really throws us completely off track, then I think we need to rethink, we need to start over again. But I am inclined now to just keep this moving forward,

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and let's just let the process happen and see where we are as we check in with one another at the summer and annual meeting and the winter meeting. Let's just see what happens. But I don't like the idea that we would need to delay, just to wait for that information.

CHAIR GATES: I think we still have two options; we'll probably need a motion from someone to get the discussion going and resolved. If anybody is willing to make that motion, I will entertain that now. Jason McNamee.

DR. McNAMEE: I will **move that we do not delay for the recalibrated MRIP data**, keep it that simple if that works.

CHAIR GATES: I saw Emerson Hasbrouck, are you seconding it? I see Emerson seconding it. I think we've heard some rationale from Jason already. I will look to Emerson if he has anything else he would like to add now.

MR. HASBROUCK: There isn't much to add to what has already been discussed, but I think we need to move forward on this. I don't think it's going to make that much of a difference as we go forward. If we delay, then it just adds another year with status quo. We don't know what that is going to do. I don't like walking in two different currencies, in effect. Let's just move forward with this and we'll see what the benchmark assessment shows.

CHAIR GATES: Bob Glenn.

MR. GLENN: I think from my perspective I just have concerns that although I understand all the options on the table don't really change, as far as our management tools are concerned. I am just concerned that the recalibrated MRIP estimates could affect the magnitude of the reductions necessary in one direction or the other.

I think that uncertainty gives me some pause as to moving forward right now, at this point. I think a delay makes some sense, to better understand how the MRIP recalibration is going to affect that before sending the PDT forward to come up with

measures, given that that could really impact the magnitude.

CHAIR GATES: Katie Drew has a comment.

DR. DREW: I would just say that we won't know what the impact of the recalibrated MRIP is on the reduction that we need until we do another assessment. Whether that is an assessment update or whether that is the benchmark. Just waiting for those numbers won't tell us anything about what the right reduction is.

I think it would, when we do the reduction, like it comes out and say, oh great, we're 30% lower, doesn't mean that we're 30% of the way there. We would be doing that comparison again at like status quo would be the new calibrated status quo, compared to where we need to get to. We won't know what the change in the projections would be until we redo the assessment. I don't know if the Board would want to talk about changing the assessment schedule to get that information sooner, but yeah.

MR. GLENN: Follow up, if I may. Katie, thanks for that, I think that's helpful. Can you just remind me what the assessment schedule is again?

DR. DREW: We are currently scheduled to have the benchmark peer reviewed in 2029; the Board would receive it in 2029. We will start work on that like late this year or early next year.

CHAIR GATES: Mike Luisi.

MR. LUISI: I've already spoken and provided my support for the process of not delaying. I am still though, you know looking at what Mr. Glenn just mentioned. I am wondering from a staff perspective. The last thing in the world that I want to do is to ask staff to do things twice. But it doesn't sound like we would have to do things twice. But maybe some clarity around from a staff perspective, if you started

tomorrow on working through this Addendum, coming up with options. When these recalibrated data are ready in August and we're all looking at them to determine whether or not the trends are the same. Does it mean that you now have to go back and redo all of the options again? The way I understood it was the recalibrated data would not necessarily be used in any way until the next benchmark to determine status.

DR. DREW: We have the potential to use it in the options that we developed, so that we could wait until the numbers come out in August, which will be, MRIP has not specified when in August, but my guess would be it would be after the first week of August, after this Board meets and potentially approves the Addendum for public comment.

After the new MRIP numbers come out we could use the new MRIP calibrated numbers when we do, for example, a size limit analysis to say, if we increase the size limit one inch, what does that look like in terms of the percent reductions, or if we want to shorten the season by two weeks. What is that in November/December versus January/February or March/April? What does that look like in terms of the reductions?

I do not anticipate that that recalibrated data would have a significant impact on those options. But of course, it is too early to say yet. I will say, my concern would be that I think the Board either has to commit now or not, because if we go forward with not waiting, with not using the recalibrated numbers, they will come out while this Addendum is out for public comment.

Then the Board can have this, you can do a comparison of those numbers and the trends when we get back together in November, and the Board can decide what to do then. I would prefer for us not to put a lot of time and effort into developing these options, developing this Addendum, sending it out for public comment and the Board coming back in November and they are like, no.

In terms of the amount of work, changing your mind would double our work load, unless the Board

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wanted to commit to one thing and carry that through. Ideally, we would only do it once. The other thing would be, you know if we are the question of when, do we have to stick to this '28 or '30 option? If there are other things that the Board would want to consider on the projection front.

Other options, things like that, would that delay. If there is additional work that we want to task the TC with prior to our August meeting, then maybe it makes sense to wait for those numbers in that change and get it all done later. Long story short, I guess the question is, how much of a workload change or is this for the Technical Committee, and we would like to make it as little reduplication as possible while still meeting your needs.

CHAIR GATES: That was a lot. Mike Luisi, do you have a follow up on that?

MR. LUISI: Yes, just a quick follow up, Mr. Chairman. It would be my preference that when the public see the options that they see the options that we're going to decide on, not see the options and then have them change, even slightly, after new data come out.

Whatever that means, however we have to get to that point with this motion, if this motion doesn't delay, but then maybe. We knew we were going to have to deal with this, we knew that there was going to be some addendum, some amendment that was going to be happening right upon the point in time when all of these recreational catch data were being recalibrated. Just want to make sure we thought through, and make sure that we're as efficient as we can be with staff that are going to be working on this. Now I'm not sure where I am with this motion, although I don't want to delay it.

I don't want the public to see two sets of options, because that just makes it harder for me to have to communicate that to the public. Any help is being requested to understand that

a little more and how this motion effects that ultimate piece in time when the public gets this.

DR. DREW: The numbers will not be out before our August meeting, which is ideally when this would be approved for public comment. On the other hand, if they are delayed significantly, maybe they won't come out until after this is approved for final implementation.

However, right now we are looking at a scenario where ideally the Board would provide some guidance to the PDT. The PDT will do the options with the uncalibrated numbers. The options will be presented to you in August, the first week of August. You will send this out for public comment.

Depending on what MRIP has told us at that time, there is the potential that we could at least provide you know maybe delay the release of the document until we can at least say, here is the total numbers and here are the trends, and not be the options, but at least not have these numbers come out and have the document separate, whatever.

But then I think you could say, we're just going to keep going forward with these options and just recognize that this is a source of uncertainty, and we'll go forward with the uncalibrated numbers, everything is in the same currency. Then approve it in November for implementation in 2026.

You know I think you can change your mind on this at any point, in terms of if you are unhappy with the results and the calibration when you come back in November and rerelease it again with changes and things like that. But I think there is a path forward to commit to unrecalibrated the whole way. It is going to be a source of uncertainty and we're going to go for it, or delay.

MR. LUISI: That was helpful, thank you very much.

CHAIR GATES: I see Bob had his hand up.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Just, the Board should go wherever they want with this motion, not trying to steer that. But working

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backwards, if the document was approved at our annual meeting, which is the second week of November this year, you know obviously it won't affect the 2026 fishery.

It will affect 2027, or if this document happens to be delayed one cycle and wait for some more insight from MRIP, and it was approved at the winter meeting, which is the last week of January this year. Do the states still have time to get the regulations in place by 2027? Is there a big difference between November and January, as far as final approval for the states affecting the 2027 fishery. I just don't have a sense of how long it takes each of the states to get tog regulations in place, each state is different. I think that is kind of what we're talking about here potentially is November versus January on final approval and then the hard work happens at all the state level for getting these in place. Just food for thought. What is the best path forward, I'm not sure. Clearly the 2026 fishery is not going to be affected and this is 2027.

CHAIR GATES: One thought I have and I'll use this opportunity to say it. What happens if MRIP gets delayed further? If we delay now and then MRIP delays even further, where does that leave us for action at all this year? I saw Joe Cimino had his hand raised.

MR. JOE CIMINO: I support the motion. Katie has already pointed out that we're already turning right around and ready to go again, and yet I still feel like, you know I think we need to look at the potential for this being a species that gets a benchmark perhaps sooner than 2029, if possible, even bumping other species if necessary. I think we should look at 2028.

It's a quiet room, it's a small table right now, but it is an important recreational species to a lot of us. The MRIP recalibration, several states have some surveys that will be coming online that will be able to be included in a new benchmark, I'm hoping including New Jersey, who has a ventless trap survey as well, that kind

of suggests that if that data was included, SSB looks better, fishing mortality is a little lower, important for the New York/New Jersey Bight area.

I don't want to delay this. I think Bob brought up a really important point of like the timing of regulations. As we're moving forward, I think that in the meantime knowing that like we're actually going to be able to incorporate data. The reason why I don't support this is as Mike Luisi had pointed out is like, we're not necessarily going to have information that is going to help us until we get a benchmark. I think we really need to push that.

CHAIR GATES: Bill Hyatt.

MR. HYATT: Just quickly. I just want to say I want to say I support this motion. There is a huge amount of variability in the tog fishery anyway. When you consider that amount of variability doesn't worry me too much that there might be some difference between the recalibrated numbers, so I think move forward now.

CHAIR GATES: I think we can probably move on to the voting on this, but before we do, the wording up on the board I think has changed a little bit since we started. Jason, do you agree with the wording, can you read that into the record for us.

DR. McNAMEE: Yes, that looks fine, Mr. Chair.

CHAIR GATES: Could you read it in for us?

DR. McNAMEE: Oh, got you, sure. **Move to continue forward with the Addendum process and not delay for the recalculated MRIP data.**

CHAIR GATES: Does anybody need to caucus before we move to a vote on this? I don't see any need for a caucus, Toni, do you want to do the role? All right, **all those in favor, please raise your hand.**

MS. KERNS: Rhode Island, Connecticut, New York, New Jersey, Virginia, Maryland and NOAA Fisheries.

CHAIR GATES: All those opposed.

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MS. KERNS: Massachusetts and Delaware.

CHAIR GATES: Any abstentions, null votes, no. We had 7 to 2 in favor, so this motion carries.
Toni Kerns.

MS. KERNS: I just wanted to address Joe's request that we look at the timing of the benchmark. I think what we'll do is we'll go back and look at the timing, potentially get the Assessment Science Committee together and then come back with a proposal of what we could adjust at the Policy Board.

Either in August, if we can get a meeting done in time for that, and if not then we can at least make a recommendation to let you know what we're thinking and then the Policy Board could reevaluate that schedule at the annual meeting at the normal timeline, but we may be able to bump it up.

DR. DREW: The Assessment Science Committee will be meeting in May virtually, so we can bring this to them and come up with a new assessment schedule that would address this concern.

CONSIDER GUIDANCE TO PLAN DEVELOPMENT TEAM FOR DRAFT ADDENDUM I

CHAIR GATES: Next item that we're going to, we need some direction for the PDT on what specific management measures we want them to look at. I don't know if anybody has thoughts on that, it's things like looking at size limits and bag limits to achieve those reductions. This plan is a little unique, I think that the actual measures have to be in the Addendum. Jason.

DR. McNAMEE: Potentially taking us on a tangent that you don't want, so you can stop me. But I was thinking about one of those things that we need to decide on is we've got two versions of, you know just sticking with the 50% probability of achieving whatever target versus the Risk & Uncertainty Policy. I've got a comment on that, unless you want me to wait.

CHAIR GATES: I think we can start with that.

DR. McNAMEE: Thinking a little bit about this, and kind of seeing finally how it played out. I've had a couple of thoughts. I think at this point what we've said, with respect to the Risk & Uncertainty Policy in this process is we're going to kind of run it parallel, and not necessarily be bound by it, which I'm fine with.

To save some work for the PDT, you know I think they should focus on just that 50%, which is the only other option that kind of came up. That being said, thinking about the Risk & Uncertainty Policy, how it has kind of played out here. It's just my sense that people are not going to like what it said, which is fine and I understand that. But this whole system was developed to be iterative in nature, and so what I would like to do is not have it be in this document and create confusion for the public, when they are kind of looking at things.

But for the Board, I would like us to keep working through specifically, with respect to the iteration I was just talking about a moment ago has to do with, in particular, the social science and economic elements within the risk policy. We got recommendations from the CESS, which are good recommendations.

However, I think it is in the purview of the Board to disagree with those and want to modify them in some way, shape or form. That is one thing, maybe folks are ready today to make those comments. I'm guessing that they are not, but maybe we can think about that and have that discussion at the next meeting, you know when this item is still up for discussion, so that folks can go back and look at what the CESS said about these things, and then offer maybe a different score even, and kind of work through that.

This will just give us that exercise of doing this iteration and help us with the timing, because I think this timing is not right. We should have come to this meeting ready to do that sort of thing, except we didn't know that. It's okay, that is what

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this experiment is for. If you'll indulge me, just another comment on this topic.

We've been working on this at the Commission for a while, its had fits and starts. The New England Council has picked up a very similar type of process. It's simplified from what we're looking at, and so that might be something else we want to think about in particular when it comes to the socioeconomic information, I think.

I agreed with, we sort of put in this short term/long term concept in there, but now we had a suspicion that this was going to happen, they basically just offset each other. My guess is that probably would be persistent with this. I would encourage folks to look at what the New England Council has done, they like simplified that, you know have these two. I think we might want to think about that as well.

There are a couple of other elements that I think folks would like in what the New England Council is doing with the risk policy. Theirs isn't completely set yet either. It's got a little further out, I think, closer to utilization than we have here at the Commission. It's good to kind of look at those examples and learn from them. I won't rattle on about this. I could. If you want me to, I will. But those are just two things, so I would love to keep talking about this in the context of tautog, but not have it rolled into the actual document at this point.

CHAIR GATES: Dr. Drew.

DR. DREW: The other thing that, as you said the Board could consider adjusting through this process is the weightings, and that was our intent behind the short term/long term. You could weight them differently, if you would like, which might resolve that issue. But I think we could also, if the Board is interested in continuing the process, we could check back in with the Board, maybe via a survey to evaluate the weights as well as the socioeconomic scores and then essentially report back to you about

that at the August meeting, to see how all that went. But again, as you said, not include that in the document, just as a report back on the process.

CHAIR GATES: Yes, I think providing some kind of survey or something, for the Board to work on in between would be helpful, instead of just sending us home to think about it. I might not. We have one suggestion is to stick with the 50% probability. We have one, we've sort of resolved one, unless we hear somebody speak in opposition to that. What kind of more direction does the PDT need? Mike.

MR. LUISI: Are you still looking for just some general ideas on options and things like that, because I have a couple that I could offer. In discussing this at home, our staff and I haven't had the chance really to talk much with Delaware and Virginia about this, but one of the things that we were thinking about was establishing an option in our DelMarVa Region that has a bag limit that is the same for all the states in the region.

Right now, we're close, but Maryland's bag limit adjusts in the summer to be reduced, it's a reduced bag limit. Perhaps we could use this as an opportunity to try to find something that aligns with the three states in our region in moving forward. In addition to that, just as an added extra precaution, something that my staff thought was something that's being used in the Massachusetts/Rhode Island area.

I believe you guys have like a trophy fish; you are only allowed one fish over a certain size limit. Fishermen in Maryland often referred to our tautog fishery as a world class fishery. One of the suggestions coming from our public stakeholders is that we should be considering maybe limiting how many of the largest of the fish we can take off the reef at any one particular time.

A trophy size, where only one fish could be captured above a certain size limit could offer an extra level of protection, continue with this model of having this world class fishery that people come from all over the east coast to engage in. I would

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like to see those develop as staff are working through options for the DelMarVa Region.

MR. BOYLE: We have a bag limit that is the same across all states and a trophy regulation similar to that in Rhode Island for DMV specifically. Is that something that the Board would like to see for both regions, and also, so I guess a few things.

If that is something you want to see in New Jersey/New York Bight as well, is there anything else you want to see, in terms of seasons or anything like that or size limits? There is the 2028 and 2030 timeline still matched up with what the Board wants, in terms of how these are drafted and analyzed, and then do you want to see something in Massachusetts/Rhode Island for consistency as well? Those are my three questions.

CHAIR GRANT: Jesse.

MR. HORNSTEIN: I would like to shoot for the 2030 timeline. It's a big reduction we're going to be asking the public to take, and if we can spread it out over a few years I think that would be the most palatable. Then as far as seasons and bag limits.

This is going to pull apart the Sound and the Bight Region in New York, which creates this kind of uncomfortable tension between those two areas. If there is any way to keep those measures as close together matching as feasible, I just ask that they try and work to keep those matching up, at least maybe in timeframe or bag limits, whatever can be done.

CHAIR GRANT: Joe Grist.

MR. JOSEPH GRIST: I appreciate my friend from the north making that suggestion about adjoining possession limits. I also know that for Virginia/Maryland to match up on possession limits, it represents something like a 50% cut in our possession limit. Last year that's an 8 to

10% reduction. If we're going to be looking at everything,

I mean definitely maybe adjustments to the season, something of that nature would be more beneficial for our perspective, unless Maryland is willing to meet us halfway and come up a little bit. But looking at the season length would be a good approach for us. I'm not sure whether to touch size limit or not. I feel we've got size limit at a pretty good spot right now, but season would be a good one in there.

CHAIR GATES: Rich Wong.

MR. WONG: I agree with Virginia, and I do appreciate Mike Luisi's and Maryland's sentiment, trying to have the same possession limit. But even as close as Maryland, Delaware and Virginia are, tautog is in in so incredibly localized. I don't see the real strong reason to have the same regulations; you know across all three states. Also, that would represent 50% cut in our bag limit as well. It probably wouldn't work very well for us in Delaware; it wouldn't be very popular for our anglers.

CHAIR GATES: Just a follow up with Rich, we hear one thing that work. Is there any direction you would like to provide on what might work for you guys?

MR. WONG: Yes, I mean if we have to take the reduction the season would probably be preferable, and as Jesse pointed out, the farther rebuild, so we can spread it out.

CHAIR GATES: Jason McNamee.

DR. McNAMEE: First, just a quick comment. I've heard a couple of folks offer that they would love to try and get some consistency within their regions. I just wanted to offer that I built a little tool to kind of make that judgment, at least for the black sea bass process. But I offer that if folks want to, first I would love for it to get out a little further, to get some review of it.

I just made it and we sort of used it as a guide. I would love for other folks to take a look at it, beat it up a little bit. I think it's pretty slick, but it's worth getting some extra eyes on it. But that might be a helpful tool for folks, so just to kind of offer that is out there, and I'm happy to share it. Maybe, James, I can send it to you if you don't have it already. Yes, so then Mass/Rhode Island, I have not talked to my friends in Massachusetts directly about this, in passing a couple of times.

I told them I was nervous about our harvest rates going up and our biomass levels coming down. I would love for us to at least have the opportunity to discuss this, potentially add it into the Addendum if we can come to agreement. The seasons I think are pretty locked in and pretty conservative as it stands now.

I guess I would just be looking at bag limit and minimum size as potential adjustments we could make to kind of slow the decline in the biomass in our area. Again, I think what we're asking for here is just to have it in the Addendum for now, so that we can discuss this and put together a couple of options based on those two metrics if they agree to that.

CHAIR GATES: Any other? Bob Glenn.

MR. GLENN: I just wanted to offer support for Jason's comments on keeping flexibility in the Addendum to allow Massachusetts/Rhode Island to take a look at our management framework and see those opportunities there to look at the season and bag limits to potentially address what looks like some increased harvest rates or declining biomass.

CHAIR GATES: We've got some comments for each region. I'll look to technical folks; do we have sufficient comments to develop options for consideration in August?

DR. DREW: Yes, I think so. If there is anything you guys think about afterwards, you can reach

out to us and to the PDT. But obviously, sooner would be better than later.

CHAIR GATES: Thanks, folks. I see Jesse's hand go up. You're moving on to a different topic, right? If Jason McNamee can go first that would be great.

DR. McNAMEE: Tangentially related to what we were just talking about. First, just to say I support kind of looking at the assessment schedule and seeing if there is some way, because there is obviously interest in the kind of change in MRIP. I think it matters to tautog being such a highly recreational species.

I think that is important to get that assessment as quickly as we can, understanding there is going to be tradeoffs and we'll have to make those judgments as to whether it is prioritized or not. I support that. One thing I was wondering though, so this is a benchmark that we're going into, and I'm just noting that right now the way we're running the assessment is, each spatial unit is its own assessment.

Each is in its own box and there is no swimming between the boxes at this point. I wondered, and I apologize, I feel like this is one of those things that I say over and over again, but I think there are some techniques now that exist, you know thinking specifically about WAM, stock synthesis can also do this. But having one synthetic model with spatial units that allows some exchange, even if it is really small. I don't know, I like that idea better. I'm not sure, I didn't see that on the slide, that's why it popped into my head. I hope maybe that is one of the things that the benchmark is going to look at, so yes that is my comment.

DR. DREW: Yes, I think reevaluate stock status, not stock status, but maybe stock definitions could be on that list, as well as something like WAM or stock synthesis that does allow movement or migration within the model. Obviously, if we bump the benchmark up too soon, I think that will limit what we can explore on that front.

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I think probably the big data gap would be developing those migration rates to parameterize the model. But I think it's definitely something that the TC and the SAS would be very interested in looking at, if the time and the data support it.

CHAIR GATES: Jesse.

MR. HORNSTEIN: Also like to, and this until it's been discussed. Also like to see the PDT develop options to go out for a second type of tautog tag to be used in the commercial tagging program. Unfortunately, in New York we continue to hear about negative impacts that the kind of strap tag has had on businesses of some of our permit holders that participate in the live market.

The intent of this would be let it be at the discretion of a state to offer a secondary tag to their harvesters, which would allow us to stay status quo who want to stay status quo, but also if it was provided to harvesters would allow harvesters the option to select the tag that meets the needs of their business.

New York previously conducted testing of various tag types, went with a number of tag types and we didn't find a suitable tag to move forward with. Our goal here would be to fund an independent study, so we've got a broader range of tag types and sizes to make sure that a tag does not impact fish kept in live storage until they are sold for consumption, that it is a user-friendly tag and that a secondary tag also meets the goals and objectives of the tagging program.

Something like this is likely to require significant financial support, you know we would like to see this move forward in the Addendum and ultimately in the FMP, so there is some certainty that this is a possibility moving forward. Then before a secondary tag is selected, it would still have to go through the approval from the TC Board and LEC as

required. I'm happy to make a motion on this if that is necessary as well.

CHAIR GATES: Bill Hyatt.

MR. HYATT: A question, just follow up question on what Jesse just said. Is this a suggestion that this be in the Addendum, simply to recognize that New York is doing this study, or is there more to it than that?

CHAIR GATES: Jesse.

MR. HORNSTEIN: I think this would be in the Addendum as options to allow for this secondary tag to be used, once one ideally is eventually selected.

CHAIR GATES: Right now, the plan only allows for one tag to be used on the coast. This would be adding a second tag to the roster of possible tags. Bob Glenn.

MR. GLENN: Yes, I guess I just would express a little bit of concern on opening up the tag question again. This is something that this Board had looked at repeatedly and discussed. I think certainly if New York is interested in coming up with an alternative tag, I think the Board could be supportive of that, I guess.

But without knowing what that tag is ahead of time, I have some concern about putting it into this Addendum now. It would seem to me as a matter of process, it would make sense to do the study, come up with the results and that we have a workable tag. Then once we know that, it seems to me that the Board would be in a better position to support adoption of an alternative tag.

As opposed to preemptively putting it in the Addendum now, not knowing whether or not we actually have another tag that will work. Then I guess, if I may, just a follow up would be a question of process. Maybe this is for Toni. Can this be something that is handled under conservation equivalency, should New York come up with an alternative tag that works?

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CHAIR GATES: Toni.

MS. KERNS: I think there are two issues here. One, New York is looking to use 2 tags instead of 1 tag, and then whether or not this Board is okay with using 2 tags or not is the question. It's having that out there. I think the Addendum process would put the option for the Board to be able to allow, through Board action the approval of a second tag.

It doesn't guarantee the use of that second tag, if approved it would just be a Board action to make a decision for that year to use a second tag. The other part that could come out of this is that the Board can go through this in the Addendum process in that timeframe New York would be looking at different tags.

Then you guys could decide, we're going to stop using the tag we're currently using and switch for everyone to go to this alternative tag that New York may or may not be able to come up with during their testing process. It's sort of multiple things that are going on. Off the top of my head, thinking through. I don't want to say absolutely no conservation equivalency tags, but I don't know how conservation equivalency would work with a tag, because it's not really equivalent. It would be hard to come up with equivalency in a tag process.

I think what you want to be able to do is, what we would do through the Addendum process is have all the appropriate bodies be commenting on, what does it mean if we use two tags? How does that impact enforcement? How does that impact the health of the fish that are being contained, et cetera. We would go back and look at all of that and come to the Board, but this Addendum would only provide it as a tool in the tool box for the Board to utilize through Board action.

CHAIR GATES: All right, Jason McNamee then I have Bill Hyatt.

DR. MCNAMEE: I appreciated Bob's comments. I'm pretty much okay with what Jesse is talking about here, sort of a deliberative process looking and collecting data. The clarification of yes, it would, whether it is in the Addendum or not, it would come back for Board action. We as a group would approve or not some alternative.

I would just want to add, I think this particular aspect of the rules that we have on this fishery enforcement is a really important component. I mean it's what it's for, so their agreement that yes, there are like 2 different types of tags, as long as they are tagged it's okay, or not. I want to hear from them on this as well. Then I guess I just defer.

It seems like maybe from Toni's comments, just sort of making them that it would be like maybe the cleanest to have at least this notion of the tag in the document. I'm okay with that, but if it is not necessary, it would be nice to like not have an extra thing in the document, if it's not needed. I'm not sure on that aspect of it. But generally, sorry prattling on, but the concept is okay, as long as it is rigorous and the Board votes on it in the end, whether or not we approve its use or not.

CHAIR GATES: My understanding, what Jesse is asking for is for us to consider the possibility of using a second tag, and that the Board would then come back later after they've done their study and approve or not that tag, as used as a secondary tag.

MS. KERNS: But having it in the Addendum, it doesn't guarantee that the Board will say yes to the second tag, it just is the tool to allow for it.

CHAIR GATES: Jesse.

MR. HORNSTEIN: Would it just be cleaner if I make this as a motion? I would go out to the Board and ask, is there any objection to including this in the Addendum, before we did that. Joe Cimino.

MR. CIMINO: No objection. I would like to know if the Law Enforcement Subcommittee feels that this exploration is worthwhile. I believe they are discussing it this week. I would say just contingent

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upon their acceptance of this pursual, then I have no objections.

CHAIR GATES: I think we would have an opportunity to, at the August meeting, before this goes out to public comment, if we want to pull anything out of the Addendum at that time, we could pull it out then. Jesse.

MR. HORNSTEIN: I'll just add too, yes, I think adding the secondary tag option to provide some adaptability and flexibility to the program. We constantly hear about management needs to be more adaptable and flexible, even heard about it this morning, being more adaptable and flexible. I think this, you know at its worst it will say that a secondary tag is allowed, doesn't mean one needs to, you know if one is not approved. It would still allow in the future for continued development of research to be done, so that if one is ever found that meets all the needs can be utilized. It also provides flexibility of states who may not have issues right now, but you never know what the future brings, so should issues arise in the future it would allow themselves or an alternative tag to their harvesters as well.

CHAIR GATES: I saw Bill Hyatt, you had your hand up earlier, no. Any other business on this topic? Roy Miller.

MR. MILLER: Could you quickly review for me what the timeline is, in terms of going out to public hearing for this Addendum?

MR. BOYLE: The process will be to bring a draft document back for Board review in August, to consider approving for public comment. If approved, then we'll be back in the annual meeting for final action.

CHAIR GATES: Emerson.

MR. HASBROUCK: I'm a little confused here on process. I'm not sure where we are. Jesse had a motion to introduce relative to this topic, and then we started to debate whether or not he

should introduce that motion, and it flashed up on the screen a couple of times and then went away.

In the 12 years I've been on this Commission, I don't recall ever debating whether or not somebody could introduce a motion, or are we to the point where we don't need a motion and we're going to include this in moving forward, you know to allow for a second type of tag. Where are we with this?

CHAIR GATES: Thanks, Emerson, sorry for that confusion. I think my intent was just debating whether we needed a motion or not to include this in the Addendum. Since there was no opposition to include, I didn't hear anybody speaking against it. I think we can just have it by staff and just include it in the Addendum to work on it. Thank you for that question though.

MR. HASBROUCK: Yes, thank you for the clarification.

ADJOURNMENT

CHAIR GATES: If that is all on this topic, I think we can move on to Other Business. Does anybody have any other business to come before the Tog Board? Okay, so with that, I think we are ready to adjourn. Thank you, everybody, and have a good rest of the meeting.

(Whereupon the meeting adjourned at 10:30 a.m.
on Monday, May 4, 2026)

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Tautog Board Risk and Uncertainty Weighting Results

July 20, 2026

Introduction

Although the Tautog Management Board elected to use the FMP-mandated 50% probability of achieving the *F* target for the development of Addendum I to Amendment 1, the Board expressed an interest in continuing the process of applying the Commission's Risk and Uncertainty Decision Tool. The next step is for the Board to consider adjusting the weighting of the different scores within the tool and the socioeconomic scores themselves.

To that end, an online survey was distributed to the Tautog Board, and the results were used to update the Risk and Uncertainty Decision Tool.

Results

Three Commissioners from the New Jersey-New York Bight region completed the survey.

Overall, the weightings were similar to the weightings established by the Board in 2021, during the first pilot application of the tool to tautog (Figure 1). The main differences were slightly lower weight for the uncertainty scores and slightly higher weight for the short-term socioeconomic impacts. Applying the revised weights to the technical and socioeconomic scores developed by the Tautog Technical Committee (TC) and the Committee on Economics and Social Sciences (CESS) resulted in very little change to the recommended probability output by the tool (Table 1).

Commissioners also provided input on the socioeconomic scores. The scores used in the first iteration of the tool were developed by CESS on the basis of specific metrics about the commercial and recreational fisheries in each region, and the scale of the proposed management change. Commissioners scored the short-term socioeconomic impacts on both the commercial and recreational fisheries more negatively than the CESS did (Figure 2). In addition, while the CESS scored the long-term socioeconomic impacts of the proposed management change as positive, balancing out the short-term negative impacts, Commissioners scored the long-term socioeconomic impacts for both fisheries as slightly negative overall (Figure 2). The CESS noted in their report that the “long-term socioeconomic impacts” factor was difficult to interpret and recommended additional discussion on how to assess this factor, which may be contributing to the differences between the CESS and the Board on this score. The revised socioeconomic scores had a more significant impact on the recommended probability from the tool, resulting in the recommendation that management action should have a 58% probability of *F* being at or below the *F* target for the NJ-NY Bight region, compared to the first iteration of the tool, which recommended a 64% probability (Table 1).

Next Steps

The Board will review these results during the Summer 2026 Board Meeting and may choose to revise them further based on Board discussion. The Board may also provide feedback to the Risk and Uncertainty Work Group at this meeting to continue development of the tool.

Tables and Figures

Table 1. Risk and Uncertainty Decision Tool recommended probability for different weightings and socioeconomic scores

Scenario	Recommended Probability
TC/CESS scores + 2021 Board weights	64%
TC/CESS scores + 2026 Board weights	63%
TC scores + 2026 Board weights + Board scores	58%

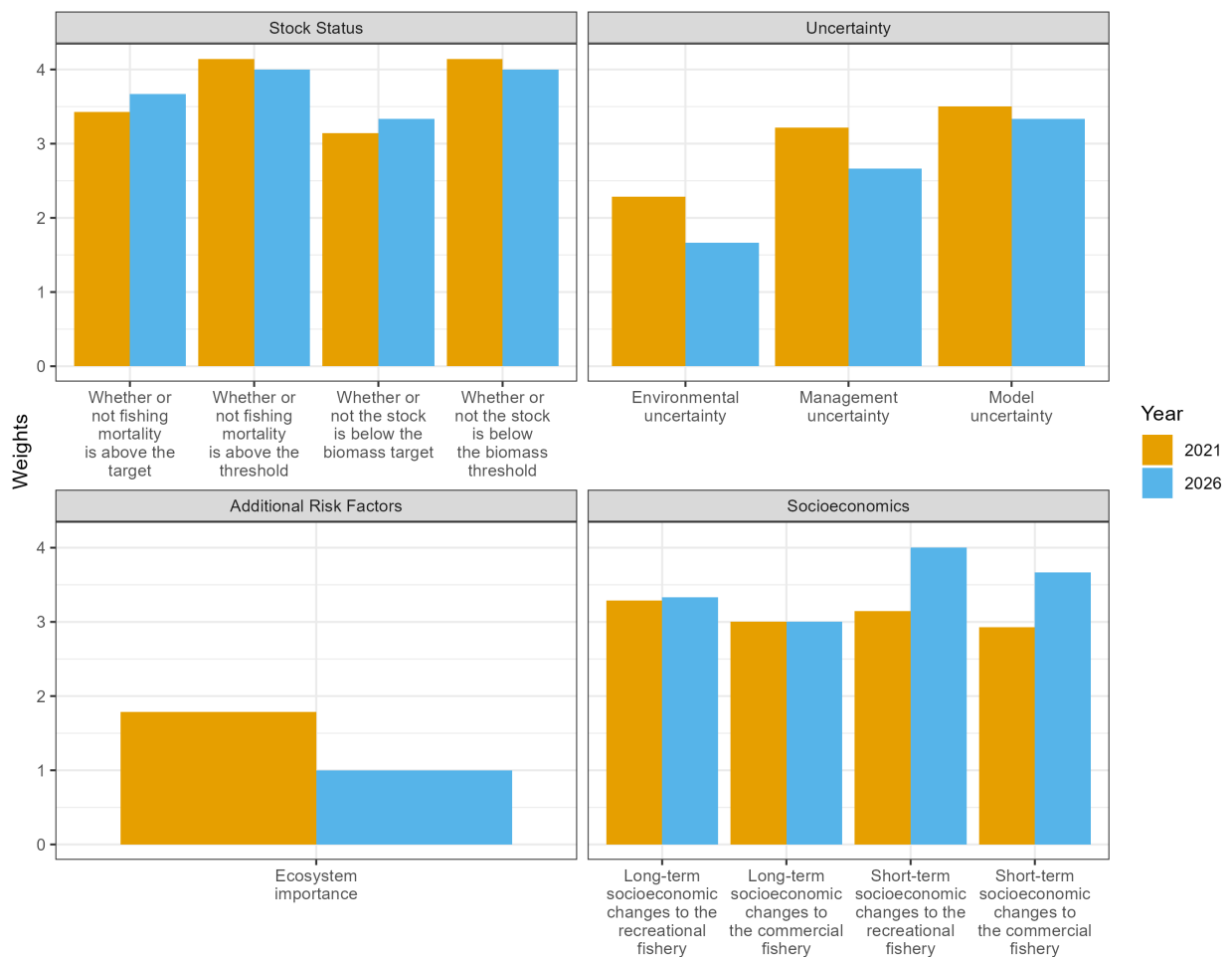


Figure 1. Board weights for the components of the Risk and Uncertainty Decision Tool from 2026 compared to 2021.

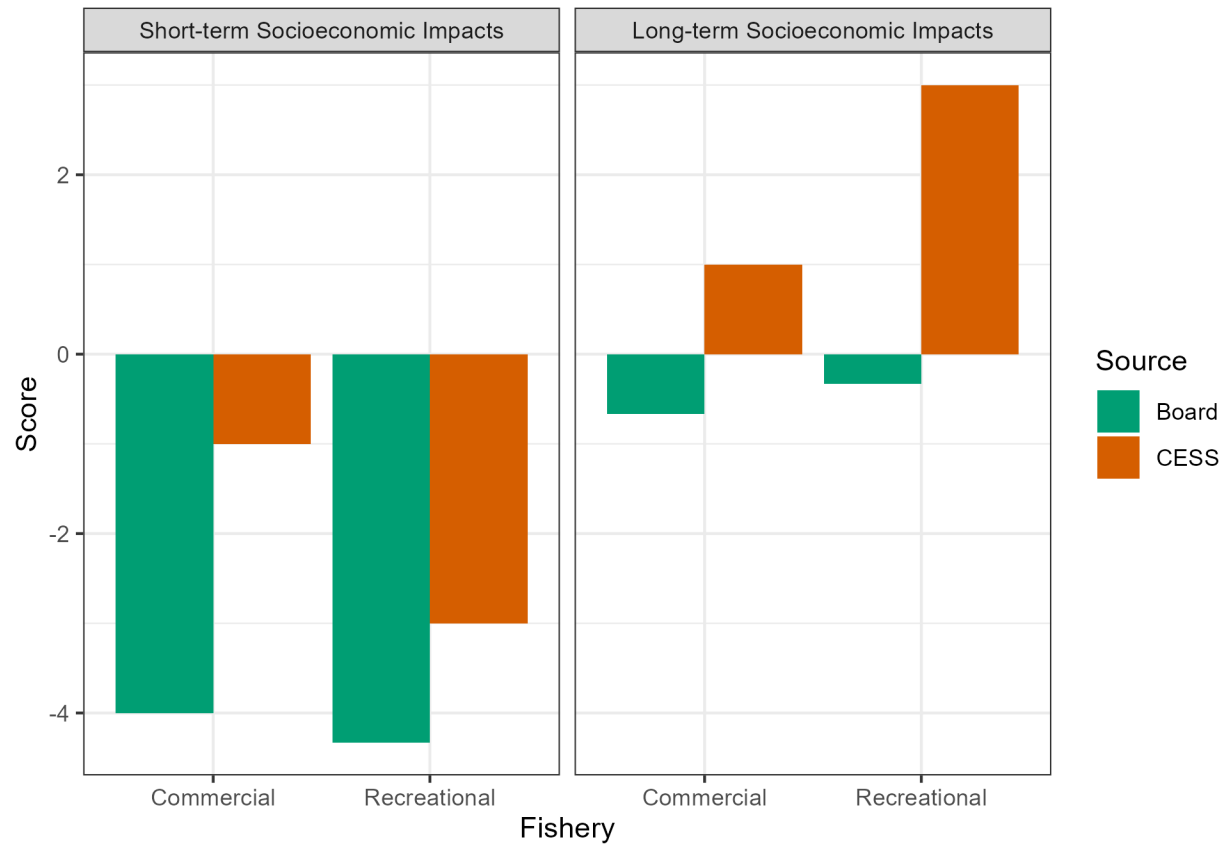


Figure 2. Comparison of socioeconomic scores for the NJ-NY Bight region from the CESS and Board members.

Atlantic States Marine Fisheries Commission

Executive Committee

*August 5, 2026
8:00 – 9:30 a.m.*

Draft Agenda

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

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

1. Welcome/Call to Order (*D. McKiernan*)
2. Board Consent
 - Approval of Agenda
 - Approval of Meeting Summary from May 6, 2026
3. Public Comment
4. Legislative Update (*A. Law*)
5. CARES Update (*R. Beal*)
6. Future Annual Meetings Update (*L. Leach*)
 - November 8 – 12, 2026 – Newport, Rhode Island
 - 2027 – South Carolina
 - 2028 – Massachusetts
 - 2029 – Pennsylvania
7. Other Business
8. Adjourn

This meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details

Atlantic States Marine Fisheries Commission

Spiny Dogfish Management Board

*August 5, 2026
9:45 – 11:00 a.m.*

Draft Agenda

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

1. Welcome/Call to Order (<i>J. Cimino</i>)	9:45 a.m.
2. Board Consent	9:45 a.m.
• Approval of Agenda	
• Approval of Proceedings from February 2026	
3. Public Comment	9:50 a.m.
4. Consider Northern Region Conservation Equivalency Proposal Final Action	10:00 a.m.
• Proposed Weekly Trip Limit (<i>J. Boyle</i>)	
5. Review Committee on Economics and Social Sciences Report on Commercial Fishery (<i>T. Scott</i>)	10:45 a.m.
6. Other Business/Adjourn	11:00 a.m.

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details.

MEETING OVERVIEW

Spiny Dogfish Management Board

August 5, 2026

9:45 – 11:00 a.m.

Chair: Joe Cimino (NJ) Assumed Chairmanship: 8/25	Technical Committee Chair: Vacant	Law Enforcement Committee Rep: Jack Chapin (MA)
Vice Chair: Renee Zobel (NH)	Advisory Panel Chair: Vacant	Previous Board Meeting: February 3, 2026
Voting Members: ME, NH, MA, RI, CT, NY, NJ, DE, MD, VA, NC, NMFS (12 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from February 2026

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 Northern Region Conservation Equivalency Proposal (10:00 - 10:45 a.m.) Final Action

Background

- The Northern Region states, with the exception of Maine, submitted a proposal to allow for a weekly trip limit for the fall fishery to make trips more economically viable and reduce quote underutilization (**Briefing Materials**).
- The PRT, TC, and AP met to review the proposal, and the LEC submitted written comments (**Briefing Materials**).

Presentations

- Review Conservation Equivalency Proposal by J. Boyle

Board Actions for Consideration

- Consider Approval of the Proposal

5. Review Committee on Economics and Social Sciences (CESS) Report on Commercial Fishery (10:45 - 11:00 a.m.)

Background

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| <ul style="list-style-type: none">• In February 2026, the Board considered initiating complementary action to the federal Accountability Measures framework. While the Board did not initiate action, in preparation for that possibility, the CESS drafted a report on the commercial fishery that could be included in a future management document, if needed (Supplemental Materials). |
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Presentations

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| <ul style="list-style-type: none">• Review Report on Commercial Fishery by T. Scott |
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6. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
SPINY DOGFISH MANAGEMENT BOARD

The Westin Crystal City
Arlington, Virginia
Hybrid Meeting

February 3, 2026

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

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INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of February 2025** by consent (Page 1).
3. **Move to set the spiny dogfish quota for the 2026/2027 and 2027/2028 fishing years at 9,197,675 pounds, pending approvals by NOAA Fisheries** (Page 9). Motion by Nichola Meserve; second by Eric Reid. Motion approved by unanimous consent (Page 9).
4. **Move to establish a 7,500-lb. trip limit for the 2027/2028 fishing year for the northern region** (Page 9). Motion by Renee Zobel; second by Matt Gates. Motion passes by unanimous consent (Page 10).
5. **Move to nominate Renee Zobel as Vice-Chair of the Spiny Dogfish Board** (Page 10). Motion passes by unanimous consent (Page 10).
6. **Move to adjourn** by consent (Page 11).

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ATTENDANCE

Board Members

Megan Ware, ME, proxy for C. Wilson (AA)	Emerson Hasbrouck, NY (GA)
Steve Train, ME (GA)	Joe Cimino, NJ (AA)
Renee Zobel, NH (AA)	Adam Nowalsky, NJ, proxy for Sen. Gopal (LA)
Nichola Meserve, MA, proxy for D. McKiernan (AA)	John Clark, DE (AA)
Ray Kane, MA (GA)	Roy Miller, DE (GA)
Jason McNamee, RI (AA)	Craig Pugh, DE, proxy for Rep. Carson (LA)
David Borden, RI (GA)	Michael Luisi, MD, proxy for k. Charbonneau (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Russel Dize, MD (GA)
Matt Gates, CT (AA)	Ethan Simpson, VA, proxy for J. Grist (Acting AA)
Bill Hyatt, CT (GA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
Rep. Joseph Gresko, CT (LA)	Rep. Brian Turner (LA)
Jesse Hornstein, NY, proxy for M. Gary (AA)	Laura Deighan, NMFS

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

Ex-Officio Members

Staff

Bob Beal	Caitlin Starks	Chelsea Tuohy
Toni Kerns	Tracey Bauer	Katie Drew
Tina Berger	James Boyle	Jeff Kipp
Madeline Musante	Emilie Franke	Samara Nehemiah

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The Spiny Dogfish Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Tuesday, February 3, 2026, and was called to order at 1:30 p.m. by Chair Joe Cimino.

CALL TO ORDER

CHAIR JOE CIMINO: I'm going to call us to order. This is the Spiny Dogfish Management Board meeting. My name is Joe Cimino. I am the Administrative Commissioner for New Jersey, happy to be chairing today. I have with me James Boyle and also special guest star from the Mid-Atlantic Council; Jason Didden is joining us online.

APPROVAL OF AGENDA

CHAIR CIMINO: Those two will be getting us through our agenda items today. To that end, I'm looking for approval of the agenda. Any concerns of the agenda as it is? Not seeing any we will consider that approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR CIMINO: Then approval of the proceedings from the May 2025 meeting. Were there any additions or corrections to that? Not seeing any we will consider that approved as well.

PUBLIC COMMENT

CHAIR CIMINO: We will go to public comment. If there are any members of the public, looking online as well that want to make comments on, I'm going to say stuff not on the agenda, we are taking final actions on the specifications, and I will go back to the public for that item at that time. Go ahead, Toni.

MS. TONI KERNS: Just quickly, to let everybody know which Board members are on the webinar, and again, I will do my best. But I believe we have Chris Batsavage and Brian Turner from North Carolina. We have Steve Train from Maine, Representative Gresko from

Connecticut, Emerson Hasbrouck from New York, and Laura Deighan for NOAA Fisheries.

CHAIR CIMINO: Thank you, Toni, appreciate that. Moving on from public comment.

DISCUSS SPINY DOGFISH ACCOUNTABILITY MEASURES

CHAIR CIMINO: We will now get into the discussion on Dogfish Accountability Measures. Actually, are we starting with Jason? Okay, so Jason, heard you on mic check. If you are ready, we will go over the actions from the Joint Council Framework.

REVIEW ACTIONS BY NEW ENGLAND AND MID-ATLANTIC FISHERY MANAGEMENT COUNCILS ON SPINY DOGFISH ACCOUNTABILITY MEASURES FRAMEWORK

MR. JOE DIDDEN: Most of these are pretty standard. I'll just flag and highlight that the MAFMC, the Mid-Atlantic Council's Risk Policy P-star is controlled how much the acceptable biological catch is lower than the overfishing level, and generally depends on stock size. Is the stock size lower relative to its target, then there are more precaution and a bigger buffer. Again, pretty standard here. They do bounce back and forth a little bit between metric tons and pounds, so just some quick conversions there. Two primary components to this presentation, first go to the specifications and then some changes to accountability measures that were adopted by the Council.

For specs, in a review where we are currently, very briefly on the assessment, talk about some recent fishery performance and get into the adopted specifications. The current fishing year specifications, it's a May 1 fishing year, so we're still in this right now and the things all flagged here is the commercial quotas at 9.3 million pounds, it's the bottom figure.

We take a large amount out for expected dead discard. There are different discard mortality rates for different gear types. Assessment overview, the

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terminal year of the last assessment was 2022. The assessment found that we were at the target, just about at the target in 2022, but finding lower annual productivity, apparently due to fewer of the biggest females, and not none, they are just definitely on the fishery and the survey encounter some, but just fewer relative to previous decades.

The future is kind of uncertain about long term spiny dogfish productivity. It was a new stock assessment model for that assessment, with the 2022 terminal year, stock synthesis 3, and we're in our first round of projections after that assessment. It will take a few assessments until we get a sense of, is this long term predicted yield around 7,500 metric tons consistent with what we see.

There are a lot of uncertainties, especially around growth of spiny dogfish that affect the productivity, but that is where we are right now. I will review a bit of, we did get a data update and updated projections, but I would just flag, it's not like getting a new assessment. The data update is just kind of informational from survey trends since the assessment.

The projections, again, it's not a full assessment update. It just uses the realized catch in some of the years after the assessment, between now and the upcoming specs. This is one of the data update highlights. This flags the orange circle that is the last year of data in the assessment, and then they had one year, there is one year of missing data and then an up year, and then a down year pretty similar to the terminal year for the spring survey.

Just in terms of how the fishery has performed a bit. The landings kept up with the quota in the late 2000s as it was increased, but then have been kind of trailing off and they didn't keep pace, but they continue to increase in quota after 2012. Then they've been generally down trending since then. Prices adjusted for inflation have been very slightly down trending in the last five or six years.

If you look at it nominally it's basically the same, but some erosion of real prices due to inflation in the most recent years there. Just a little background in terms of where the fishery occurs, 2024 wasn't super different compared to the kind of five years up to and including 2024, the fishery you see off the Cape there, off New Jersey and then off Virginia.

The blue line here is right around the current fishing year. You can see compared to '24, which is the orange, August was a bit slower and then you have a little bit of a slower time in December. The last few weeks have been pretty strong. We're like, maybe two or three weeks behind where we were in '24, in terms of total landings in the '25 fishing year, which again is continuing through April. As part of the Mid-Atlantic's specifications process we asked the Advisory Panel for input. Those are all available on the website. But again, there is more details in the Fishery Performance Report for each year that is included.

But some highlights, they kind of flagged demand for this product is relatively stable but low, a lot of marketing challenges with it. They have pretty much just one processor, so that adds complexity for the fisheries further south away from Massachusetts. But they have said that they can take more product than they have had in the last year or two.

Weather is always a constraint for Virginia, and that winter fishery. The Advisory Panel continues to highlight that any kind of up and down management just leads to shoreside gentrification, and that if they do lose that last processor it will pretty much end the fishery. They flagged that there are a variety of regulatory restrictions that limit production, the trip limit, area and gear restrictions.

There hasn't been a lot of interest in the recent years to change that trip limit, but they do flag that it is a limit on production when you look at trips you do see a lot of trips right at the trip limit. They continue to flag that they see some seasonal ups and downs, but really no long-term trends.

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They flag that the discard numbers seem unreasonably high. They did dig into that a little bit, and when we broke things down on like a per trip basis in the trawl fishery it accounts for a lot of the dead discards. It was just maybe a thousand or a couple thousand pounds of spiny dogfish per trip, which didn't seem super unreasonable for trawl fishery trips.

Although fishermen continue to flag, and our advisors continue to flag that they think the total discards seem unreasonably high, whether it is the discard estimates or the assumptions about discard mortality. We did get the Council in recent years has done some suspending of its risk policy to obtain some more quota.

We have gotten some comments about concern about that given kind of the spiny dogfish biology makes them vulnerable to overfishing. The Advisory Panel also provided some specific alternative recommendations. That was considered by the Spiny Dogfish Joint Committee and the Councils it went through.

I'm going to more focus on what the Councils output and which were for the most part pretty aligned in a lot of the recommendations from the Advisory Panel for some of the accountability measures. The AM, the accountability measure options that I'll get to later. Basically, there were three ABCs considered for total catch for '26 and '27.

The Council's risk policy adds a little bit of a buffer there to achieve a higher percent or a lower percent of overfishing. They have the 7300 metric tons under the Council's Risky Policy. It's 100 metric tons for going right up to the OFL. But the SSC really strongly cautioned against that.

The Council had flagged that they were considering suspending the risk policy and potentially setting catches right up to the OFL. The SSC provided that information but really cautioned against it, and recommended just maybe staying where the Council was at for '25,

the current fishing year. The OFL goes up a little bit in '26, because the projections have the stock increasing a bit. But the SSC said, well if you're looking for a little more fish here, but maybe considering going right up to the full '26 OFL, and that is what the Council's ended up going with for an ABC under that 2025 OFL, which again has a little bit of a buffer compared to fishing right at the OFL, the overfishing limit.

After the SSC met then it went to the Monitoring Committee, things like discard set aside, Canadian set-aside, then to the Spiny Dogfish Committee then to the Councils. There was a difference in the Council's initial selection for the accountability measures. It had the Mid-Atlantic, New England and then came back to the Mid-Atlantic again.

What did the Councils adopt? Basically, keeping the same ABCs as 2025, but because of the differences in discard data it would set aside just a little bit more for discards in the '26/'27 fishing years for '25. The quota goes from 9.3 million pounds to 9.2 million pounds. This is just the math working. The Canadian set aside is minimal. The recreational landing set aside is minimal.

It's really that discard set aside, and that was kind of driving the quota differences once the ABC was decided on. The Council set it on using the projection percentage that the assessment had used. Again, we looked at a number of different options, recent averages, and the Council settled upon just using the assumption that the assessment projections used, which is among the lower of the options, which increases the quota a bit.

Still a little bit higher than the current discard set aside. That is kind of the not much change, in terms of the specifications. The other framework alternative kind of looked at, right now we have 100% payback of any annual catch limit overages. That is likely to reduce future quotas if we have overages and they have to be paid back.

The idea was that maybe we can avoid disruption from these accountability measure paybacks if they don't seem really necessary to keep the stock near

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to target. It wasn't binding from the 2023 overage, but the 2024 quota was reduced by a little over a million pounds due to an overage in 2023. We ended up still not bumping up against that quota, but just kind of flag that this does have the potential to impact quotas, even though it didn't appear to impact the fishery in '24.

One thing that Toni Kerns has continued to flag is that there are some kinds of theoretical disconnects between the Federal approach and the Commission approach, potentially resulting in double paybacks. Doesn't seem like it's kind of been a huge issue to date, but certainly kind of monitoring that in thinking that may have to adjust in the future if needed, either at the Commission or the Councils or both levels if we seem to get into some kind of double payback pension, and Toni can describe that more if folks want to dig into that more at this point.

The AM modifications next. The first one, and this is kind of the primary thing was that if the stock is at or below 75% of the depth biomass you do 100% payback like we have now. If it's above the target you wouldn't have to do payback. Still might revisit management measures and evaluate kind of what went wrong to avoid kind of continual overages. There wouldn't be these automatic paybacks. Then in between the target and 75% of the target you would have an even slide based on biomass. This line figure just shows that exact same thing from the previous page. You are at Point A, so 100% of the stock target size and the payback would be 0%. If you're at point B down at 75% or below of the target stock size, then full paybacks. Notice there is an even side in between, so you can look at any example, but I just said, well, we're at half paybacks be required it's 87.5%. It's just an even side of required automatic paybacks based on biomass.

There was some discussion of treating all catch sources as the same or only having this kind of relaxed paybacks apply to discards or recreational estimates. Instead, the Councils

just went kind of treat all catch sources the same, since in terms of impact on stock you would expect that 100 metric ton discard overage would have the same stock effect as 100 metric ton landings overage.

Yes, the discard estimate may be high, but it may also be low. That's why the Council settled on no action for this one, just treat all catch sources the same. Three is that if we got down to 50% somehow and a rebuilding plan was triggered, you would have to do full paybacks all the way through the rebuilding plan, until you got back to 100%

Not kind of allow some of those relaxed paybacks between 75 and 100% if you are kind of in the middle of and have not completed a rebuilding plan. Again, if you are in a rebuilding plan you have to do full ACL paybacks until you are out of it. Councils also decide to go to three-year averaging, so just compare that three-year average of the ACLs since we are averaging the catches, and that again should buffer from like a random high year on discards or something like that.

Then the scaling would also be in effect, so it would just be the most recent projected biomass in the three-year average would be used for determining the scaling back in that kind of sliding scale line for paybacks. There was one other alternative set and it was to close federal waters, potentially above the quota, kind of the way the situation where like northern states went above a bit and it caused an early closure of federal waters later in the fishing year, when like Maryland and Virginia were fishing.

The Mid-Atlantic Council originally adopted this at the Mid's meeting during the shutdown. NMFS indicated that it seemed risky for potential of creating ongoing overages that weren't addressed, especially in combination with the other alternatives, including the one where all catch sources are treated the same, which means you can potentially not pay back a landing's overage if you are in good stock condition.

This kind of just seems like too much kind of added risk of creating ongoing overages. That was

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expressed at the Mid's meeting. It was further discussed at the New England meeting. New England decided that this did not make sense to include adopting this. Then when it came back to the Mid, the Mid aligned with New England and rescinded this particular provision.

Then big picture, quotas just about the same for the '26 and '27 fishing years starting May 1, and then some relaxations of some of the payback provisions in the Federal FMP when the stock is at or near the target, or above the target. I think that's it for me, I'll take questions. Thanks.

CHAIR CIMINO: Okay, thank you, Jason. Jason covered a lot of information there, including some information on the upcoming specs. I'll just remind the Board that we have a separate agenda item for that issue. James also has some information and some slides on the AM. But since Jason did cover so much information, let's go to questions directly on his presentations. I would look for any hands around the table, or Toni will look online for us. I see John Clark. Go ahead, John.

MR. JOHN CLARK: Thank you for the presentation, Jason. I was just curious about the processor. I know it's been an ongoing issue as to whether the quota is high enough to keep him in business, and is that still an issue or have these recent quotas been high enough to keep him running?

MR. DIDDEN: I mean they have been running, but I would think they would likely say they are in a kind of continued tenuous position, at the recent levels of landings and up to kind of the current quotas. That's my sense.

CHAIR CIMINO: David, go ahead.

MR. DAVID V.D. BORDEN: Jason, do you have a sense of what portion of the discards are caused by the trip limit? We're at the point with this stock where the ABC is basically the same, relatively close to the discard level. The question would be, how much of those discards

could we convert with a different trip limit, like a two-day trip limit or a weekly one, or something like that.

MR. DIDDEN: Most of the dead discards are in the large mesh and small mesh trawl fisheries. Kind of might be Gulf of Maine or Southern New England or Mid-Atlantic, kind of more or less. I don't think with the directed fishery is running, the gillnet fishery is really not where the discards are. In terms of directed fishing, it doesn't seem like adjusting the trip limit is going to have a big effect. I don't know, in terms of the trawl fishery.

Most of the discard reasons in the trawl are no market. I don't have a slide on that, but I know I've looked at that. It's unclear to me whether or not you could kind of stimulate a directed trawl fishery through a higher trip limit if the processor wants trawl-based spiny dogfish. At least for the gear types where most of the dead discards are coming from, it's not clear to me that you would have a big kind of conversion of the total discards to landings.

MR. CIMINO: I don't see that John or David necessarily needed a follow up from you, maybe a little bit unorthodox, but considering how the questions are going, you saw that John Whiteside had his hand up. John, if you had anything to add to this, either to John Clark's question or David's, go ahead please.

MR. JOHN WHITESIDE: Yes, I mean obviously I would like the quota to be higher. We feel it is artificially low. It does constrain sales and we have lost sales, and Peter has spoken about that in other meetings. I should have started off with good afternoon, yes, John Whiteside representing East Coast/Sea Trade, the last remaining processor.

Yes, we would like that. It does constrain us. Buyers do see that the quotas have been cut two-thirds and that does impact things. As for a quick comment on multiday or week trip limit for dogfish I think would be just terrible, just because of the quality of fish that would be coming in at that point. This is a product that needs to be caught, landed, processed,

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shipped in very short order on all of it. It's not something that can stick around. Thank you.
CHAIR CIMINO: Yes, thanks, John. I apologize; I should have introduced you there. Any other hands, questions for Jason? Not seeing any. I'm going to go to James, as I mentioned James has some slides on the AM as well.

CONSIDER COMPLEMENTARY COMMISSION ACTION

MR. JAMES BOYLE IV: I just have a few slides on sort of complementary management with the Boards path forward and actions to consider are. One objective of the Spiny Dogfish FMP is to strive for complementary management in Federal and State waters. I have a very quick couple slides on that.

Under the Commission's FMP overages within state or region will be paid back by that state or region in the subsequent fishing year on a pound per pound basis. However, as Jason alluded to during the development of this framework, there were some issues raised about the possibility of a double payback in the Federal and the Commission FMPs.

While the framework seems to resolve that issue under the current circumstances, it's still a possibility. Here is a general breakdown of the different conditions, for example overages, when the stock is at or above its target biomass as it is currently. Any overages from commercial landings will be paid back under the Commission FMP by the state or states or regions that incurred the overage, and there will be no additional payback necessary from the Federal FMP.

However, if the stock falls below the target biomass, then it depends on the catch source. If there is an ACL overage that is solely due to discards and not commercial landings, then the Federal FMP will require payback from the next applicable ACL. Now that payback varies under the framework because of the three-year averaging, and because of the scaling.

But for all intents and purposes, some payback will be required on the next applicable ACL, and the Board will have the option to implement a matching coastwide quota, which will be similar to the action the Board took in 2024 when the Board changed the coastwide quota to match the reduced Federal quota in response to the revised discards estimate.

In the situation where there is an overage that is a combination of or solely due to commercial landings or combination of commercial landings and discards, then there could be a scenario where the states or regions that in current overage are required under the Commission's FMP to pay back that overage, and the Federal FMP will also include that, and by reducing the ACL by a certain amount accordingly.

Then if the Board matches the reduced Federal quota there are essentially two paybacks of the same overage. Now this can be somewhat alleviated under the current FMP, because the Board is not required to match the Federal quota, so the Board could set a different quota, knowing that it will be taken out under our payback systems.

There is some flexibility there as well. But this is the issue that was raised during the framework action. The possible actions for the Board to consider are to take no action and maintain the payback provision as is. At this point the Board could choose to initiate an addendum to consider incorporating some of all of the new provisions recommended by the Council to the Federal FMP, including scale paybacks or utilizing a three-year average, or the Board is free to initiate action for some other changes they see fit regarding this item. With that I'm happy to take any questions.

CHAIR CIMINO: Thank you, James, any questions for James? Yes, Megan.

MS. MEGAN WARE: A question on timing if we go down the route of an addendum. I think there is maybe more uncertainty as to when the Federal regs will actually be implemented and changed, so I'm curious if there has been a conversation of, who goes first, or is there a better situation if the

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Commission finishes its process first, versus Federal government.

MR. BOYLE: I have not had that conversation. I would defer to NOAA Fisheries if they have an opinion on that. I'm not sure. Under a normal addendum process if it were initiated today, then we would be looking at final action if everything goes smoothly during summer meeting.

CHAIR CIMINO: Further questions or I'm certainly willing to move into discussion on this, thoughts on whether or not there is a feeling that we need to try and get ahead of this or as Megan mentioned, maybe wait and see what happens. Nichola.

MS. NICHOLA MESERVE: I'll move to the second part of an opinion, I guess. My read of the situation is that while there are some potentials for double deductions or the other issue is a state not be able to take its quota in full before a federal closure happens. That is something we talked about for a while now.

But it seems to me that with the changes made to the accountability measures and the three-year averaging, as well as the fishery performance as of late not reaching the quota, that if this is maybe more of a wait and see type of situation. See if there are real impacts that an addendum is used to take care of the issues. Just my two cents.

CHAIR CIMINO: Thank you for getting us started. Other thoughts or I guess any other questions on timelines. I always think it's important to understand the difference between complementary and joint management as well. You should consider yearly training on that. Megan.

MS. WARE: Maybe this is a follow up of my question. I'm wondering if waiting to see a Proposed Rule might be advantageous here just as a starting point. Just because there were concerns raised by GARFO during the

Accountability Measures Framework. I think we resolved this, but it would give me a little more confidence just to the timing and what actually will get implemented.

CHAIR CIMINO: Yes, appreciate that. Just kind of to move this along, are there any concerns by any Board members on doing just that, any objection? No, not seeing any. Let's do that, I appreciate that. I think that is a good idea. With that, James, if you have everything you need on that we can go to, Toni, go ahead.

MS. KERNS: Hopefully the Proposed Rule will come out in a timeframe where this Board would meet while it is still active, and if there are any issues that are contained in the Proposed Rule, the Board could give feedback to staff and we could craft comments to NOAA Fisheries on that rule.

CHAIR CIMINO: Very good, I agree. We will move on to the next agenda item. Go ahead, Eric.

MR. ERIC REID: The \$64,000.00 question is when is the Proposed Rule going to come out? I would look at my friends at the far end of the table to see if they have any idea, or online, that's fine, anywhere they are. But so many actions by this body and the Councils have been delayed because of the shutdown and for a variety of other reasons, staffing, et cetera, et cetera. I would really like to get some idea where this timeline actually is.

CHAIR CIMINO: Looks like we do have a hand online, so Laura if you are willing to respond and if you wouldn't mind introducing yourself as well. Thank you.

MS. LAURA DEIGHAN: Thanks, I saw Jsaon had his hand up, so I wasn't sure if he wanted to chime in first.

MS. KERNS: I think we want you to chime in.

MS. DEIGHAN: This is Laura Deighan, NOAA Fisheries. I don't know that I can speak to the timeline at this point. It depends on when we get the document from the Council, and then it will

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have to go through the rulemaking process. I'm sorry not to have a better answer.

CHAIR CIMINO: Yes, that is understandable. I think there is really a couple of issues here. I didn't mention it earlier, but I think it is also very concerning that the terminal year of this assessment is getting further and further in the rear-view mirror, and we're uncertain on when we're going to get an actual update as well.

I think we're in a really tough spot, to be quite honest with you, on how to manage this. The Mid-Atlantic SSC, obviously major concerns with suspending the Risk Policy. There was talk of you know maybe we should be considering constant catch. For those of you that have lifted that with black sea bass, it's certainly not a great way to manage. Jason, if you had a response as well, go ahead.

MR. DIDDEN: I was just going to flag that when you kind of had communications with GARFO with NMFS that this requires an environmental assessment. Been working on a mackerel NEPA thing, but I'll soon be switching over to this. Should get a draft EA up to NMFS sometime in February. But since these involve regulatory changes, some of those have taken a very long time to kind of clear through various processes.

I wouldn't expect a Proposed Rule before April at the earliest would be my guess right now. But since there wasn't an overage in the '24 fishing year, that it's not like an immediate pressing kind of, like there is no overage in '24. It will take some time to evaluate if there was an overage in '25.

The quotas being so similar it's not like an immediately pressing thing. We have rollover so if May 1 comes the current specifications just rollover, so I definitely agree with Laura's kind of big picture wise, it's hard to predict. But there is not like an immediate impact on May 1 of the new regs being implemented or not.

CHAIR CIMINO: Thank you, Jason that is helpful. Follow up from Eric.

MR. REID: Yes, so if that is the case I would be fine with the wait and see attitude. I am concerned about this fishery, you know and there has been more than one comment about losing the last processor. When you're a processor, there is a lot of things you have to consider. What you make on any certain item. The ex-vessel price is 0.22 cents a pound according to my math. That might be high. Depending on the margins and all that, you have to think about what your plant time looks like, and the last thing I want to do is lose this processor and the fishery all in one shot.

CHAIR CIMINO: I think one thing that kind of hasn't really been mentioned too is that this is as species that impacts the ecosystem. This fishery is managed for this fish if you like it or not. It's certainly something that for better or worse, I think both Councils and the Commission are doing everything they can to keep this all going. With that I think we can get into the specification settings for '26 and '27 and I'll turn it over to James.

SET SPECIFICATIONS FOR THE 2026/2027 AND 2027/2028 FISHING YEARS

MR. BOYLE: Yes, again, just a couple of slides really quickly. In addition to the quota that Jason presented that the Councils have recommended for the next two fishing years. In 2024 the Commission maintained the trip limit for the northern region at 7,500 pounds through the 2026/2027 fishing year, which is consistent with the Federal Trip Limit.

If the Board chooses to set the quota for the 2027/2028 fishing year or beyond, then the Commission would need to respecify the trip limit for those years as well. If the Commission were to adopt the recommended quotas from the Council or quota from the Councils it would result in these regional state quotas shown on the table. That does not account for the potential 5% rollover. I can leave these up for reference and happy to take any questions or leave it for the discussion.

CHAIR CIMINO: Questions? We do have some draft motions, I believe. Not seeing any hands for questions. What is the pleasure of the Board here? Nichola.

MS. MESERVE: If staff has a motion that would have the wording for the Tier Specifications I would happy to make that. **Move to set the Spiny Dogfish quota for the 2026/2027 and 2027/2028 Fishing Years at 9,197,075 pounds, pending approval by NOAA Fisheries.**

CHAIR CIMINO: Motion by Nichola Meserve; second by Eric Reid. Discussion on the motion. Not seeing any hands, **any objection to the motion? No objection, we'll consider that approved by consent.** Thank you very much, Eric, James, anything else on that?

We do have another motion to set trip limits. Do we have a maker for this motion? I see Renee Zobel; second Matt Gates.

MS. RENEE ZOBEL: We'll slow it down for a second here. **Move to establish a 7,500-pound trip limit for the 2027/2028 fishing year for the northern region.**

CHAIR CIMINO: Matt, does it still have your heart since you heard it read? Okay. Very good, Matt still seconds. They have a motion and a second. Any discussion on the motion? Eric.
MR. REID: Just to Mr. Borden's point a little while ago about having another look at what the trip limit is in the northern region. When he mentioned a weekly trip limit. I don't think he meant to be out a week doing it, it's more of an aggregate program. I just want to make sure that Mr. Whiteside understands that, because his response was, "they can't stay out and have fish turn to dogfood" instead of dogfish, I suppose. I just want to make sure that that is clear.

I don't think it's a bad idea to revisit that. We've done it before. But the economics of the fishery are really slim, and it may help the industry to keep dog fishing, if we work it out

where there is some sort of aggregate trip. But let them take advantage of economies of scale when they have the opportunity.

CHAIR CIMINO: I don't know if you're suggesting that necessarily as a task, because Jason or James if the APs have recently discussed that again. That is not a notion of multiple days, but instead of a combined tally across days. As Eric mentioned, this happened in this fishery and does exist for some other fisheries. I guess I'll start with a question then to either James or Jason as knowledge if that has been recently discussed or if not if that could be kind of brought to the advisory groups and possibly the Technical Committee or something.

MR. BOYLE: Speaking just for the Commission's AP it has not been discussed recently, at last in the last few years to my knowledge, and they could certainly be a task for the AP if that's what the Board would like.

CHAIR CIMINO: I see David Borden's hand and I just want to note that we would be recommending that that would also go to the Law Enforcement Committee.

MR. BORDEN: I would just like to thank Eric for clarifying that, because that is what my intent is. I know I think that a lot of people around the table know that Rhode Island has aggregates in a number of other species, and they work well. They get to the point that they improve the economics of the fishery.

I guess that leads to the question. If a state wanted to, this is also a motion, Mr. Chairman. I can come back to it if you prefer. Okay, so if a state, this is to staff, if a state wanted to pursue like an LOA or C proposal, to task that concept. When would that have to come back to the Board? Conservation equivalency?

CHAIR CIMINO: Toni.

MS. KERNS: The conservation equivalency would need to come back; it needs to be at least two months. In order for it to be discussed at the next

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The Board will review the minutes during its next meeting.

Board meeting it needs to come to us two months ahead of time, in order to get the appropriate feedback from the right committees. I would also have to think more through.

NOAA has a trip limit, so if they have a federal permit, they would have to follow the more restrictive of the two permits. I don't know if NOAA has an appetite to create LOAs or not, we would have to ask them about that. I'm not sure if Laura would be able to answer that at this moment in time. It would not be as simple as normal conservation equivalency would be, so it might take more time.

CHAIR CIMINO: Follow up.

MR. BORDEN: I'll just make this quick, because I know there are motions. I think that would be a useful idea for Massachusetts and Rhode Island to talk about jointly during some type of C proposal, and then if they could come to some kind of agreement and bring something back to the Board. I know that would require an LOA from NOAA in federal waters.

CHAIR CIMINO: A bit of a side discussion that I think was important. As I mentioned, we are doing everything we can to try and help keep this going. But it sounds like that is something we can do without a motion. It's to ensure that that is with that both at the state level and at our advising and technical levels. Then that could be revisited in the future.

We do have a motion before us, and so I'll look to see if there is any further discussion on the motion. Not seeing any hands, **any objection to the motion? Not seeing any; we'll consider that passed by consent.** We'll move on to the next agenda item, which is election of the Vice-Chair.

Actually, I'm sorry. I had mentioned that as a final action that we would have had public comment. I do apologize. I realize the Board has passed that motion, but I still will allow any

comments from the public on that. Not seeing any hands in the room, that surprises me. Not seeing any hands online. Okay, very good. Sorry about that. Let's see if we have a motion to elect a Vice-Chair. We do, John Clark, go ahead.

ELECT VICE-CHAIR

MR. CLARK: **It is my pleasure to nominate Renee Zobel as Vice-Chair of the Spiny Dogfish Board.**

CHAIR CIMINO: Very good, do we have a second? I have Ray Kane. Motion and second, any discussion? Not seeing any, **very good. Congratulations, Renee.** Appreciate that. My screen went blank there, James is that all we have? Other business and we'll go to Toni.

OTHER BUSINESS

MS. KERNS: At the CITES meeting the Tope shark as well as smooth-hound dogfish were put on notification for an Appendix II listing. These listings will go into effect in May of 2027, and Karyl Brewster-Geisz will give us an update on that during the Policy Board meeting, since we're not having Coastal Sharks Board meeting.

I am in the process of trying to figure out where exports are coming from, and what states are exporting smooth dogfish. John Whiteside, expect a phone call from me. Then what countries they are going to. In conversations with NOAA Fisheries and Fish and Wildlife Service, there is a possibility that we may have impacts to spiny dogfish.

I just want to make this Board aware, to pay attention to these conversations that we're having about smooth-hound and the Appendix II listing, because of the comingling of these two fisheries. I'll keep you guys up to speed as I know it. It is the plan for Fish and Wildlife Service to come to the Policy Board meeting in May to give us a full breakdown of how they are approaching it. There will be somebody from Fish and Wildlife here on Thursday. If you have some questions we can ask them then. But they are figuring out how to respond to this. Tope, which is a Pacific shark, T-O-P-E, I think is how

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you spell it. But I could be wrong. It is a new shark for me. I believe that the smooth-hound are a look-alike of a tope shark and that is why they were listed.

Yes, I am remembering correctly. It was not on our radar that smooth-hounds would get listed, because the original proposal was for two species, but it was not the Atlantic species of smooth-hounds. That caught us off guard when they did list it.

MR. REID: Could you remind me of the Latin name of what you're talking about? Is it *Mustelus Canis* or is it something else?

MS. KERNS: The tope?

MR. REID: No, I don't care. The one in the Pacific I don't have any control over.

MS. KERNS: Tope is *Galeorhinus galeus*, I can't say the scientific names, Eric.

MR. REID: Yes, but what about the smooth-hound, what about our shark? I think it's *Mustelus Canis*, I just want to make sure we're all talking about the same shark. It's got a million different names.

MS. KERNS: Very different. I'm not an expert in the look-alikes. Look-alikes under CITES, as I learned as I ventured into the land of CITES can be very wildly unexpected. I believe a snapping turtle is a look-alike for a crocodile at some life stage.

CHAIR CIMINO: I was worried I didn't know what the color taupe was. But mistaking a snapping turtle for a crocodile is way worse. Our state directors had gotten a heads up on this from Toni, because she is looking for some information. I guess Toni really, I'm glad that the Board and the rest of the folks listening in are hearing this. Any information on how the experts go, we'll have folks reach out to you.

MS. KERNS: Yes, I just chose that I could reach out to the state directors to try to get a better handle on the exports for smooth-hounds and then how the fishery is or is not comingled. As I figure that out I will, James and I through James, will report back to this Board and we'll be reporting back to the Coastal Sharks Board. Mr. Chairman, you do have a member of the public with their hand raised, Peter Hughes.

CHAIR CIMINO: Since it is a fellow New Jersey-an. I'm going to go to Peter Hughes.

MR. PETER HUGHES: Well, hi everybody, thanks for inviting me. The answer to Eric's question. When we exported smooth-dogs into Greece, we started exporting them as *Mustelus Canis*. But the Greek recognized them as *Mustelus Mustelus*.

I have some concerns that spiny dogfish at one point were threatened to be listed, and that that was going to cause severe marketing problems for U.S. fisheries being sold in the international markets. This really, really does bear watching to see what happens. But those were the names that we export. Horndogs were *Squalus Acanthias*. Thank you.

CHAIR CIMINO: Thank you for that follow up, Mr. Hughes, and we know where to reach you if we have further questions. Anyone else on this item? Not seeing any other hands, so moving on from Other Business.

ADJOURNMENT

CHAIR CIMINO: Unless there is any objection we will adjourn. Thank you, we are adjourned.

(Whereupon the meeting adjourned at 2:25 p.m. on Tuesday, February 3, 2026)

Conservation Equivalency Proposal

Seasonal Aggregate Limit Program for the Spiny Dogfish Northern Region

June 2, 2026

Overview

The New Hampshire Fish and Game Department (NH FGD), Massachusetts Division of Marine Fisheries (MA DMF), Rhode Island Division of Marine Fisheries (RI DMF), and Connecticut Department of Energy and Environmental Protection (CT DEEP) are submitting this conservation equivalency proposal to allow the commercial harvest, possession, and landing of spiny dogfish at a weekly limit of 37,500 pounds during September 1, 2026–December 31, 2026. This weekly limit would be authorized via regulatory changes or permit conditions issued to vessels enrolled in a states-administered Aggregate Limit Program, thereby exempting them from the Northern Region’s daily trip limit of 7,500 pounds. We are also applying to NOAA Fisheries for a complementary Exempted Fishing Permit in relation to the federal spiny dogfish possession limit of 7,500 pounds per day.

Rationale

The objectives of the project are two-fold: 1) to encourage additional effort in the fishery by providing for more economically viable fishing trips, thereby increasing the utilization of the Northern Region spiny dogfish quota; and 2) to provide data to inform the setting of future trip limits through the specification process.

The Northern Region, which is allocated 58% of the coastwide quota, has routinely underutilized its quota for over a decade, often by more than 50%. In the most recent fishing year (FY25: May 1, 2025–April 30, 2026), the Northern Region landed roughly 1.53 million pounds (mlb) of a roughly 5.55-mlb quota (28% quota use). Effort and landings in the Northern Region are on a downward trend. Advisory Panel members have consistently cited the impact of low profit margins in the fishery—given low species value compared to trip costs—on effort levels and quota utilization. The FY26 quota for the Northern Region has been set at a similar level (~5.46 mlb), and there is the potential for effort and landings to be further depressed by the rapid escalation in fuel costs.

The high percent of quota underutilization was of less concern during the era of 20-mlb or higher coastwide quotas (with landings still being 10-20 mlb). Under the recently reduced quota levels (~10 mlb), continued quota underutilization of this magnitude will jeopardize the operation of the sole remaining dogfish processor located in New Bedford, MA. While the potential coastwide quota underutilization in recent years has been offset by quota

transfers from the Northern Region to Virginia, the resulting landings are ultimately transported a great distance to the processor, which may also be impacted by increased fuel costs.

Northern Region landings occur primarily during the months of July, August, and the beginning of September by dayboats when the resource is closest to shore and trip costs lowest. Effort and landings decline into the fall concurrent with the resource's seasonal shift to deeper and more southern waters. This declining effort may be linked to the 7,500-pound trip limit. Allowing for a higher trip limit during the fall months may broaden participation and increase effort through enabling more economically viable fishing trips.

Spiny Dogfish Management Board increases to the Northern Region trip limit have proceeded at a slow but steady pace partly in recognition of supply impacts on market price. In particular, the region's dayboat vessels that fish the resource in inshore waters during the summertime have been hesitant to support large trip limit increases that could increase landings but depress price-per-pound resulting in more effort for the same profit. Other industry members have argued for higher trip limits to improve trip profitability, encourage more participation and effort, and enhance quota utilization to maintain or develop market position. We believe this seasonal approach to experimenting with a weekly limit strikes the appropriate balance of these various interests within our region. Data collected during the fishery from established trip-level reporting programs will inform future deliberations on the trip limit (e.g., changes in participation, effort, ex-vessel price, landings per trip).

Program Details

The requested weekly trip limit is conservationally equivalent to the 7,500-pound daily trip limit. The 7,500-lb daily limit has the potential to result in as much as 52,500 pounds landed in a week by a single vessel. We are requesting a 37,500-pound weekly limit for participating vessels (7,500 X 5), which approximates the maximum weekly landings seen by vessels in our region under the daily limit. Our states would authorize the weekly limit through regulations or permit conditions (depending on each state's authorities) to eligible vessels that apply to be a part of the Aggregate Limit Program. Eligibility would be restricted to vessels authorized to land spiny dogfish in our state(s) and who possess a federal spiny dogfish permit. Consequently, daily electronic vessel trip reports would be mandatory for all participants per the federal permit requirement.

All spiny dogfish commercial landings by the participating vessels (and non-participating vessels) would continue to count towards the Northern Region quota and be monitored by the Northern Region states. (While Maine is also part of the Northern Region, the state did

not expect interest from their permitted vessels and declined to participate.) We would suspend the Aggregate Limit Program and revert to the 7,500-pound daily trip limit if 80% of the Northern Region quota is projected to be utilized. This will practically eliminate the potential for a quota overage, while continuing to allow for minor January–April Northern Region landings and some unused quota transfer to other state(s) when it could still be used. Otherwise, the Aggregate Limit Program would end on December 31, 2026.

We acknowledge that there may be concerns regarding the potential for the weekly limit to reduce ex-vessel spiny dogfish price. However, demand has exceeded supply in recent years and this is not anticipated. Nonetheless, if needed, efforts will be made to self-regulate through communications between the processor and participating vessels. Should negative effects materialize, vessels will be advised against making trips under the EFP until prices normalize. Any concerns about the quality of product being landed and its effect on market price will also be communicated.

In order to make the Aggregate Limit Program available to vessels with a federal spiny dogfish permit (and have the federal permit be a prerequisite to participate in the program), we are also applying to NOAA Fisheries for a complementary Exempted Fishing Permit (EFP). If that EFP is not granted, we will not launch the Aggregate Limit Program.

This conservation equivalency proposal is asking for the operation of the Aggregate Limit Program during September 1–December 31, 2026 only. We intend to submit a report to the Spiny Dogfish Management Board evaluating the impacts of the program by the ASMFC Summer 2027 meeting. Results may be used to inform a similar conservation equivalency proposal for FY27, as well as FY28 specification setting in mid/late 2027.



Atlantic States Marine Fisheries Commission

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Spiny Dogfish Plan Review Team and Technical Committee Meeting Summary

July 1, 2026

Technical Committee and Plan Review Team Members: Angel Willey (MD), Catherine Wilhelm (VA), Greg Skomal (MA), Kelli Mosca (CT), Matthew Heyl (NJ), Melinda Lambert (NC), Tara Scott (NMFS), Tobey Curtis (NMFS), Jason Didden (MAFMC)

ASMFC Staff: James Boyle

The TC and PRT met via webinar on July 1, 2026 to review a Conservation Equivalency proposal from the Northern Region states to consider a weekly trip limit instead of a daily trip limit for some harvesters.

Review of Conservation Equivalency Proposal

From Addendum III to the Spiny Dogfish FMP, the Board sets the daily trip limit for the Northern Region during specifications, and currently, the daily trip limit is 7,500 pounds.

The goals of the proposal are 1) to encourage additional effort in the fishery by providing for more economically viable fishing trips, thereby increasing the utilization of the Northern Region spiny dogfish quota; and 2) to provide data to inform the setting of future trip limits through the specification process. The proposal would allow the commercial harvest, possession, and landing of spiny dogfish at a weekly limit of 37,500 pounds during September 1, 2026–December 31, 2026, which coincides with the seasonal decline in the fishery as the stock moves farther offshore making trips more expensive.

The PRT and TC noted three potential concerns: 1. Is there likely to be an increase in discards if the processor receives large batches of landings that outpace processing? 2. Are states able to ensure that a harvester can be monitored in multiple states to not exceed the weekly limit? 3. Were there any biological concerns in past proposals of larger trip limits?

Additional information from Massachusetts clarified that a communication system is being developed between the processor and individual harvesters to prevent landings exceeding capacity. Furthermore, the proposal would only include federally permitted harvesters, who have daily reporting requirements that can be monitored by every state in the Northern Region. Finally, there were no biological concerns PRT and TC, and concerns of past trip limit proposals stemmed from market concerns that should be alleviated by the seasonality of the proposal.

The PRT and TC recommend the proposal for approval.



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Spiny Dogfish Advisory Panel Meeting Summary

July 13, 2026

Advisory Panel Members: James Webber (RI), John Whiteside (MA)

ASMFC Staff: James Boyle

The AP met via webinar on July 13, 2026 to review a Conservation Equivalency proposal from the Northern Region states to consider a weekly trip limit instead of a daily trip limit for some harvesters.

Review of Conservation Equivalency Proposal

From Addendum III to the Spiny Dogfish FMP, the Board sets the daily trip limit for the Northern Region during specifications, and currently, the daily trip limit is 7,500 pounds.

The goals of the proposal are 1) to encourage additional effort in the fishery by providing for more economically viable fishing trips, thereby increasing the utilization of the Northern Region spiny dogfish quota; and 2) to provide data to inform the setting of future trip limits through the specification process. The proposal would allow the commercial harvest, possession, and landing of spiny dogfish at a weekly limit of 37,500 pounds during September 1, 2026–December 31, 2026, which coincides with the seasonal decline in the fishery as the stock moves farther offshore making trips more expensive.

The AP did not have any concerns with the weekly trip limit. John Whiteside echoed comments made at the PRT and TC meeting that they are implementing a communication system between the processor and the harvesters to alleviate any concerns about supply outpacing capacity. They noted that this process had already been established in the skate fishery and that with just a single processor on the coast, it would be a relatively simple process for spiny dogfish. **The AP recommends approval of the proposal.**

Overall, the responses were supportive, with a few minor concerns noted. The primary issues were dockside monitoring of trip limits and clear notification of any in-season program changes.

The proposal involves two management options evaluated in the *Guidelines for Resource Managers on the Enforceability of Fishery Management Measures*: Electronic Reporting and Trip Limits (Aggregate). Both received mid-range enforceability scores: 3.05 for Electronic Reporting and 3.16 for Trip Limits (Aggregate), on a scale where 1 is least enforceable and 5 is most enforceable.

Law Enforcement Committee Comments

New Jersey

New Jersey's primary concern is the potential elimination of a daily trip limit. From an enforcement perspective, monitoring actual offloads across an entire week to establish an overage case would be extremely difficult. For example, if a fisherman landed 10,000 pounds one day, 5,000 pounds the next, and 7,000 pounds the following day, enforcing a weekly limit with certainty would be challenging.

New Jersey uses daily trip limits for summer flounder and black sea bass, paired with a weekly maximum. A recent commercial Season 6 trip-limit modification notice included the following structure:

- Option A: 4,000-pound trip limit once per week
- Option B: 2,000-pound trip limit twice per week
- Option C: 1,000-pound trip limit four times per week

New Jersey would support a similar approach.

Massachusetts

MEP identified no issues.

Delaware

Delaware identified no concerns.

U.S. Coast Guard

The U.S. Coast Guard raised no overall objection. Its review focused on consistency with federal regulations and enforceability at sea.

- The proposal appears to be sufficiently aligned with federal regulations.

- Vessels would need to hold a federal spiny dogfish permit, and an Exempted Fishing Permit would be sought.
- If the Exempted Fishing Permit is not granted, the Aggregate Limit Program would not occur.
- The U.S. Coast Guard is experienced with Exempted Fishing Permits, which are required onboard to support fisheries inspections.
 - The proposal would shift enforceability burdens to shoreside enforcement.
 - Weekly limits are not well suited to at-sea enforcement and would require reliance on active dockside enforcement. The U.S. Coast Guard is not the lead agency for dockside enforcement and would not assume additional shoreside enforcement responsibilities. However, the Coast Guard noted that weekly limits could make it more difficult for managers to obtain accurate landing values because additional shoreside monitoring across trips may be needed.

South Carolina

Although the fishery does not occur in South Carolina, the main concern would be clear notification if total limits are close to being reached and the weekly limit needs to be reduced. South Carolina also noted that the proposal appears intended to help participating fishermen, which was viewed positively.

Georgia

Georgia did not identify significant enforcement challenges with the proposed change, particularly because the resource does not appear to be overfished.

Relevant Enforceability Guidelines

ELECTRONIC REPORTING

Definition: Data transmission, electronic logbooks, or other digital recording systems are used to record harvest activity on a vessel. Enforceability is based primarily on use in commercial fishing operations.

Average Overall Rating: 3.05

Recommendations:

- Reporting systems should be established to record and transmit data as soon as possible after actual harvest activity occurs.

- Delayed reporting should be specified to occur on a daily or weekly basis. Lengthy delays between harvest activity and required reporting intervals reduce the effectiveness of enforcement monitoring.
- Data storage systems should be readily accessible to enforcement personnel in the field or on the water.
- Regulations should include provisions requiring tamper-resistant and tamper-evident electronic monitoring units.

TRIP LIMITS (aggregate)

Definition: A specified amount of a species is allowed to be caught and possessed onboard or landed by weight, volume, or number, covering a specified duration of time. In most situations this applies to the commercial sector. It is a form of possession limit intended to reduce bycatch, provide for safety at-sea while also considering the economics of the fishing industry. Aggregate limits allow a vessel to remain at-sea fishing, rather than having to come to port with each day's possession limit. An aggregate possession limit allows for a vessel to catch a multi-day trip limits in one shortened trip but requires this vessel to stay out of a fishery for the remaining period. This type of allowance is typically based on a one- or two-week duration.

Average Overall Rating: 3.16

Recommendations:

- Most of the difficulties or concerns with enforcing daily trip limits would still apply to aggregate trip limits.
- It is even more difficult to enforce an aggregate trip limit at sea.
- This type of regulation allowing for a vessel to remain at sea and catch multiple daily trip limits precludes any significant at-sea enforcement.
- This type of aggregate program or a multi-jurisdictional trip limit (landing flexibility) program should not be considered without an adequate cooperative management program to provide for responsible fishers, clearly defined rules, and sufficient sanctions for a violation of the program rules.
- This type of program should require both a vessel monitoring system and timely electronic reporting.

Atlantic States Marine Fisheries Commission

Coastal Pelagics Management Board

August 5, 2026
11:15 a.m. – 12:15 p.m.

Draft Agenda

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

1. Welcome/Call to Order (<i>R. Beal</i>)	11:15 a.m.
2. Board Consent	11:15 a.m.
• Approval of Agenda	
• Approval of Proceedings from February 2026	
3. Public Comment	11:20 a.m.
4. Consider 2027 Total Harvest Quota and Recreational Measures for Atlantic Cobia (<i>C. Tuohy, A. Giuliano</i>) Final Action	11:30 a.m.
5. Progress Update on 2027 Stock Assessment for Atlantic Cobia (<i>A. Giuliano</i>)	11:45 a.m.
6. Consider Approval of Atlantic Cobia FMP Review and State Compliance for the 2025 Fishing Year (<i>E. Franke</i>) Action	11:55 a.m.
7. Update from South Atlantic Fishery Management Council on Spanish Mackerel Activity (<i>C. Curtis</i>)	12:05 p.m.
8. Elect Vice-Chair Action	12:10 p.m.
9. Other Business/Adjourn	12:15 p.m.

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details.

MEETING OVERVIEW

Coastal Pelagics Management Board

August 5, 2026

11:15 a.m.– 12:15 p.m.

Chair: Erika Burgess (FL) Assumed Chairmanship: 5/26	Technical Committee Chair: Cobia: Angela Giuliano (MD) Spanish Mackerel: Vacant	Law Enforcement Committee Rep: Capt. Scott Pearce (FL)
Vice Chair: Vacant	Advisory Panel Chair: Craig Freeman (VA)	Previous Board Meeting: February 4, 2026
Voting Members: RI, NY, NJ, DE, MD, PRFC, VA, NC, SC, GA, FL, SAFMC, NMFS (13 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from February 2026

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. 2027 Total Harvest Quota and Recreational Measures (11:30-11:45 a.m.) Final Action

Background

- The current total harvest quota (commercial and recreational) and recreational measures for Atlantic cobia expire at the end of 2026.
- Atlantic Cobia Addendum II established a lengthened specifications setting timeline and a new regional recreational allocation framework allowing the Board to set specifications and recreational measures for up to five years at a time.
- The Cobia Technical Committee (TC) met in June to discuss available data, complete the recreational harvest target evaluation which found all regions to be under their respective soft targets, and formulate recommendations for the 2027 total harvest quota and recreational measures (**Briefing Materials**).

Presentations

- Overview of Addendum II Provisions by C. Tuohy
- Technical Committee Report by A. Giuliano

Board action for consideration at this meeting

- Approve total harvest quota and recreational measures for 2027.

5. 2027 Stock Assessment for Atlantic Cobia (11:45-11:55 a.m.)

Background

- A stock assessment for Atlantic cobia began in early 2026 with anticipated completion and peer review in 2027.
- The Commission is leading the assessment process (Data, Methods, and Assessment Workshops) and the SouthEast Data Assessment, and Review (SEDAR) will coordinate a Peer Review Workshop in Spring 2027 (SEDAR 107).
- The Cobia TC and Stock Assessment Subcommittee (SAS) met four times in early 2026 in-person and virtually to conduct the Data Workshops (**Briefing Materials**).
- The Methods Workshop is scheduled for September 2026 in Raleigh, NC.

Presentations

- Update on stock assessment by A. Giuliano

6. Atlantic Cobia Fishery Management Plan Review (11:55 a.m.-12:05 p.m.) Action

Background

- State Compliance Reports were due on July 1, 2026.
- The Plan Review Team reviewed each state report and compiled the annual FMP Review (**Supplemental Materials**).
- Rhode Island, New Jersey, Delaware, Maryland, Potomac River Fisheries Commission, and Georgia have requested *de minimis* status.

Presentations

- Overview of the Atlantic Cobia FMP Review Report by E. Franke

Board action for consideration at this meeting

- Accept 2026 FMP Review and State Compliance Reports for the 2025 Fishing Year for Atlantic Cobia.
- Approve *de minimis* requests.

7. South Atlantic Fishery Management Council Update on Spanish Mackerel (12:05-12:10 p.m.)

Background

- The South Atlantic Fishery Management Council (SAFMC) has been considering how to respond to recommendations from the 2024 [Mackerel Port Meetings](#) as well as the most recent Spanish mackerel stock assessment (SEDAR 78).
- The SAFMC decided to postpone action until the revised MRIP time series is available and until the 2027 SEDAR stock assessment is complete.
- In June 2026, the SAFMC passed a motion to initiate an amendment to address a fishing year change for Spanish mackerel (in response to discussion about harvest balance between North Carolina and Florida) and prohibit tournament sales for king mackerel (**Briefing Materials**).

Presentations

- SAFMC update on Spanish mackerel by C. Curtis

8. Elect Vice Chair (12:10-12:15 p.m.) Action
Background • The vice chair seat is currently empty.
Board actions for consideration at this meeting • Elect Vice Chair

9. Other Business/Adjourn (12:15 p.m.)

DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
COASTAL PELAGICS MANAGEMENT BOARD

The Westin Crystal City
Arlington, Virginia
Hybrid Meeting

February 4, 2026

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

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INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of October 2024** by consent (Page 1).
3. **Move to approve the Terms of Reference for the 2027 Atlantic Cobia Stock Assessment and Peer Review** (Page 4). Motion by Doug Haymans; second by Jason McNamee. Motion approved by consent (Page 4).
4. **Move to approve the Atlantic Cobia FMP Review for the 2024 fishing year, state compliance reports and *de minimis* requests for Rhode Island, New Jersey, Delaware, Maryland, Georgia and Florida** (Page 11). Motion by John Clark; second by Joe Grist. Motion passes (Page 11).
5. **Move to approve the Spanish Mackerel FMP Review for the 2023 and 2024 fishing years, state compliance reports and *de minimis* requests from Rhode Island, New Jersey, Delaware, and Georgia** (Page 14). Motion by Roy Miller; second by Doug Haymans. Motion passes (Page 14).
6. **Move to approve Sara Pace of North Carolina and Chris McDonough of South Carolina to the Spanish Mackerel Plan Review Team** (Page 19). Motion by Chris Batsavage; second by Ben Dyar. Motion passes by unanimous consent (Page 19).
7. **Move to approve Robert Hale of Georgia to the South Atlantic Species Advisory Panel** (Page 19). Motion by Doug Haymans; second by Dave Sikorski. Motion passes (Page 19).
8. **Move to elect Erika Burgess as Vice Chair** (Page 19). Motion by Ben Dyar; second by Dave Sikorski. Motion passes by unanimous consent (Page 19).
9. **Move to adjourn** by consent (Page 20).

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ATTENDANCE

Board Members

Jason McNamee, RI (AA)	Russel Dize, MD (GA)
David Borden, RI (GA)	David Sikorski, MD, proxy for Del. Stein (MD)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Joe Grist, VA (Acting AA)
Jesse Hornstein, NY, proxy for M. Gary (AA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
Scott Curatolo-Wagemann, NY, proxy for E. Hasbrouck (GA)	Rep. Brian Turner, NC (LA)
Joe Cimino, NJ (AA)	Ben Dyar, SC, proxy for B. Keppler (AA)
Adam Nowalksy, NJ, proxy for Sen. Gopal (LA)	Robert Boyles, SC, proxy for Sen. Cromer (LA)
John Clark, DE (AA)	Doug Haymans, GA (AA)
Roy Miller, DE (GA)	Spud Woodward, GA (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)	Jeff Renchen, FL, proxy for J. McCawley (AA)
Carrie Kennedy, MD, proxy for L. Fegley (AA)	Gary Jennings, FL (GA)
	Ron Owens, PRFC

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

Ex-Officio Members

Angela Giuliano, Technical Committee Chair

Staff

Bob Beal	Caitlin Starks	Chelsea Tuohy
Toni Kerns	Emilie Franke	Katie Drew
Tina Berger	Tracey Bauer	Jeff Kipp
Madeline Musante	James Boyle	Samara Nehemiah

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The Coastal Pelagics Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Wednesday, February 4, 2026, and was called to order at 10:00 a.m. by Chair Robert E. Beal.

CALL TO ORDER

CHAIR ROBERT E. BEAL: Good morning, everyone. I would like to call the meeting of the Coastal Pelagics Management Board to order. My name is Bob Beal; I am the stand-in Chair for this meeting, Spud Woodward was not able to join in person and he asked me to step in as Chair. I am happy to do that.

Spud is online, so he is listening and will be hopefully participating in the meeting. It's just tricky to chair a meeting from Georgia rather than in the room here. That is why I am sitting up in front of the room instead of Spud. With that we'll get up and running for the Coastal Pelagic Board. I would like to go to Toni first, to announce all the commissioners that are participating virtually in this meeting rather than in the meeting room. Toni, go ahead.

MS. TONI KERNS: We have Emerson Hasbrouck from New York, I have Brian Turner from North Carolina, Carrie Kennedy from Maryland, Spud Woodward from Georgia, Malcolm Rhodes from South Carolina, and John Carmichael is not here today, and Emilie remind me who the NOAA rep is. No one from NOAA on today, okay there we go.

CHAIR BEAL: Great, thanks, Toni.

APPROVAL OF AGENDA

CHAIR BEAL: Moving along to the Board consent items. Are there any changes or additions or subtractions to the Board agenda? Not seeing any; any objection to approving the agenda as drafted? All right; the agenda stands as it is. If anything comes up under Other

Business as the meeting goes along, we can add that towards the end of the meeting.

APPROVAL OF PROCEEDINGS

CHAIR BEAL: Any comments or edits to the proceedings from October of 2024 for this Board? Not seeing any hands, those proceedings are approved.

Is there any public comment at this time for the Coastal Pelagics Board, either in the room or online? I see no hands in the room, and no hands online, so we'll keep moving right along.

REVIEW AND CONSIDER APPROVAL OF 2027 ATLANTIC COBIA STOCK ASSESSMENT TERMS OF REFERENCE

CHAIR BEAL: The first action item for the Board to consider is the Approval of the 2027 Atlantic Cobia Stock Assessment Terms of Reference and Angela Giuliano is going to present those. Whenever you're ready, Angela. Thanks for being here.

MS. ANGELA GIULIANO: I'll be reviewing the Draft Terms of Reference for the upcoming Cobia Stock Assessment. Just as some background, this stock assessment was initially started back in 2024 through SEDAR 95. While we had gotten that assessment underway and were in the middle of the Data Workshop, the assessment was paused due to the availability of a lead analyst. That assessment has remained paused until this year.

The assessment will be restarting here in early 2026, with an anticipated completion and Peer Review in 2027. Whereas the previous assessment was going through the SEDAR process entirely, this current version of the assessment will be coordinated through ASMFC for the Data, Methods and Assessment Workshops and SEDAR will be coordinating the Peer Review Workshop and Report.

This is similar to how some other Commission species are handled, such as menhaden and red drum. However, as part of the new SEDAR process

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and just the length of time that it's been, the assessment has been renumbered for SEDAR to now be SEDAR 107. Back in December of 2025, the Board approved the Stock Assessment Subcommittee membership for the cobia assessment, and so that is listed here on the slide, as well as the staff contacts.

Given the length of time and the restart of the assessment, the Technical Committee and Stock Assessment Subcommittee did meet in December to develop an updated draft terms of reference for Board consideration. These were fairly similar to what was approved previously, it was mainly converting it from the CR format into the Commission format.

One thing to note is that there are actually two sets of TORs that were in the meeting materials. The first is the Assessment Terms of Reference, which give direction to the Stock Assessment Subcommittee, as they are preparing the assessment as well as the Peer Review Panel. These TORs basically mirror each other, so when I go through the following slides, I'm just going to read the assessment TORs and not the Peer Review Panel ones.

The first TOR is to identify the relevant ecosystem influences on the stock, including impacts to range shifts and/or expansions. Consider findings as appropriate when addressing other TORs. Report how the findings were considered under impacted TORs. The second Term of Reference is to investigate all available life history data, including but not limited to age, reproductive characteristics, stock structure and natural mortality.

Describe the spatial and temporal distribution of the data and characterize the uncertainty and error. Also discuss the strength and weaknesses of the data sources when justifying inclusion or elimination of datasets. The third TOR is to investigate available fishery independent and dependent datasets, again characterizing precision, accuracy and uncertainty for any available abundance indices,

as well as commercial and recreational landings and discards.

Include the estimation of length and age distribution of landings and discards, and discard mortality is feasible. As part of this TOR, we also are instructed to review the new MRIP estimates of catch and effort for use in the assessment if available, and again, discuss the strengths and weaknesses of the available data sources and justify inclusion for elimination of the datasets. The fourth Term of Reference is to develop models used to estimate population parameters such as fishing mortality and abundance and reference points, and analyze model performance. Provide comparisons between the current assessment and the prior benchmark assessment SEDAR 58, where feasible. This includes providing model diagnostics, sensitivity analyses, retrospective analysis of the model results and a historical retrospective.

TOR 5 is to update or redefine biological reference points. For example, point estimates are proxies of BMSY, SSBMSY, FMSY and MSY. Define stock status based on reference points where possible and compare these reference points from this assessment with what is known about the general life history of the exploited stock.

Compare and contrast the reference points and time series estimates in this assessment with values from the previous benchmark SEDAR 58 as feasible, and comment on the impacts of changes in data assumptions for assessment methods on estimated population conditions. TOR 6 is if a minority report has been filed to explain the majority reasoning against adopting the approach suggested in that report.

A minority report should explain the reasoning against adopting the approach suggested by the majority. TOR 7 is to develop detailed short- and long-term prioritized lists of recommendations for future research, data collection and assessment methodology. TOR 8 is to recommend timing of the next benchmark assessment and any intermediate update, if necessary, relative to the biology and current management of cobia.

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This last TOR, TOR 9 is specific to the Peer Review Panel, directing them to prepare a peer review report summarizing their evaluation of the stock assessment and addressing each peer review Term of Reference as part of that it requires them to complete and submit their report within four weeks of the Workshop conclusion. Those are the TORs extracted by the Technical Committee and Stock Assessment Subcommittee for the upcoming benchmark and I can now take any questions from the Board about them.

CHAIR BEAL: Before we get to questions, I just want to announce that there is a NOAA representative participating in the meeting now, they just logged in, Rick De Victor from the Southeast Regional Office is online. We're all set with NOAA representation. Questions on the Terms of Reference. Jason.

DR. JASON McNAMEE: Thanks, Angela, good trip through the TORs there. I had a quick question, actually if we could flip back to TOR 1. I wonder, this is the ecosystem influences and I just was curious as to how, you might not have had a chance to talk about this yet, because I know we're early in the kind of revamping of all of this.

It's going to be just like a little report, like when we were doing black sea bass they had this ESP report. Is it that kind of thing or is it going to be more integrated with the actual modeling, or is it just going to be maybe like a paragraph or two in the report that says what you looked at. I'm just curious about how this one kind of will play into the product that we see at the end.

MS. GIULIANI: At a minimum, I think it will be a literature review with some sort of summary. I think the ability to incorporate it into the modeling really will depend on what model we end up going with, given the data limitations, as well as what data are available. At this point not too much information to offer, but it is definitely something to be thinking about with

cobia, given the range of expansion shift of the stock.

CHAIR BEAL: Other questions or comments on the Terms of Reference? Jason, again.

DR. McNAMEE: If no one else is going to ask another question, I will. This is just given like some of the background with the model for cobia. I think there is like a candidate model people are thinking about using. I wondered, and I think there is like limited resources here, so I'm not expecting we're going to be running like six different models or anything like that.

But I am concerned, I think there were concerns about convergence of the model or the model working the last go around. I wondered, there is a strategy that, I think we used it here at the Commission as well, but certainly with the Feds where you have like, I don't think we call it the same name, but there was a time we were calling it the Plan B model.

It's just sort of like a simple version in the background, so you are not left with nothing in the end, if your kind of main model doesn't work. Is that something that is being considered? Is it like in, could you assume TOR 5, maybe, which is the one that talks about the models, if that is being contemplated, or if not if it could be.

MS. GIULIANO: The hope is to continue using the BAM model, the Beaufort Assessment Model, which has been used in the past. Cobia is kind of in a weird situation between being a full benchmark versus an update. One of the limitations from last time when the assessment was getting started was concern over the index that was used last time, which was from the Southeast Region Headboat Survey, and whether we can update that with changes to the fishery.

I think getting an index, developing an index is probably one of the first priorities there, and then yes, I know last time we had talked about potentially having some data limited options for modeling. But with the current iteration of our new

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SAS, we have not gone over those with the details. They came up before, we'll see where the current group ends up.

CHAIR BEAL: One of the other things that this assessment is relying on is the new recalibrated MRIP data that we can do FES estimates. We're not exactly sure when that will be available. You know we heard, "we're still under review" yesterday when Richard Cody gave a presentation.

But we're hoping it will be summer, whatever exactly that might mean, that we get that data. That might be a bottleneck. Any other comments or questions on Terms of Reference? Dr. McNamee, are you good? Is there a motion to approve these terms of reference? I think there is a motion drafted that will go up on the board momentarily. Mr. Haymans.

MR. DOUG HAYMANS: **I move to approve the Terms of Reference for the 2027 Atlantic Cobia Stock Assessment and Peer Review.**

CHAIR BEAL: Is there a second to that motion? Dr. McNamee, thank you. Any justification or discussion? I'll start with you, Doug, in case there is any.

MR. HAYMANS: No, I thought we had good discussion of the terms from Jason, and I have no issues with them, move forward.

CHAIR BEAL: Jason says he's all set as well. Any other comments or **any objection around the table to approving these Terms of Reference? Not seeing any; they stand approved**, thank you.

REVIEW NEXT STEPS AND TIMELINE FOR COBIA MANAGEMENT

CHAIR BEAL: That brings us to the Next Steps in the Timeline for Cobia Management. Now where do we go from here in the short term while we wait for the assessment to get

completed? Emilie is going to give a presentation on that.

PRESENTATION OF SPECIFICATION SETTING PROCESS, RECREATIONAL MANAGEMENT MEASURES, AND CONFIDENCE INTERVAL APPROACH

MS. EMILIE FRANKE: The purpose of this presentation is to remind the Board sort of where we are, what is coming up with cobia management in the next year, and some of the timing considerations and challenges to keep in mind. Just sort of as an overview here, so coming up this year the Board may consider new specifications for 2027 and potentially beyond that, and also consider recreational management measures for 2027 and potentially beyond that.

A couple things to keep in mind is the revised MRIP, when that is available and what the impacts of that may be. Also, the timing of the stock assessment, which is anticipated to inform measures in 2028. Some of the challenges there with the timing lining up. Then kind of in the background just a reminder of the confidence interval approach, which is something that the Board can use if the Board would like.

But just a reminder of what that is, and it is sort of in the background if needed. First on specifications. The current specifications for cobia expire at the end of this year, the end of 2026. The total angler harvest quotas for both sectors are 80,112 fish. This is the same quota that has been in place since 2020.

With these specifications expiring, the Board would consider new specifications for at least next year, 2027. Per the new Addendum, the Board can set specifications for up to 5 years, so potentially up to 2031 if the Board would like. One timing thing to keep in mind, as I mentioned, is the stock assessment, which is anticipated to be complete to inform quota levels in 2028. Just sort of keeping in mind when that stock assessment may become available.

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The Cobia TC as in past specification cycles will plan to meet this year, sometime prior to the summer meeting to discuss any TC recommendations on the total harvest quota for 2027. However, as was discussed at the last time the Board met, there is a bit of a challenge in that we have very limited information to inform these 2027 specifications. Projections from the last cobia stock assessment only extended through 2024.

We're in the same data limited situation the Board was in a couple years ago when the Board was considering these current 2024 to 2026 specs. Just sort of a reminder that the TC is going to have very limited information to work with there. The next thing coming down the pipe this year is the Regional Recreational Measures. When the Board sets specifications, that triggers an evaluation of average recreational harvest against the harvest targets, to determine any changes to the recreational measures. As a reminder, we are now in this regional framework. We have our northern region, which is Rhode Island through Virginia, and the southern region, which is North Carolina through Georgia. For any evaluation, the evaluation only includes years that have been under the same recreational management measures.

Management measures did change last year in 2025 for the northern region. That means that when we do this evaluation at the end of this year, there is only going to be one year of data, 2025, to include in that evaluation to determine what measures would be next year. That is sort of the big challenge there, that the Board had identified at the last meeting.

Then a couple other things to think about here as well. We have this revised MRIP time series, and that revised time series could potentially change the allocation percentages between the two regions. The regional allocations are based on landings from 2014 to 2023, and the FMP does allow the Board to update those allocation

percentages via Board vote, if those underlying MRIP data are updated.

The Board anticipated the MRIP time series might be updated, so the Board has the ability to recalculate the 2014 to 2023 landings, to potentially update those allocation percentages. Depending on the timing of the release of these MRIP data, there could be time to update those allocations and regional targets in time for this year's evaluation to inform 2027 measures.

That is sort of one factor to keep in mind. The next again is the stock assessment. Again, anticipated to inform 2028 management, so if the stock assessment leads to a new harvest quota in 2028 this would also update those regional harvest targets for 2028. Then there would be another evaluation to inform 2028 measures, so potentially there could be two evaluations for changes to recreational measures in two consecutive years.

In the past the Board has actually encountered this challenge of having two evaluations of recreational measures and making changes two years in a row. Back in 2023, the Board was doing an evaluation for 2024. However, the Board was anticipating things might change again in 2025 with the new allocations.

In that situation at the time, the Board did task the TC with evaluating the impact of staying status quo for that one year in 2024. Then making the changes then later in 2025, once things were updated with the allocations. That is what happened. The Board did decide to keep status quo in '24, and then reevaluate things in '25 after those reallocations.

Just a reminder of a similar situation the Board was in a couple years ago. Then finally, the last thing I want to cover. Again, this is sort of in the background in the FMP available to the Board if the Board desired is the confidence interval approach. The confidence interval approach allows the Board to change the method for these recreational harvest evaluations.

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Currently we're comparing the average harvest across years to the target. Alternatively, this provision that would allow the Board to instead compare the 95% confidence intervals around those harvest estimates to the target, to determine if any reductions need to be taken. I'm not going to get into the details any further than that, but last time the Board met the TC did take a look at what that approach might look like as applied to data a couple years ago. But the TC noted that more Board discussion would be helpful here. The Board agreed more discussion would be helpful, but it was a little unclear sort of how to proceed and exactly what questions to ask. Again, we have the challenges of thinking about this confidence interval approach.

At the same time, we're thinking about specifications and the timing of the revised MRIP and the stock assessment, so a lot kind of going on in the next few years. Just looking ahead from a staff perspective. Just looking ahead from a staff perspective. Before the 2026 meeting, as I mentioned, the summer meeting. The TC will plan to meet to discuss any recommendations for the 2027 quota.

Then in the summer meeting the Board would consider at least the 2027 quota. Again, the Board could consider setting additional years as well. Then by the annual meeting, there would be a TC report on the evaluation of the regional harvest against the targets for the Board to consider 2027 rec measures.

Then as revised MRIP become available, we'll keep the Board updated on what potential regional allocations might look like with the new revised MRIP data. Then next year we will anticipate the stock assessment report. From a staff perspective this is what the year ahead is looking like. If there are any Board questions or guidance on these TC tasks coming up, today would be helpful to discuss that. But happy to take any questions.

CHAIR BEAL: Great, thanks, Emilie. Obviously, there are a lot of moving parts there, a lot of challenges and timing issues with the recalibration of MRIP data and the pending stock assessment, and Technical Committee work and just a lot of moving parts.

The question and the goal of this conversation is one, to make sure the entire Board fully understands everything that Emilie just said, and if you have any questions this is a great time to ask those. Then the second part is what guidance if any does this Board want to provide to the Technical Committee for additional analysis to inform some of these pending decisions that the Board will be faced with.

With that explanation, are there any questions on what Emilie said and timing and all these moving parts? I think this may be a cascading thing. The first question may lead into about ten more. Are there any questions, or does everyone fully understand what Emilie said? Doug, you look like you are reluctantly thinking about it.

MR. HAYMANS: No, I have a comment.

CHAIR BEAL: Okay, go ahead, a comment is great.

PROVIDE GUIDANCE TO COBIA TECHNICAL COMMITTEE ON UPCOMING TASKS IF NEEDED

MR. HAYMANS: Just based on the number of moving parts, I'm perfectly content with status quo where we are through the 2028 assessment. I would think what you've got laid out there is fine. But I don't have a burning desire to reallocate or bump the quota right now. That is just from my perspective.

CHAIR BEAL: Other thoughts. Jason.

DR. McNAMEE: A question. I'm thinking a little bit about, you said two things, thank you for the presentation first. Then you said two things in there that I'm wondering. I'm trying to like put them together. The first is, so we had consistent measures and then we didn't have consistent

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measures. It's only one year that we have that information on.

How does that connect in with the confidence interval approach? Where does the confidence interval come from? Maybe I'm not kind of thinking of the data correctly. But I'm just having trouble thinking about, like what would the confidence intervals be, based on if we're only looking at a single year of information?

MS. FRANKE: For the confidence interval approach, in the FMP it is laid out in that if the majority of years you're looking at, if the confidence interval is above the target, then you would need a reduction. Obviously, if we're just looking at one year of data it seems like it would just be what is happening in that one year, you know where is the target relative to that confidence interval.

Similar to if you keep the average approach would we just stick to sort of one year of data that we're looking at. The FMP never really got into the scenario of what if we only have one year of data. I think when the FMP was originally developed, you know there was an assumption that there would be at least a couple years under the same management regime. But because of all the timing challenges these past two years, these ended up sort of out of alignment with all these timing aspects.

CHAIR BEAL: Other comments or questions? Yes, Ben.

MR. BEN DYAR: Kind of a comment and then maybe some questions. I kind of second Doug's comment, looking at what we see now. We've talked about management whiplash in the past, going from what we've had, at least in South Carolina, standards that have been set for quite a while, and then all of a sudden, they changed them, and then potentially in the very next year changed them again.

There are obviously concerns there, especially with our legislative process and trying to change

those things in South Carolina through that without having a Commission. I don't know when that comes into play. But it's not until summer that we need to really make that decision. But just wanted to get that on the record.

Then kind of following up on Jay's comment. According to FMP, I understand the confidence interval. When can the Board determine that, at any time? Like when would we want to time that along with the stock assessment, and also one you did clear up, a very large concerns about using confidence intervals. But just curious about when the timing of that would be.

MS. FRANKE: For the confidence interval approach. The Board can vote at any time to switch to that approach, so there is no sort of constraints on when the Board can do it. It is essentially the Board at any time can determine, you know we don't think the average approach is appropriate anymore. We would like to switch to doing the confidence interval approach. At any time, the Board can decide to do that.

CHAIR BEAL: Yes, Jesse.

MR. JESSE HORNSTEIN: Yes, I support waiting to change stuff until we have more information. But I also think it's important that the TC looks at any potential issues with maintaining status quo for the next couple years, so we have something to be more comfortable with, with that decision if we do.

CHAIR BEAL: Dr. McNamee.

DR. McNAMEE: I appreciate the comment that Jesse just made, and so I was kind of wondering, have there been like some indicators that we can look at? I know there is just generally speaking not a ton of data. We don't have like trawl surveys and things like that for cobia.

But to get to what Jesse just said, having some indicators that we can look at I think would be helpful to give us some comfort. I am in alignment here. There are so many things like fundamental things like data that are changing, that it will be

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really hard to make an informed judgment on how to move.

But I mean if we saw troubling signal in something in what we have available to us, I think it is something we would want to consider. I don't have anything specific for you, maybe like an MRIP CPUE type of an index or something like that would be valuable. But anything that the Technical Committee can kind of put their hands on and show as, here is what is available.

Don't put too much stock in this one. It's not a stock assessment; it's just an indicator. Like we understand all of that. But just to give us something to kind of look at to get some confidence. We're okay. We can kind of pitch this out a little while longer before we have better information to make judgments on. That is what I'm hoping we could get.

MR. FRANKE: The last time I mentioned that a couple years ago when the Board tasked the TC with looking at what is the impact if we just stayed status quo for a year before we changed things. I believe the TC looked at essentially just realized harvest against what the projections used as the assumed removals and sort of compared that and provided an analysis to the Board. I think the TC could do the same thing looking at realized harvest.

Outside of that I don't think there are really many other indicators. But from what it sounds like you said, Jesse, Ben and Doug, it sounds like there is interest in the TC doing a similar analysis this time to look at what the impact if you stayed status quo for 2027, and waited for the assessment to change recreational measures. It sounds like there is support for that. I think the TC would have that on their list of analyses for later this year.

As far as timing for that, I think we would actually bring that back at the annual meeting, so the summer meeting would be focused on the total harvest quota levels, and then at the

annual meeting you would come back and say, based on that total harvest quota, if we looked at just 2025 what would that look like. If we set status quo what would that look like? Maybe we could be done in time for the summer meeting with both, we'll have to see. But either the summer or annual meeting for all of these things.

CHAIR BEAL: Other comments or questions on that path forward and the timing of that? I thought Emilie was going to volunteer for the spring meeting, since she will be out on maternity leave and she can task everybody else with doing work while she's enjoying a new extended family. Is there anything else on this issue?

The TC, Angela are you comfortable with the tasking? Okay, so we'll go forward with that and as the meeting goes along if there is something you guys think of, we can come back to this, we have time if we start a day early.

CONSIDER APPROVAL OF ATLANTIC COBIA FISHERY MANAGEMENT PLAN REVIEW AND STATE COMPLIANCE FOR THE 2024 FISHING YEAR

CHAIR BEAL: Moving along we'll go to the FMP Review of State Compliance for Atlantic Cobia. Emilie, please.

MS. FRANKE: I will get into the FMP Review for cobia. Just starting with Status of the FMP. Again, we're working under Amendment 1, Addendum I and the most recent Addendum II that moved us to that recreational regional management framework. I mentioned you've had the same total harvest quota for cobia in place since 2020.

The allocation of that quota is 96% to recreational, 4% to commercial. We're focused on the FMP Review for fishing year 2024. In 2024 there were no management changes so things were the same as the prior couple of years. Just as a reminder, there are no cobia monitoring requirements in the FMP.

For the commercial fishery, it's managed with the coastwide commercial quota, again 4% of that overall total quota. There are minimum size limits,

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2 fish per person possession limit, and a 6 fish per vessel maximum. Then we also have a commercial closure trigger, so for all those non *de minimis* states.

If all those landings reach the specific trigger, then the fishery is closed and the states have a 30 days' notice for that closure. For the 2024 recreational fishery, we're still under the state-by-state allocations at that time, so we have those non *de minimis* states again have a minimum size limit. The season and vessel limits vary by state, but there is a maximum six-fish per vessel and a one-fish per person bag limit.

Then for all the *de minimis* states that's from Maryland northward, states could either choose to match their nearest non-*de minimis* state, so Maryland and the Potomac River matched Virginia and then Rhode Island through Delaware implemented the sort of standard *de minimis* measures, which were a lower minimum size and a one-fish vessel limit.

Again, last year we switched over to the regional framework, but the northern region did have to take a reduction. They increased their minimum size, have a two-fish vessel limit. Just a reminder, that did happen last year, but today we are focused on the 2024 fishing year. Status of the Stock, Angela just went over this, but again, this last assessment was a while ago, had a terminal year of 2017, indicated the stock at the time was not overfished and overfishing was not occurring. We have our new assessment anticipated to be complete next year, with a terminal year of 2025. As far as status of the fishery, in 2024 total landings across both sectors were about 1.7 million pounds. That broke down into almost exactly what the allocation is, about 4% commercial, 96% recreational.

This was about a 40% decrease from 2023, and this was driven by a decrease in recreational landings in '24. On the commercial side things actually slightly increased from '23, '24

commercial landings were about 70,546 pounds. The commercial quota was not exceeded and the fishery did close on December 18, based on that closure trigger.

Then Virginia and North Carolina comprised the majority of commercial cobia landings, over 96%. As you can see here this is commercial landings over time. That black line the last few years that is the commercial quota. You can see landings have been relatively stable, sort of hovering right around that quota.

On the recreational side, in '24 landings were about 54,000 fish or about 1.6 million pounds. Again, this was a decrease by about 45% from 2023. It was the lowest harvest since 2017. The harvest was obviously well below the coastwide quota, which is about 77,000 fish and also well below the ten-year average harvest as well.

Sort of aligning with that decreasing harvest, you could see directed trips also decrease by about 21%. Live releases, about 80% of the 2024 catch was released alive. Here you can see recreational harvest and then again, the last few years you can see that from the quota. We tend to see this we had some high years where we exceeded the quota interspersed with some lower years we were below, or in the case of 2025, well below the quota.

By state in 2024 Virginia harvested the vast majority with the other states comprising less than 10% each. North Carolina did specifically note that their harvest estimates for '23 and '24 were very low, compared to prior years. They noted that historically the primary weight of cobia typically would arrive in late May, be around for about six weeks.

But the past few years it seems like cobia have been migrating to the Chesapeake Bay much earlier, so they have been available in North Carolina waters for a much shorter period of time. South Carolina's 2024 estimate was also very low compared to prior years, and it was their lowest since 2017.

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As a reminder, there were federal fisheries closures in 2016 and 2017. Generally, the PRT continues to emphasize that there are a lot of factors influencing these changes in harvest from year to year, including the stock distribution in both north to south, inshore/offshore, the state regulatory changes and effort.

As far as PRT comments and recommendations, the PRT found no inconsistencies in implementation of the FMP. As far as *de minimis* on the recreational side, Rhode Island, Delaware, Maryland and Florida all request and do qualify for *de minimis*. On the commercial side, Rhode Island, New Jersey, Delaware, Maryland, Georgia and Florida all request and do qualify for *de minimis*. The PRT notes that multiple states, especially in the Mid-Atlantic, could potentially exceed *de minimis* thresholds over the next few years if cobia landings do continue to increase in the Mid-Atlantic. As I mentioned, some years landings are quite high in some of these states, some years they are quite low. What this means is on the commercial side if you become a non *de minimis* state, then you have to submit weekly in-season landings reports to the Commission that we monitor toward that commercial closure.

On the recreational side the *de minimis* designation actually no longer has any impact, because we've moved to that regional management framework. All the states in a region have the same measures, so there is no differentiation between *de minimis* measures and non *de minimis* measures there.

The PRT just notes that this new assessment is really important. It can add several years of data, 2018 through 2025, so that will capture the recent trends of the increased landings in the Mid-Atlantic, particularly in Virginia and the transition to commission only management. The PRT emphasizes the importance of incorporating the new revised MRIP into the assessment. Happy to take any questions.

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CHAIR BEAL: Any questions on the FMP Review or PRT comments on state compliance? Yes, Roy Miller, please.

MR. ROY W. MILLER: Thank you, Emilie, for the summary. What was the *de minimis* threshold, in terms of recreational landings percentage?

MS. FRANKE: For recreational it's less than 1% of the coastwide landings for 2 out of the past 3 years. For commercial it is less than 2%.

MR. MILLER: If I may follow up. Just out of curiosity, Maryland was 3%, does that mean they are likely to go off *de minimis*?

MS. FRANKE: That's a good question. In 2024 Maryland was 3% and Angela can speak more to this, but the MRIP estimates for Maryland the prior years, '23 and '22 I think were both 0. I think Maryland is one of the examples of the difficulty of capturing cobia landings through MRIP. Obviously, cobia is being caught in Maryland, but Maryland has had a couple of 0 MRIP estimate years so it's hard to say what that's going to look like.

CHAIR BEAL: Emilie, I'll take Chair's prerogative and ask a question. Florida is qualified for *de minimis* for recreational and commercial fisheries; however, they are not part of the management unit that ASMFC manages, which is the Florida/Georgia line northward up to Rhode Island. Does this Board need to grant them *de minimis*, and does that provide a benefit to Florida?

MS. FRANKE: My understanding is that because Florida has been on this Board and they do catch cobia, but they catch a different stock, the Gulf stock. Essentially, Florida submits their compliance report every year that says we have caught 0 Atlantic cobia, and so it's sort of an administrative step to send out that compliance report, but they are part of the Gulf stock.

CHAIR BEAL: All right, great, thank you that's helpful. Any other questions or comments? Not seeing any; is there a motion to approve the FMP Review and *de minimis* requests? John Clark. I

think a motion will come up on the board momentarily.

MR. JOHN CLARK: **Move to approve the Atlantic Cobia FMP Review for the 2024 fishing year, State Compliance Reports and *de minimis* requests from Rhode Island, New Jersey, Delaware, Maryland, Georgia and Florida.**

CHAIR BEAL: Okay, thank you, John, is there a second to the motion? Joe Grist, thank you. Any comments on the motion? I don't know, John, if you have any justification.

MR. CLARK: No, I think it was all well explained by Emilie.

CHAIR BEAL: **Any objection to approving the FMP Review and *de minimis* requests? Not seeing any; this motion stands approved.** I think one administrative thing we may want to consider. Does it make sense and is it worth the burden to Florida to submit a State Compliance Report saying they didn't catch an Atlantic cobia group and they are part of the Gulf group.

Is that necessary for this Board to see that every year, or it just an assumption based on where the line is drawn in this FMP? I don't know if Florida has a comment on that or if any other Board members. I'm just looking to take away a burden from Florida, because it really doesn't serve a lot of value to this Board. I don't know, Jeff, if you have a comment please go ahead.

MR. JEFFREY RENCHEN: It's not much of a burden for us to submit this report, and it keeps us involved as well, in case the stock boundaries were to change. It kind of keeps an eye on that as well. It doesn't really create much of a burden to add that to this point of view,

CHAIR BEAL: Thank you, Jeff. Yes, Toni.

MS. KERNS: I think, and staff can evaluate this. You can even continue to send us in your compliance report thing you have 0 harvest. But I actually don't think we need for you to ask

for *de minimis*, because you're not in the management unit at this time. Obviously, if that were to change ever, we can make that change.

But because you're not in the management unit, you are not obligated to move forward any of the regulations. Therefore, you're getting *de minimis* for nothing that I am aware of. That part doesn't really make sense to me, but we can evaluate it and then get back to you and Erika.

CHAIR BEAL: Yes, one option may be that Florida continues to submit the reports as they are, and then in the FMP Review we note; Florida submitted a report and didn't catch any cobia from the Atlantic group, and leave it at that. Then maybe we don't have to go through the *de minimis* process for Florida. But we can think about that, I'm not pushing it away. Ben, do you have a comment?

MR. DYAR: I didn't know if they're declared interest, is there a requirement to provide some type of documentation of harvest and catch to that peer review, number one, and then number two, I mean obviously it would be something different, wouldn't want to put extra burden if not necessary, but as Jeff commented, it's really not a big lift, and especially with the upcoming conversations we were having regarding kind of declared interest in voting rights, privileges and things like that, see how that kind of comes out to change something now preemptive to that. I would just maybe suggest maybe stay in the course. If it's not a big lift and it's not a big deal, that would just come back to my two cents.

CHAIR BEAL: Yes, that is a fair comment. Thanks, Ben. Joe, did you have your hand up?

MR. CIMINO: Just I was hoping to get maybe an update on the stock boundaries, like knowing that an assessment is coming up. Just getting a feel for where that exploration has been and where it may go in the near future.

MS. FRANKE: Yes, so part of the last assessment SEDAR 58, there was a Full Stock ID Workshop conducted through SEDAR. The recommendation

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coming out of that workshop was to have that boundary at the Florida/Georgia line. For this assessment there is not a full workshop, so there is no sort of plan to change the stock boundary.

You know the Terms of Reference do include a review of any new data, specifically I know there has been some acoustic counting, so these would have been published in the past few years, just sort of update the background on that stock ID and to discuss any uncertainty and things like that. But through this assessment the stock boundary would not change.

CHAIR BEAL: Anything else on this topic before we go into Spanish mackerel FMP Review? All right, not seeing any.

**CONSIDER APPROVAL OF SPANISH MACKEREL
FISHERY MANAGEMENT PLAN REVIEW AND
STATE COMPLIANCE FOR THE 2023 AND 2024
FISHING YEARS**

CHAIR BEAL: Emilie, if you could present the Spanish mackerel FMP Review and States Compliance Reports, please.

MS. FRANKE: Switching gears to Spanish mackerel. Today we're looking at the FMP Review for the past two years, so 2023 and 2024 fishing years. As far as the FMP, there haven't been any management changes at the Commission level since 2011; that was the Omnibus Amendment.

The management unit is Rhode Island through Florida, only the Atlantic Coast of Florida, with the exception of Connecticut. Similar to cobia, there are no Spanish mackerel monitoring requirements in the FMP. The FMP is managed through complementary management with the South Atlantic Council, and Council staff will be providing an update on Council activity right after this presentation.

There are some differences between the Federal and Interstate Spanish mackerel FMPs. The Board has been briefed on these and the Board has noted in the past that the Board would discuss these differences the next time the Board takes any sort of Spanish mackerel action. The recreational fishery and commercial fishery are both managed using a minimum size limit.

There is also a creel limit for the rec fishery and some gear restrictions for both sectors. Then the commercial fishery is subject to daily trip limits. New York through Georgia is a daily 3500-pound trip limit. Florida is a little bit different, sort of a step-down approach, depending on how much of the quota has been taken. Status of the stock, the last Spanish mackerel assessment was completed in 2022, with a terminal year of 2020. It indicated the stock was not overfished and not experiencing overfishing, based on a three-year average fishing mortality. The assessment team noted that in the terminal year of the assessment the fishing mortality rate was above the threshold. If that higher fishing mortality rate were to continue, it's possible the stock could fall into an overfishing status.

I'll get into sort of the stats here for '23 and '24, just a reminder that all the landings in the FMP are calendar year, and again, any Florida landings are Atlantic coast only. In '23 and '24 total landings, in '23 was about 8 million pounds, in '24, 8.2 million pounds – pretty similar. Comprised of about between 33 to 36% commercial, 64 to 67% recreational.

On the commercial side both years, landings were about 2.7/2.8 million pounds. Only three states have directed Spanish mackerel commercial fisheries; that's Florida, North Carolina and Virginia. In commercial landings you saw a peak in 2021, followed by lower levels the past three years. This was largely driven by decreases that we saw in Florida, which I'll touch on in a little bit.

Another sort of thing to note is that Virginia's commercial landings for the past six years have been higher than their landings in the previous

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decade. Virginia noted there are a lot of factors here, one of which is their extended drift net/gill net program that has become a new licensed fishery in the state as of last year.

There is also a lot to think about in terms of fish availability, such as when are the Spanish mackerel moving into the Bay and if those fish are available. Here are the commercial landings over time. Again, you can clearly see that peak in '21, and the past three years landings have been at a bit of a lower level.

On the recreational side, landings in '23 and '24 were between 5.2 and 5.5 million pounds. Again, this is a decrease from the peak in 2021, but above the ten-year average. Florida and North Carolina account for the majority of landings. As far as live releases, we saw a decrease in 2023 and then again in 2024.

These live releases comprised between 40 to 49 percent of the catch those two years. Here you can see the recreational landings in blue, and then the number of fish released alive in red. Again, you can clearly see that peak in 2021 and then the lower levels the past three years. A couple of state-specific notes here.

North Carolina did flag is MRIP estimates from 2024. Their 2024 harvest estimates were much higher than their ten-year average, 77% higher in weight. Their release estimates were about 30% higher than the ten-year average. North Carolina noted this 2024 value seems to be unusually high, and diverging from anecdotal observation we noted potentially it was skewed by a limited number of intercepts in 2024.

They also noted their PSEs for 2024 were a little bit higher than PSEs in prior years. As far as some of the comments about the decreases we've seen in Florida. Florida noted that there have been increases in areas that have been closed to vessels associated with space launches, and so that has prevented access to fishing areas and that has potentially contributed to the decrease in effort and

decrease in landings. Then during the port meetings conducted by the South Atlantic Council, Florida stakeholders noted several concerns, including concerns about shark depredation, water quality, weather conditions in federal water, the potential of fish shifting more northward, being less available, and changing effort dynamics, all impacting the Florida Spanish mackerel fisheries.

As far as the PRT comments and recommendations. All states in '23 and '24 did implement management consistent with the FMP except for one inconsistency that has since been addressed. The Potomac River Fisheries Commission had not implemented the daily commercial trip limits of those 3500 pounds.

After they received notification of this, they were able to implement that within a couple of months, so that is now effective. Then as far as *de minimis*, if a state has their 3-year average of total landings is less than 1% of the coastwide total they receive *de minimis* status. Rhode Island, New Jersey, Delaware and Georgia all request and do qualify.

I will note for this FMP there is no specific *de minimis* difference in the regulations, and there are no monitoring requirements, there is no difference in monitoring requirements either. PRT recommendations, just some recommendations to better understand regional dynamics and sort of paying attention to any changes in catch by region.

To better understand the life history components, sort of in conjunction with the stock assessments and to fully utilize available state data, especially trying to get some more data from Virginia northward. Proceed to investigate discard mortality and environmental drivers affecting the distribution, and also social and economic drivers affecting effort. These are all things that were brought up at the Council's port meetings. Then again, continue coordination between the Commission and the Council to address any differences in the FMP. Happy to take any questions.

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CHAIR BEAL: Any questions on the Spanish mackerel presentation? Yes, Joe Grist.

MR. JOSEPH GRIST: I noted you made call-out of my drift/gillnet fishery, which is predominantly targeting Spanish mackerel. I don't think I would call that a substantial fishery for cobia. I think overall they just sent back to me about 500 pounds of cobia in 2025 or the 300 in 2024. I think compared to overall landings that is pretty insignificant numbers. It's definitely not targeting cobia; I'm not sure why that got called out. I'm sure it had something to do with our report and we'll look into it.

CHAIR BEAL: Great, thanks, Joe. Comments or questions. Not seeing any; is there a motion to approve the FMP Review and *de minimis* requests? Roy Miller, there will be a motion coming up momentarily.

MR. MILLER: **Move to approve the Spanish mackerel FMP Review for the 2023 and 2024 Fishing Year, State Compliance Reports and *de minimis* requests from Rhode Island, New Jersey, Delaware and Georgia.**

CHAIR BEAL: Is there any second to that? Doug Haymans, thank you. Any justification, Roy, or pretty self-explanatory?

MR. MILLER: Pretty self-explanatory.

CHAIR BEAL: **Any objection to the approval of the motion that is on the board? Not seeing any that motion stands approved.** Thank you, Emilie, for both of those reports and that brings us to Spanish mackerel, an update. Spanish mackerel Council activity for the South Atlantic Council. Christina Wiegand, Council staff is online, and we're ready to go whenever you are, Christina, thanks for being here.

UPDATE FROM SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL ON SPANISH MACKEREL COUNCIL ACTIVITY

MS. CHRISTINA WIEGAND CURTIS: Thank you so much. For those who don't know me, my name is Christina Weigand Curtis, I'm the Fisheries Social Scientist with the Council, and the lead for the Coastal Migratory Pelagics FMP. I was asked to just briefly brief you all on where the Council stands in terms of Atlantic Spanish mackerel management.

If you all remember way back in 2024 now, the South Atlantic Council did a series of mackerel port meetings all up and down the coast, and the purpose of these meetings was to sort of acknowledge that there were significant changes happening in the king and Spanish mackerel fisheries, and try to get a holistic view of those fisheries by working with stakeholders in all of these communities.

I'm not going to go over that full report today, but there is a link to it on the Council's website and on the presentation. That process wrapped up at the end of 2024, beginning of 2025, and we presented the Council with the results of that at their March 2025 meeting, going over sort of individual themes seen in each state, as well as similarities and differences seen up and down the coast.

The Council requested that that would go to their Mackerel/Cobia Advisory Panel first and then to have staff bring back detailed information on specific regulatory measures that the Council could take in June of 2025. We brought this information to the Mackerel AP. They discussed the Mackerel/Cobia Report. They were also provided a sort of refresher on the SEDAR 78 stock assessment and details on revisions to the FMP Goals and Objectives.

They provided comments on all three of those things, but the important thing here is that the Advisory Panel did pass a motion recommending that the Council request an update of the Spanish mackerel overfishing limit and ABC recommendations based on the results of that new

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FES Pilot Study before implementing any new catch levels, specifically those coming out of SEDAR 78.

That AP report was provided to the Council at their June 2025 meeting, and in particular response to that motion from the AP, they decided to postpone work to address those Spanish mackerel catch levels coming from SEDAR 78 until the results of that FES Pilot Study were received and could be incorporated into an updated stock assessment. They also requested that we work with the Science Center to see if we could move the next Spanish mackerel stock assessment to occur sooner in the schedule.

With regard to recommendations from port meetings, there was a desire to sort of wait until we had a new Spanish mackerel stock assessment and catch level recommendations. There was some discussion about sort of looking at recommendations from port meetings from the regulatory standpoint, but as of right now that work is not currently prioritized on the Council's workplan.

August 2025 the SEDAR Steering Committee did meet and did agree to sort of rejiggle the schedule a little bit to get the Spanish mackerel stock assessment a little bit earlier, so Spanish mackerel will now be occurring before the vermillion snapper stock assessment. It's schedule to start in 2027.

If everything is on schedule things would go to the Council. That would go to the Council probably late 2027, early 2028. In December the Council did get that updated presentation on the FES Pilot Study. I'm not going to go into that in detail here, other than just to note that the tentative plan is to have full MRIP estimates for Wave 1 in 2027, and the Council really noted the importance of having those recalibrated FES data available as soon as possible.

We remain sort of cautiously optimistic that recalibrated data will be able to go into the

Spanish mackerel stock assessment by its start in 2027. With that there is nothing related to Spanish mackerel that is currently on the Council's workplan. Again, they would be looking to sort of address Spanish mackerel, as well as recommendations from port meetings once we have results from this upcoming stock assessment scheduled to begin in early 2027.

With that I am happy to take any questions. I also just wanted to say thank you for all of the work that the state agency reps and staff and Commission staff did to help make the mackerel port meetings endeavor such a success. I know John Carmichael has passed along our appreciation before, but since I'm the one here today, I wanted to sort of reiterate how much we appreciated all of the support during that process.

CHAIR BEAL: Great, thank you, Christina, and we will also return the thanks to you and the Council for making the effort to go beyond the South Atlantic Council's jurisdiction and get perspectives from participants in the fishery north of North Carolina, so thank you for that. Any questions on process and progress with the South Atlantic Council. Chris Batsavage.

MR. CHRIS BATSAVAGE: Thank you, Christina, for the update. Based on this timeline with your Spanish mackerel assessment, hopefully being done by 2027 and South Atlantic Council considering the results of that assessment for an amendment. What do you think the timeline would be for that amendment to be complete, because I suspect it's a pretty long list of issues that could be addressed in that amendment. Then I'll probably have a follow up.

MS. CURTIS: Thanks, Chris, that's a great question. I think it will ultimately depend on how the Council decides to sort of package addressing catch levels from the stock assessment, versus some of the things that came out of the port meetings.

If they decide to move forward with two separate amendments, catch level implementation could move quite a bit faster than maybe some of the

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port meeting recommendations that could be a little bit controversial, would require a more detailed amendment, likely one where we have to collaborate with the Gulf. That would sort, timing will ultimately depend on how the Council packages things, if they keep catch levels and port meetings separate or if they wrap it all into one large amendment.

MR. BATSAVAGE: Thank you, that sounds like a logical strategy, kind of breaking this up with the other items outside of catch levels taking a little more time, I suspect. I think it's probably worth considering how that workload is divvied up even amongst the councils and with this Board.

I think this is the ninth time we've gotten a Spanish mackerel management update from the South Atlantic Council since 2019. There are some longstanding issues that need to be addressed sooner rather than later. You know kind of thinking through the timeline you just gave; we could be looking at the early 2030s before this is all finalized.

Considering that much of the Spanish mackerel fishery is a state waters fishery along most of its range, as this goes on, I think this Board and the South Atlantic Council needs to think about what items might be better addressed in an ASMFC FMP as opposed to trying to tackle all of that into a joint council FMP.

CHAIR BEAL: Great, thanks, Chris. Appreciate that. Other comments or questions on Spanish mackerel? Jason.

DR. JASON McNAMEE: Just to chime in and support what Chris was just talking about. You know he and I talked a little bit about this and the arc has been long and continues on this species. I think the idea would be to maybe kind of convene a little bit and see how to piece these things out.

What might make sense for the Commission to take on and leverage their nimbleness of the

Commission relative to the regional councils, just to kind of start to turn the ship here a little bit, and correct some of the issues that have been identified for a really persistent period of time here. That don't seem egregious, but just need some correction. I just wanted to support Chris, and I like the idea of trying to help supplement what is going on at the federal level with some state action as well.

CHAIR BEAL: Just as a reminder, and Emilie can fill in the blanks here. There are a number of differences between the interstate and federal fishery management plans for Spanish mackerel. I think there is a seasonal issue in the recreational side, maybe commercial as well. What happens when the quotas are landed in state waters. You know federal waters close and some states close, some step down to 500 pounds. We've got different gear types that are allowed, a couple other things. The question is, how does this Board and what is the timing of this Board's interest in proceeding on and resolving some of those differences between the state and federal FMPs. Are there things that identify through the South Atlantic Council that this Board might be able to help them out with.

I surely don't want to get ahead of the South Atlantic Council on this, and clearly especially in federal waters. But if there is something that the Commission can do, as Jason said, the nimbleness of the Commission to help out the South Atlantic Council maybe is a good conversation to have.

It will be interesting to hear what other folks think about that, and Christina, feel free to chime in if there is the best venue to have that conversation on what pieces of this ASMFC could tackle to help out the South Atlantic Council. Any thoughts around the table, then Christine, I'll go back to you and ask you if you have any thoughts. David Borden.

MR. V.D. BORDEN: I'm must kind of curious. In terms of the problems, you're noting on the regulatory side. Are these more a case of the regulations not complementing each other or not being identical?

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MS. FRANKE: Not being identical, but I guess it would be up for the Board's interpretation of whether or not they think they are complementary. I'll say one example is when the quota is caught, federal water close, states are not required to close on the commercial side. Some states have voluntarily in the past decided to implement a lower trip limit, other states have not. That is sort of one of the bigger differences.

MR. BORDEN: Okay, thank you, Emilie.

CHAIR BEAL: Other thoughts. Yes, Chris Batsavage.

MR. BATSAVAGE: I think that is probably one of the biggest issues that should be addressed at some point, at least through the ASMFC FMP is what to do when the commercial ACL is reached. I know that's an issue that SERO has raised, they have ACLs for a reason, federal waters close, but the landings keep coming in, even under lower trip limits, because that is where the fishery occurs.

Just in terms of dividing up the workload, considering this is a largely state waters fishery for the commercial fisheries, is maybe looking at trip limits, at least in the northern zone. A 3500-pound trip limit is really not constrained, and I think that kind of exacerbates some of the ACL overages that we've seen in the northern zone.

Just because it's very controversial and time consuming, we may want to consider looking at the allocation differences between the northern and southern zones for the commercial fishery. I think that's tied in with the other items that South Atlantic Council is hoping to address. You know it could draw out just that portion of the FMP pretty long. That is something that isn't really reliant on an updated stock assessment or updated FES estimates. It's just looking at whatever amount is the commercial fishery, how is that distributed along the coast from now Southern New England down to Florida.

CHAIR BEAL: Jeff, go ahead, please.

MR. RENCHEN: Yes, I understand the desire to kind of move forward on some of these items, but I also don't want to get ahead of the Council and prefer, you know there is likely to be a lot of different changes, and we prefer to kind of handle this altogether, instead of trying to get ahead and do like a couple things here and there if we could. My preference would be just to wait until the Council kind of moves forward, before we move forward. That's all I got.

CHAIR BEAL: Great, thanks, Jeff, that is good input. Not seeing any other hands around the table I'll go back to Christina. What is your perspective from Council staff?

MS. CURSTIS: I think these are really worthwhile conversations to have. I think it would certainly be beneficial to have it sort of expressed from the Commission's desire to move forward with actions related to Spanish mackerel that are not tied to the recreational catch levels in an updated stock assessment.

I'm not sure our Council is as aware of the Commission's desire to start moving forward on some of this. I think if that desire could be made clear, the Council might reconsider some of their priorities. From a staff standpoint, I think we would still want to be heavily involved in discussions related to this.

I would just sort of note, not to always bring it back to port meetings, but they are sort of a wealth of information there on some of the issues that I've been hearing you guys discuss; things like trip limits and how to slow catch in the northern zone commercially is something we talked about at length when we were with stakeholders in Virginia, as well as Maryland and New Jersey. I think that report in particular could really paint a path forward for some of these issues.

CHAIR BEAL: Thank you, Christine, that is definitely helpful. Yes, Chris.

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

MR. BATSAVAGE: The timing is key on this. Although myself is interested in getting things moving sooner rather than later, maybe the decision point on this Board takes on some of these items as opposed to the South Atlantic Council taking on all these items is when the stock assessment is completed and presented to the South Atlantic Council.

I think that would maybe be the point where the South Atlantic Council in conjunction with the Gulf Council is on the clock for addressing these items at the federal level. Maybe then as a Board we can discuss with those councils on what might make more sense to handle through ASMFC as opposed to indicating an action now while the stuff is underway, and we find we have a disconnect again.

I definitely want to avoid that from happening, because we've had some of those in place for a long time now. Yes, I'm just kind of putting a marker out there, as far as when we should start working on stuff. Maybe what makes the most sense is just let's see what the assessment brings and then when the South Atlantic Council is ready to start working, that's maybe where some parallel work by this Board can be done to cover some of that workload.

CHAIR BEAL: Other thoughts on that suggestion that was just, everyone hang tight until the assessment is done, then we can decide how both bodies react in a joint conversation with the Council and as Jeff said, not get ahead of the South Atlantic Council. Are folks comfortable with that timing and that strategy? Yes, David Borden.

MR. BORDEN: For my own edification, how long does it take the South Atlantic Council to do all regulations and then implement those. The real question is, what is a delay in timing between the Council finalizing its plan and the Federal Government adopting complementary regulations? How many years?

CHAIR BEAL: Christina, can you tackle that question, please?

MS. CURTIS: Absolutely. It depends on the complexity of the action and how controversial it is. I would say for simple catch level changes from the Council initiating an amendment to actual implementation of those catch levels. A fairly straightforward amendment can be anywhere from six months to a year. When we start talking about compliment changes, regional allocation changes between, for example, the northern and southern zone for Spanish mackerel, which I anticipate to be pretty controversial.

That is likely to delay the process, and that can take a year or two. That necessitates from the Council standpoint a full plan amendment, which means we have to go to both the Gulf and South Atlantic Council to get agreement, which can delay the process quite a bit. Then once the Councils have agreed and approved the amendment and transmitted it to NMFS, I don't want to speak too much on their behalf, but it can be anywhere from a couple of months to six months to longer, just depending on their workload and staffing concerns.

CHAIR BEAL: You got a thumbs up from David Borden, so that's a thank you. What are your thoughts on this? Yes, Ben Dyar.

MR. DYAR: I would just like to say that I support that wait until that assessment to have more further information and the best path forward there. If that is the joint management or wanting to do something. We'll have more information at that point. Thank you.

CHAIR BEAL: Great, thanks. Christina, I don't think Spanish mackerel is on your agenda for your March meeting in early March. There is value in me or you reporting out this conversation sometime under reports to the Council. More than happy to do it, and just talk about the timeline. I just don't want the Council to think that the Commission is moving ahead and getting ahead of them. If there is value in that, I won't be there in person but I will be

participating virtually, so happy to give that update if it's appropriate.

MS. CURTIS: Thanks, Bob, I appreciate that and we'll pass that along to sort of leadership and see if they feel like it's appropriate to include on the March agenda, because you are correct. The Mackerel Committee is not on the agenda for the foreseeable future until this stock assessment gets going.

CHAIR BEAL: Great, thanks, anything else on this for Spanish mackerel. All right, not seeing any hands around the room or online. Thanks again, Christina, for your participation.

REVIEW AND POPULATE SPANISH MACKEREL PLAN REVIEW TEAM MEMBERSHIP

CHAIR BEAL: We'll move along to populating the Spanish Mackerel Plan Review Team. Emilie.

MS. FRANKE: Yes, so while the Board is convened, there is a couple of state updates to the representation to the Plan Review Team. For North Carolina we have Sara Pace nominated to take over the PRT for North Carolina and Chris McDonough from South Carolina. This is for the Spanish mackerel PRT. We're looking for the Board to consider approval of those nominations, and there is a draft motion.

CHAIR BEAL: Anyone, Chris Batsavage, a motion will be coming up momentarily.

MR. BATSAVAGE: **Move to approve Sara Pace of North Carolina and Chris McDonough of South Carolina to the Spanish mackerel Plan Review Team.**

CHAIR BEAL: Seconded by Ben Dyar, thank you. I don't know, Chris if you have any justification, it seems pretty straightforward. He's shaking his head that he's all set. **Any objection to adding Sara and Chris to the Plan Review Team**

for Spanish mackerel. Seeing none; thank you, they stand approved.

REVIEW AND POPULATE ADVISORY PANEL MEMBERSHIP

CHAIR BEAL: That brings us to an addition to the Advisory Panel. Tina or Emilie is going to give that presentation. Tina is up, go ahead, Tina.

MS. TINA L. BERGER: I would like to offer for the Board's consideration the addition of Robert Hale a recreational angler from Georgia to the South Atlantic Species Advisory Panel.

CHAIR BEAL: Thank you, Tina, Doug, would you like to make that motion?

MR. DOUG HAYMANS: I certainly would. **Move to approve Robert Hale of Georgia to the South Atlantic Species Advisory Panel.**

CHAIR BEAL: Is there a second to that? David Sikorski, thank you, and **any objection to adding Robert Hale to the Advisory Panel? Seeing none; he is approved** and now a member of the AP.

ELECT VICE-CHAIR

CHAIR BEAL: That brings us to my favorite part, election of the Vice-Chair. I think Ben Dyar may have a motion.

MR. DYAR: I think the plan and the thought here is that's done when nominating someone who is not here in person to defend themselves, so with that **I have the privilege of nominating Erika Burgess as the Vice-Chair of the Coastal Pelagics Board from Florida.** Thank you.

CHAIR BEAL: Great, is there a second to that motion? David Sikorski again, thank you. **Any objection to having Erika as the Vice-Chair of this Board? Seeing none; congratulations, Erika,** wherever you may be, you are now the Vice-Chair of the Board. That's what you get for missing a

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meeting. Yes, you can report back that she is elected.

ADJOURNMENT

That actually brings us to Other Business. Is there anything else before this Board that you want to tackle on the Coastal Pelagics species before we adjourn? Seeing no hands; this Board stands adjourned. Thank you all for your time today.

(Whereupon the meeting adjourned at 11:25 p.m. on Wednesday, February 4, 2026)



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Coastal Pelagics Management Board

FROM: Cobia Technical Committee

DATE: June 24, 2026

SUBJECT: Recommendation for 2027 Total Harvest Quota and Recreational Management Measures for Atlantic Migratory Group Cobia

The Cobia Technical Committee (TC) met via webinar on June 24, 2026 to discuss the 2027 total harvest quota, 2027 recreational management measures, and ongoing stock assessment for Atlantic migratory group (AMG) cobia.

TC Members in Attendance: Justin Yost (SC DNR), Chris Kalinowsky (GA DNR), Catherine Wilhelm (VMRC), Zachary Schuller (NY DEC), Melinda Lambert (NC DMF), Angela Giuliano (MD DNR), Nichole Ares (RI DEM), Jamie Darrow (NJ DEP), Michael Larkin (SERO)

ASMFC Staff: Chelsea Tuohy

Others in Attendance: CJ Schlick (SC DNR), Erika Burgess (FL FWC, Chair), Chris Batsavage (NC DMF)

2020-2026 Total Harvest Quota

The current total harvest quota for Atlantic cobia is 80,112 fish, which results in a coastwide recreational quota of 76,908 fish and a commercial quota of 73,116 pounds (3,204 fish)¹. This total quota level was first approved in February 2020 for the 2020-2022 fishing seasons² following the Atlantic cobia benchmark stock assessment. In May 2022, based on a recommendation from the TC, the Coastal Pelagics Management Board (Board) changed the cobia quota timeframe to 2021-2023, thereby, maintaining the harvest quota of 80,112 fish for the 2023 fishing season³. This change to the quota timeframe aligned with the timing of new recreational measures implemented by some states in 2021 following the change in quota allocation per [Addendum I to Amendment 1 of the Interstate Fishery Management Plan \(FMP\) for Atlantic Cobia](#). The TC noted that maintaining this quota level in 2023 carried a low risk considering the low projected probability of the stock being overfished (0.25), and considering average realized harvest in recent years was below the harvest projections associated with this

¹ For the commercial portion of the quota, the average annual coastwide commercial average weight from 2015-17 (22.8 pounds) was used to convert the commercial quota from numbers to pounds.

² January 2020 TC Quota Recommendations and Projections: <https://asmfc.org/resources/management-technical-committee/cobia-technical-committee-report-january-2020/>

³ April 2022 TC Quota Timeframe Recommendation: <https://asmfc.org/resources/management-technical-committee/cobia-technical-committee-report-april-2022/>

quota level. In 2023, the TC recommended and the Board approved keeping the total harvest quota status quo for 2024-2026 as no new information was available to inform a change in quota, updating projections that far from the terminal year of the previous assessment was not recommended due to increasing uncertainty, and a stock assessment was to be completed in the near future⁴.

TC Recommendation for 2027 Total Harvest Quota

Per [Addendum II to Amendment 1 to the Interstate FMP for Atlantic Cobia](#), the Board may specify a new coastwide total harvest quota for up to five years after expiration of previously specified measures, or following a completed stock assessment. Since the current total harvest quota specification expires in 2026, the Board may specify a new total harvest quota for 2027 through 2031.

The TC considered available data to inform the 2027-2031 total harvest quota. The 2020-2026 total harvest quota was informed by the 2020 stock assessment (SEDAR 58) and by additional projections provided by the NOAA Southeast Fisheries Science Center (SEFSC) immediately following the 2020 assessment, which included a range of constant harvest and constant fishing mortality scenarios through 2024. In Spring 2023, the TC requested an updated set of projections from the SEFSC to inform the 2024-2026 total harvest quota. The TC requested that 2019-2022 realized harvest data be incorporated in the projections, and requested the projections be extended through 2026, if feasible. However, projections were not provided as the nine-year forecast from the assessment terminal year of 2017 through 2026 was well beyond the recommendation to limit analysis to five years and the SEFSC noted that a large portion of cobia removals were now outside the South Atlantic, which was inconsistent with the projection model.

Considering the lack of new information and ongoing stock assessment for AMG cobia, the TC recommends the Board set the cobia harvest quota at the status quo level of 80,112 fish for 2027 only. This results in a coastwide recreational quota of 76,908 fish and commercial quota of 73,116 pounds.

The TC noted that the ongoing stock assessment, scheduled to be completed in 2027, should inform future total harvest quota levels. On the current timeline, assessment information will be available in 2027 to inform the total harvest quotas for 2028 and beyond.

Recreational Harvest Target Evaluation and 2027 Recreational Management Measures

Per [Addendum II to Amendment 1 to the Interstate FMP for Atlantic Cobia](#), “Recreational landings are evaluated against recreational harvest targets at the same time as the specification process. Recreational landings for each region are evaluated against that region’s target as an average of annual landings. The timeframe for this average only includes years with the same

⁴ August 2023 ASMFC Coastal Pelagics Board Sets Atlantic Cobia Total Harvest Quota for 2024-2026 Fishing Seasons: <https://asmfc.org/news/press-releases/asmfc-coastal-pelagics-board-sets-atlantic-cobia-total-harvest-quota-for-2024-2026-fishing-seasons/>

recreational management measures”. Given recreational management measures changed in 2025, the 2027 recreational management measure harvest target evaluation only had one year of data for evaluation.

In 2025, there was a significant underage of each regional soft target and as a result, the coastwide quota, especially compared to recent harvest trends (Tables 1 & 2). Addendum II to Amendment 1 specifies that regions must restrict management measures if a region’s averaged recreational landings exceed its annual recreational harvest target over the evaluation period, and regions may liberalize management measures if a region reports a consistent under-harvest during an evaluation time period for a minimum of 2 years, but not prior to the completion of the next stock assessment.

Given the underharvest in 2025, guidance from Addendum II, and lack of new stock assessment information, the TC recommends keeping recreational management measures status quo in 2027.

During the discussion on recent recreational performance, the TC noted the significant underage in recreational quota in 2025 seems anomalous compared to recent years under the same total harvest quota. Acknowledging that some recreational management measures were restricted in 2025, the TC expressed interest in continuing to monitor recreational landings to observe if this significant underage is due to an abundance of undersized fish, lack of availability, or influenced by uncertainties in the MRIP information for this species.

Tables

Table 1: 2025 Regional Soft Target Performance.

Region	2025 Soft Targets	Harvest	Performance
Northern Region (RI-VA)	52,825 fish	17,386 fish	32.9%
Southern Region (NC-GA)	24,083 fish	13,687 fish	56.8%
Total	76,908 fish	31,073 fish	40.4%

Table 2: Coastwide recreational quota performance 2020-2025.

Year	Harvest	Quota Attainment
2020	76,786 fish	99.84%
2021	90,807 fish	118.07%
2022	69,800 fish	90.76%
2023	98,311 fish	127.83%
2024	54,289 fish	70.59%
2025	31,073 fish	40.40%
Average	70,177 fish	91.25%



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Dan McKiernan (MA), Chair

Doug Haymans (GA), Vice-Chair

Robert E. Beal, Executive Director

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Atlantic Cobia Stock Assessment Data Workshop Summary

March 18, 2026 – Virtual

March 23, 2026 – Virtual

March 30, 2026 – Virtual

April 28-29, 2026 – New Bern, North Carolina

Participants: Angela Giuliano (MDDNR, TC-SAS Chair), Coly Ares (RIDEM, TC-SAS, data coordinator), Brad Johnson (NCDEQ, SAS), Catherine Wilhelm (VMRC, TC), Chris Kalinowsky (GADNR, TC), Jamie, Darrow (NJDEP, TC), Jimmy Kilfoil (SCDNR, SAS), Justin Yost (SCDNR, TC-SAS), Kevin Weng (VIMS, SAS), Melinda Lambert (NCDEQ, TC), Mike Larkin (NOAA, TC), Zach, Schuller (NYDEC, TC), Amy Schueller (NOAA SEFSC, SAS lead analyst), CJ Schlick (SCDNR, SAS assessment coordinator), Emilie Franke (ASMFC), Chelsea Tuohy (ASMFC), Amy Zimney (SCDNR, data provider), Anna-Mai Christmas-Svajdlenka (ACCSP), Elizabeth Gooding (SCDNR, data provider), Eric Hiltz (SCDNR, data provider), Gary Decossas (SEFSC, data provider), John, Dearstine (VMRC, data provider), Larry Beerkircher (NOAA SEFSC, data provider), Meredith Whitten (NCDMF, data provider), Michaela Pawluk (NOAA SEFSC, data provider), Nate Bacheler (NOAA, data provider), Rob Cheshire (NOAA SEFSC, data provider), Samantha Binion-Rock (NOAA SEFSC, data provider), Sarina Atkinson (NOAA SEFSC, data provider), Sascha Cushner (NOAA SEFSC), Tracy McCulloch (NOAA SEFSC, data provider), Tracey Smart (SCDNR, data provider), Alan Bianchi (NCDMF), Ben Dyar (SCDNR, Commissioner), Erika Burgess (FL FWC, Board Chair), Erin Pereira (FL FWC), Jared Flowers (GA DNR), Jeff Moore (NCDMF), Jessica Clawson (FL FWC), Joshua McGilly (VMRC), Julie Dingle (SCDNR), Kevin Thompson (FL FWC), Steven Ellis (SEFSC), Sydney Alhale (SEFSC), Thomas Newman, Todd Elder, Travis Williams (NCDMF)

The Data Workshop for the 2027 Atlantic Cobia Stock Assessment was held over three virtual meetings and a two day in-person workshop in New Bern, North Carolina. Members from the Cobia Stock Assessment Subcommittee (SAS), the Cobia Technical Committee (TC), and multiple data providers, including federal partners, participated in the workshop. The workshop discussed available data sources along the Atlantic coast of the US from the Georgia-Florida state line north to the Canadian border. No data sources were submitted by the public in response to the call for data from the Atlantic States Marine Fisheries Commission (Commission) ahead of the workshop.

March 18, 2026 – Virtual Workshop

The first data webinar focused on the roles of participants, timeline of the stock assessment, and commercial fishery data sources. The roles of the TC members, SAS members, and data

providers were briefly explained at the start of the workshop. The draft timeline of the assessment was also discussed, and the deadline for all data products was scheduled for June 30, 2026, with a note that revised Fishing Effort Survey (FES) Marine Recreational Information Program (MRIP) estimates would not be available until later in the fall. Preliminary standard data units (i.e., stock definition- Georgia north, years-1986-2025, using Total Length in cm, midpoint length bins in cm, whole ages from annuli counts, commercial catch in 1,000 lb whole weight, recreation catch in 1,000 fish) used in the last benchmark assessment were presented and there was no opposition to using the same standards for this assessment.

Coastwide commercial landings provided by the Atlantic Coastal Cooperative Statistics Program (ACCSP) were reviewed. Landings are complete and validated from 1986-2023. 2024 landings are complete and validation will be completed soon. 2025 landings will be completed and validated following the spring data load. There are no commercial landings in Maine or New Hampshire. Since 1950, 56% of landings have been landed in North Carolina, 30% landed in Virginia, 8% landed in South Carolina, and all other states had <3% of landings. Many states have landings with confidential data. Landings have continued to grow in Virginia at faster rates than other states. In SEDAR 58, landings were split by handlines, long lines, and all other gears. The participants discussed if this split was a decision based on fishery specifics, data limitations, or other drivers. This discussion was continued after the state commercial fishery overviews.

TC members gave more specifics about commercial fisheries in each of their states. Virginia shared their mandatory reporting began in 1994 and there were three major regulatory changes for cobia captured in commercial fisheries in 1990, 2014, and 2018. The dominant gears in Virginia have historically been gillnets and pound nets, with hook and line becoming another dominant gear in 2012. Biological samples have been collected from the commercial fishery in the form of length, weight, ages, and sex data, as well as discards estimated from the Virginia Marine Resources Commission (VMRC) Observer Program. North Carolina's current trip level reports began in 1994. The number of participants in the cobia commercial fishery has dropped through the years but has become stable with around 150 participants. The dominant gear types are gillnets, hook and line, long lines, haul seines, and a history of trawls. Biological samples are available from the commercial fishery in the form of length, weight, and fin clips with 294 trips sampled since 1982. Cobia is a rare event species, so only 201 fish were sampled for length. In South Carolina, data collection at the trip level started in 2004. In 2012, cobia was listed as a gamefish, so all cobia reported in commercial landings are from federal waters. Regulations of cobia prior to 2016 mimicked federal regulations. Any biological data gathered from the commercial fishery are collected as part of the Trip Interview Program (TIP) but not otherwise available. Dominant gears are hook and line and spear fishing. Information for Georgia, Rhode Island, New York, New Jersey, and Maryland were all presented, but commercial landings for many years in these states are confidential. All of these states combined contribute to roughly 6% of the coastwide commercial catch since 1950.

After state presentations, the participants revisited the discussion on whether the gear separation in SEDAR 58 should still be used for SEDAR 107. A major deciding factor in whether to split the data comes down to whether there is enough biological data collected from these

gear types to allow for length composition, age compositions, or selectivity patterns to be determined for use in the model. The participants requested North Carolina and Virginia explore biological data collected in their jurisdictions to determine if sufficient data can be provided for the model by gear. These data will be presented at the in-person workshop in New Bern, NC on April 28 with follow up discussion.

The Southeast Fisheries Science Center (SEFSC) has historically collected data on commercial discards from the gillnet and handline (vertical line) fisheries; however, the SEFSC no longer recommends the use of the Discard Logbook data in stock assessment as was previously used in SEDAR 58 (SEDAR92-RD-05) due to a large increase of “no discard” trips within the self-reported data. When compared to the observer data, there are increased concerns with data reliability, and SEFSC recommends using the observer data in place of the Discard Logbook data.

The Southeast Region Headboat Survey (SRHS) was used as a catch per unit effort (CPUE) dependent data index in SEDAR 58. The survey began in 1981 but expanded in 2009. Lengths and weights were recorded as part of the survey. Discard estimates were added to the survey in 2004 but biased low, however estimates were still low in 2008-2010, so still of potential use. The survey had a low percent of positive occurrences for North Carolina and Georgia-South Carolina combined, at just below or around 5% positive. The data are available to use as an index, but standardization has not occurred. The panelists asked to see the index before deciding if it would be used in SEDAR 107. The index will be examined in another meeting of the data workshop.

March 23, 2026 – Virtual Workshop

The second data workshop focused on recreational fishing data and began discussion on biological data available from various entities. Presentations were given on MRIP, the NOAA Commercial Trip Interview Program (TIP), South Carolina DNR (SCDNR) Charter Logbook Data, SRHS composition data, New York Headboat Vessel Trip Reports, Maryland Charter Logbooks, Virginia Recreational Reporting and Biosampling, age data from the NOAA SEFSC Biology and Life History Branch, and SCDNR life history data.

Data available through MRIP were presented. These data have already been provided through 2024 using the current FES methodology. The provider plans to provide 2025 data, as well as a data update when the new FES methodologies are available later this year. Landings and discards are most common from private boats in Virginia, North Carolina, and South Carolina. Discards had a marked increase in 2017, which coincides with the federal closures. The workshop attendees requested to see the data by wave, given the strong seasonality in catch. The data provider was able to pull the data before the end of the webinar and confirmed landings were higher in waves 3 and 4, with discards highest in waves 3, 4, and 5.

Length compositions are also available from MRIP and the SRHS from 1981-2024 (2025 will be provided at a later date). Estimates from the MRIP tool uses imputed lengths, which the SEFSC does not use. Many years have <100 fish sampled per year, with the majority of samples from North Carolina. Very few samples have been intercepted north of Virginia. Only 2 fish measured

were >2000 mm fork length (FL). MRIP At-Sea headboat also captures size of cobia observed, which provides some discard information. These data are available from 2004-2025. There are low sample sizes in this data set and less than 10 trips per year. Provided length composition, however, shows the discards are smaller than retained lengths, an expected outcome given the fishing regulations.

The NOAA Commercial Trip Interview Program (TIP) also has length data for Georgia-North Carolina collected commercially harvested fish through random fish-house sampling and dockside sampling. These data are available from 1983-2024 and are split into gear types: longline, handline, and other (gillnets). There are <100 lengths in all years, with some years having <30 lengths. Most data come from North Carolina. All samples from Georgia ended in 2006 due to staffing decisions. Historically handlines were the dominant gear type, but “other” became dominant in 2013 when a TIP sampler began working with gillnetters in North Carolina. It was noted during this presentation that the last stock assessment used the same length frequency for all gears across all years due to a limited amount of data at the gear and year level.

SCDNR provided information on programs that target recreational fishing for data. The SCDNR Charter Logbook Program is a mandatory reporting program that began in 1993. All recreational Charter Fishing vessels are required to report all catch and effort. The percent occurrence of cobia landed or released on all charter fishing trips ranges from 1.60%-2.74%; however, on trips where operators report that they are targeting cobia, the percent occurrence increases to 59.85% -75.85%. This program is only available in South Carolina and has no field validation available to verify the self-reported data. There are software checks and QA/QC subsamples completed for data quality. Next, the South Carolina State Finfish Survey was presented which is a vessel-based creel survey that has been conducted from 1988-2024; however, in 2013, sampling was only conducted in Wave 1 to coincide with the lack of data collected in MRIP. Length data are available from this survey, with > 400 cobia measured across all years.

Additional State Logbook/Charter Programs were also briefly discussed. The New York Headboat Vessel Trip Reports are available as a data source, but only 15 trips reported cobia captured from 2011-2025 in over 60,000 reported trips. All were captured from June-August, near Fire Island Inlet, Long Island Sound, New Jersey, or offshore. The Maryland Charter Logbook Program has been collecting data since 1993; however, most years capture <25 fish and many years did not capture any. Harvest has increased since 2019.

In Virginia, recreational reporting and biosampling data are available for use. There have been several regulation changes in Virginia that differ from federal regulation changes. The carcass collection program officially started in 2007, with some opportunistic sampling prior. Additionally, tournaments targeting cobia were sampled for a few years with a handful of samples from each year. These two data sources provide length, age, and possible weight. Through Virginia’s Saltwater Journal, voluntary reporting of cobia fishing started in 2006, but not much was reported until 2016 when reporting of the trip (not the catch) became mandatory. However, the program was very disliked and mandatory reporting concluded in

2022 with anglers reporting data voluntarily in more recent years. Lengths of both harvested and discarded fish available through this dataset were reported by anglers. Due to the dislike of the Saltwater Journal, the Voluntary Recreation Cobia Initiative started in 2023. An additional data source is the Recreational Citation Program where cobia are weighed on a certified scale but length is optional. This program has run since 2000 but has a minimum 50 lb weight limit that increased to 55 lbs in 2004.

The NOAA SEFSC Biology and Life History Branch has collected and aged 134 otoliths from 97 trips between 2005-2023. Length is recorded in FL. Sample size by year is very low in most years (<10 per year) with several years not having any samples. SCDNR is providing life history data that have been collected through several programs. In 2001, SCDNR started stock enhancement and mariculture work with cobia. Since 2007, 4,570 samples have been collected with 2,868 ages available from these samples. Some samples have been donated through carcass collection or tournaments. However, freezers were removed in 2022, and tournaments have dwindled due to inshore closures in South Carolina where much of that effort was targeted. Biological samples from the charter fleet were also targeted from 2005-2006. Within these samples, SCDNR has collected fin clips as part of genetic program work with the species. In recent years, a genetic sex marker has been identified in cobia, allowing for sex to be determined without needing the gonads of the fish. This provides more data on the sex ratios of the population.

This webinar concluded with some discussions on the best metric for length to be used in the assessment. The previous assessment used total length (TL) in the model; however, it was noted that many of the data sources discussion to date are in fork length (FL). There are several sources that contain both metrics, so converting from one to another is not difficult, as long as definitions are consistent and conversions are verified. However, using FL rather than TL for the model would result in less data sources having to be converted, so attendees concluded FL would be a better metric for the stock assessment model.

March 30, 2026 – Virtual Workshop

The third data workshop continued with life history data available from other locations, as well as looking into surveys and programs that could be used for indices of abundance.

North Carolina DMF (NCDMF) has collected length and age data for cobia through several fishery dependent and independent programs. The samples were aged by the SEFSC until 2017 and have been aged at NCDMF from 2018-2024. Samples collected in 2025 have not been processed yet but will be available in the next month. Recreational samples are available through the Carcass Collection Program and Charter Boat Sampling Program. Commercial sampling occurs from the fish house sampling program and dockside sampling. As a possible index, the Gillnet Survey also collects cobia with 1-9% of trips catching cobia in the Pamlico Sound. Other regions are sampled in the Gillnet Survey, but sampling started in different years, making combining the locations into one index difficult without losing years of potential sampling. However, the Gillnet Survey could provide a potential index of abundance for cobia, at least on a small spatial scale. The percent occurrence is higher than other fishery dependent

data sources in some years and it is a fishery independent program. Additionally, this survey has an associated length composition and potential age composition available with the index.

The videos from the Southeast Reef Fish Survey were presented as a possible fishery-independent index of abundance. Video cameras were attached to the chevron traps in the multispecies reef survey in 2010. Cobia were not captured in the chevron traps in any appreciable number, but have been seen on the video transects in schools around larger organisms (i.e., skate, rays, sharks, turtles, etc.). Sampling for this survey occurs from Cape Hatteras, NC to St. Lucie Inlet, FL in depths ranging from 15-100 m. Cobia have been recorded to occur in a low percent of trips (ranging from 0.4-2.6%); however, when recorded they are often seen in schools. This data set is likely zero-inflated and positively skewed. However, this survey was used as an index for abundance in the Red Grouper SEDAR 86, with similar percent positive occurrence. N. Bacheler is willing to provide an index of abundance for cobia from this survey if convergence of a model is attainable. The workshop attendees preferred a standardized model, if possible, but N. Bacheler recommended a potential presence/absence model if traditional standardization methods did not work. He will present a potential index at the April in-person workshop. This index would not have lengths or ages available for composition.

Another potential fishery-independent index of abundance was created using data from the SEAMAP Coastal Trawl Survey. The SEAMAP Coastal Trawl Survey has been sampling from North Carolina-Florida since 1990; however, for the purposes of the cobia stock assessment, only data from North Carolina-Georgia were considered to coincide with the stock boundary. The index has an average 3.4% occurrence and uses area swept as effort to account for variations in sampling through time. The standardized index was created using a zero-inflated negative binomial GAM (ZINB) with year, depth, and bottom temperature as significant presence covariates and year, latitude, and day of year as significant abundance covariates. From 2012-2016, lengths were recorded and otoliths kept for aging on all cobia <100 cm FL. From 2017-2025, lengths were recorded on all cobia, but otoliths were still only maintained on cobia <100 cm FL. However, only two cobia were captured from 2017-2025 >100 cm, so the webinar attendees felt the length and age compositions were still of potential use for the assessment. Amy Zimney is willing to provide the length and age compositions for the April in-person workshop.

Other indices of abundance were also briefly discussed during the workshop. In the last assessment, the South Carolina Charter Logbook Survey Index was considered but not ultimately used in the assessment. This is a fishery-dependent survey that was discussed in the second webinar, but the previous index was reviewed. The percent positive for this survey ranged from 1-3% and the survey does not have any age or length components. The index was standardized using a delta-GLM with lognormal error distribution and the significant covariates were Year, Month, and Locale. Examining the catch did provide information that more cobia were captured closer to shore in state waters than offshore. The SRHS, Video Survey, and Coastal Trawl Survey all capture cobia in federal waters only. Maryland fishery-independent indices were also mentioned but only 11 cobia have been captured across all surveys in all years. The Northeast Bottom Trawl Survey, which samples down to Cape Lookout, NC, has been

mentioned as a potential data source, but more information about the data available on cobia from this trawl survey is still pending. It will be discussed more at the April in-person workshop. Also, the Northeast Fisheries Science Center has a Fisheries Observer Program that collects information on commercially discarded cobia with 0-181 encounters per year from Maine to North Carolina. More information on this data source will be provided at the April in-person workshop.

An in-depth literature review was conducted prior to the workshop. Many studies dealt with tagging and migration, cobia in mariculture, or from the Gulf.

April 28, 2026 – New Bern, North Carolina

The workshop highlighted the extensive conventional and electronic tagging datasets available for the upcoming Atlantic cobia stock assessment. The South Carolina Department of Natural Resources (SCDNR) Marine Game Fish Tagging Program (MGFTP) reported 1,853 releases and 308 recaptures of conventional tags since 1986, while the Virginia Game Fish Tagging Program (VGFTP) has recorded 8,364 conventional tags released and 1,338 recaptured since 1995. While the vast majority of conventional tag recaptures occurred within same state as release, it should be highlighted that recent data show a limited number of VGFTP recaptures into more northern states such as New Jersey (n=4) and Delaware (n=1). Disposition data from both programs indicate that while release rates vary annually, a significant portion of recaptured cobia are harvested. Additionally, the workshop noted that further conventional tagging data from other states, such as North Carolina, could be incorporated into the assessment as it becomes available.

In addition to conventional tagging methods, passive acoustic telemetry data from the FACT Network — comprising over 2.6 million detections — have provided new insights into offshore overwintering and stock boundaries. Studies confirmed that cobia movement is heavily influenced by the 20C isotherm, with fish utilizing the continental shelf break and Gulf Stream as thermal refugia during winter months. The workshop concluded that these acoustic datasets will be used to attempt to update estimates of both discard mortality and total mortality (Z).

The videos from the Southeast Reef Fish Survey were discussed in more depth after direction for the survey standardization was given to SEFSC by the TC and SAS on a previous data webinar. A standardization of the abundance data was not possible due to the zero-inflated negative binomial model not converging. An index of distribution (i.e. presence) was developed and thought to be highly correlated to an index of abundance. The data were subset to the months with the highest occurrence and excluding Florida or Florida and North Carolina. The index trend was similar, regardless of the subset used. There are still questions as to whether the video indices are tracking cobia abundance or abundance of other species (like sharks and rays).

A MRIP CPUE dependent index was created using directed trips for cobia. Total effort was calculated based on the hours fished and number of anglers on a trip. The data were subset to include Virginia through Georgia and waves 3-5, resulting in 11,450 trips. Overall, there were 16.7% positive trips for cobia and an increasing trend in abundance over the length of the

timeseries with a decline in abundance starting in 2018. The workshop attendees expressed concern that that trend matched Virginia's catch closely, which is likely a driving factor in the index. More development of this index will be done following the in-person workshop, specifically potential ways to handle increasing interest and effort in the fishery over time, especially in Virginia.

Final decisions on the indices used for the stock assessment will be done at the methods workshop, after comparisons between the indices can be completed through a correlation analysis or other considerations (such as fishery independent vs. dependent indices, whether age or length data is available for the index, whether the index is representative of the stock, etc.).

Virginia provided more information about the biological samples from their commercial fisheries, specifically the number of fish sampled from each gear type in each year. While some gears had more than 30 samples in a handful of years, the group determined that there were not enough samples consistently in each year to use the data for annual age or length compositions. Also, there was not enough information to break the commercial data out into different gear categories with length composition information available for each gear category. It was decided to maintain one commercial fleet with landings and discards aggregated and one aggregated length composition, as was completed in SEDAR 58.

Recreational data are coming from MRIP, with the intent to wait for the new MRIP FES calibration. Limited age and length data are available from carcass collection programs, recreational sampling efforts, and tournament samples with sample sizes increasing in recent years. Additional recreational age and length data from the early part of the time series, used in SEDAR58, were also identified which had not previously been submitted by the SEFSC. Discard lengths are not readily available, except through the Virginia Saltwater Journal mandatory and voluntary reporting or the MRIP headboat surveys. Many of the samples are from the Virginia Saltwater Journal mandatory reporting, but the group questioned some of these data entries as the program was not well received by the fishing community.

Discard mortality was explored in comparison to what was accomplished in SEDAR 58. Specific details about past analyses can be found in SEDAR58-WP04 and SEDAR58-DW06 working papers. The recreational discard mortality rate was assumed to be 5% of the recreational discards with a range of 2% to 12% used in sensitivity runs based on information provided from a past acoustic telemetry study (Young et al. 2016) and past VIMS Satellite Archival Tag study. The group decided the acoustic telemetry study could be updated with new additional data to ensure this was still the best available information on recreational discard mortality. Commercial discards were estimated using data from the Shark Gillnet Observer Program, NCDMF Gill Net Observer Program, and Supplemental Discard Logbook Program, which determined discard mortality for gillnets was roughly 45% and 5.6% for vertical lines. These data will be updated where available to determine if the reported discard mortalities are the best available science.

April 29, 2026 – New Bern, North Carolina

The last day of the workshop was used to review the terms of reference and discuss assignments needed for the completion of the assessment. It was noted that some environmental analyses outside the model and tagging data analyses may be needed, with some discussions on potential directions. A subgroup will be developed to work on these environmental aspects. Additional time was spent forming a tagging subgroup, as the tagging work will be a crucial and large component of the assessment.

The group also discussed potential data limited methods if the current Beaufort Assessment Model (BAM) does not converge. Ideas were brought forth on using the NOAA Data Limited Toolbox for analyses that could be beneficial. Also, discussions on potential exploration of another modeling platform occurred given the lack of future support for ADMB, the base platform needed to run the BAM. The workshop wrapped up with assignments moving forward and a plan to hold the methods workshop in September.

FINAL
SUMMARY REPORT
FULL COUNCIL II
SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL
June 2026

The Council met in open session on Friday, June 12, 2026, reviewed its workplan, and finalized committee reports.

Workplan

The following changes were made to the Council's workplan:

- Moved the long-term snapper grouper amendment that will implement actions resulting from the Management Strategy Evaluation (MSE) further into the future to bring it in line with progress of the MSE and to allow for the red snapper stock assessment to be incorporated into the MSE.
- Red Snapper ACL update and SEDAR 90: The Council expressed interest in considering a framework amendment to more quickly update the ACL based on SEDAR 90 results. This will require SEDAR 90 staying on track for the scheduled peer review in December 2026 and the Council convening the SSC in late January/early February to provide an ABC recommendation the Council can consider in March 2027. SEDAR 90 cannot be accelerated because it is awaiting revised MRIP estimates and requests to expedite those were rejected for procedural challenges. There was interest among Council members to hold a management level discussion relative to SEDAR 90 since a new catch level recommendations might prompt a revision or the sector allocation, which cannot be done via a framework amendment.
- Shifted approval for public hearings of Snapper Grouper Amendment 61 (FMU Revision) to December 2026 instead of September. This will not affect the anticipated approval in March 2027.
- Moved Dolphin Wahoo Regulatory Amendment 3 off the active amendments workplan.
- Moved Black grouper MSE response amendment to June 2027 because more time is needed to develop a catch level recommendation.
- Moved final approval for Snapper Grouper Regulatory Amendment 40 (changing seasonal closed area regulations for black sea bass pots) to March 2027.
- Council members brought up the need to better balance the harvest of Spanish mackerel between North Carolina and Florida.
 - There was interest in investigating whether unused ACL could be rolled over from one fishing year to the next. Rollovers are not included in the ABC control rule for the Coastal Migratory Pelagics FMP, because the CMP FMP was not included in the Council's ABC Control Rule Comprehensive Amendment due to the CMP FMP being a joint plan with the Gulf Council. The current control rule would need to be modified through an amendment to the FMP.

- Council members asked whether harvest balance could be improved through changing the fishing year to start on November 1. This could be a solution, however, a fishing year change in the CMP FMP cannot be done via framework so it is not a rapid solution. Therefore, the Council expressed interest in modifying the CMP framework to include changes to the fishing year and investigating opportunities to streamline joint FMP amendment processes with the Gulf Council.
- Given the discussion regarding the need to expedite changes to certain management measures, the Council directed that the comprehensive amendment to modify abbreviated framework procedures and “Sunday sale” be included on the December 2026 agenda.

The Council approved the following motion and provided additional guidance below:

MOTION 1: INITIATE AN AMENDMENT TO ADDRESS A FISHING YEAR CHANGE FOR SPANISH MACKEREL AND PROHIBIT TOURNAMENT SALES FOR KING MACKEREL AS SOON AS POSSIBLE.

APPROVED BY COUNCIL

- Bring this to the AP in the fall (will constitute scoping).
- Limit discussions with the AP to actions that are not dependent on the stock assessment for Spanish mackerel.
- It was clarified that given the Council’s current workload, this amendment would not likely start until March 2027.

Other Business

Executive Committee membership

- John Carmichael clarified the composition of the Executive Committee since the topic came up during closed session. The Council’s handbook lists the composition of that committee and if it were to be modified it will require a change in the handbook.
- Some Council members maintain that since the Council process is stakeholder-driven the Executive Committee should reflect this by providing the opportunity for all Council members to be a part of that Committee.
- Council chair and vice-chair positions are linked to the Executive Committee (both participate, according to the current handbook). Council members were encouraged to think about what changes they may want to explore ahead of the upcoming elections at the September meeting.
- Some Council members also expressed interest in potential changes to how chairmanship rotates among the states. Rotation can be changed and is not specified in the handbook.

Atlantic States Marine Fisheries Commission

Atlantic Menhaden Management Board

August 5, 2026

1:45 – 5:30 p.m.

Draft Agenda

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

1. Welcome/Call to Order (<i>J. Cimino</i>)	1:45 p.m.
2. Board Consent	1:45 p.m.
• Approval of Agenda	
• Approval of Proceedings from May 2026	
3. Public Comment	1:50 p.m.
4. Consider Approval of Draft Addendum II on Chesapeake Bay Reduction Fishery Cap for Public Comment (<i>J. Boyle</i>) Action	2:00 p.m.
5. Review Committee on Economics and Social Sciences Report on Board Task	5:00 p.m.
• Economic Impacts to Bait Fishery from Changes in Total Allowable Catch (<i>A. Scheld, T. Scott</i>)	
6. Consider Guidance to Technical Committee on 2027-2029 Specifications (<i>K. Drew</i>)	5:15 p.m.
7. Other Business/Adjourn	5:30 p.m.

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details

Atlantic States Marine Fisheries Commission

MEETING OVERVIEW

Atlantic Menhaden Management Board

August 5, 2026

1:45 – 5:30 p.m.

Chair: Joe Cimino (NJ) Assumed Chairmanship: 5/26	Technical Committee Chair: Caitlin Craig (NY)	Law Enforcement Committee Representative: David Bailey (MD)
Vice Chair: Nicole Lengyel Costa	Advisory Panel Chair: Vacant	Previous Board Meeting: May 5, 2026
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (18 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from May 2026

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

4. Consider Approval of Draft Addendum II on Chesapeake Bay Reduction Fishery for Public Comment (2:00 –5:00 p.m.) Action

Background

- In October 2025, the Board initiated a draft addendum to consider changes to the Chesapeake Bay Reduction Fishery Cap.
- The Plan Development Team (PDT) and Work Group incorporated the Board’s feedback from May into the Draft Addendum **(Briefing Materials)**.

Presentations

- Overview of Draft Addendum II to Amendment 3 by J. Boyle

Board Actions for Consideration

- Approve Draft Addendum II to Amendment 3 for public comment

5. Review Committee on Economics and Social Sciences Report on Board Task (5:00–5:15 p.m.)

Background

- In May 2026, in response to a Board task, the Committee on Economics and Social Sciences (CESS) provided a report on the socioeconomic impacts to the reduction

Atlantic States Marine Fisheries Commission

fishery from changes in the coastwide Total Allowable Catch, and the Board requested additional information for the bait fishery.

- CESS representatives updated the report on the available literature (**Briefing Materials**).

Presentations

- Overview of CESS Report by A. Scheld and T. Scott

6. Consider Guidance to Technical Committee on 2027-2029 Specifications (5:15–5:30 p.m.)

Background

- The Board sets an annual or multi-year TAC using the best available science, and the current TAC is set through 2026.
- The TC completes projection runs based on recommendations from the Board.

Presentations

- Request for direction for stock projections by K. Drew

7. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
ATLANTIC MENHADEN MANAGEMENT BOARD

The Westin Crystal City
Arlington, Virginia
Hybrid Meeting

May 5, 2026

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

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INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of February 2026 as amended by consent** (Page 1).
3. **Move to add a no rollover provision to Section 3.2.2.3** (Page 16). Motion by Mike Luisi; second by Rob LaFrance. Motion passes (10 in favor, 5 opposed, 1 null, 2 abstentions). (Page 19).
4. **Move to reconsider the previous motion** (Page 26). Motion by Doug Grout; second by Spud Woodward. Motion passes (13 in favor, 3 opposed, 2 abstentions). (Page 28).
5. **Move to add a no rollover provision to Section 3.2.2.3**. Motion Fails (3 in favor, 13 opposed, 2 abstentions) (Page 30).
6. **Move to form a Work Group of the Atlantic Menhaden Board to work with the Plan Development Team on revisions to Draft Addendum II** (Page 31). Motion by Nicole Lengyel-Costa; second by John Clark. Motion passes (16 in favor, 2 abstentions) (Page 34).
7. **Move to elect Nicole Lengyel-Costa as Vice-Chair of the Atlantic Menhaden Board** (Page 41). Motion by Doug Haymans; second by Eric Reid. Motion passes by unanimous consent (Page 41).
8. **Move to approve the nomination of Eric Lorentzen from MA to the Atlantic Menhaden Advisory Panel** (Page 41). Motion by Nichola Meserve; seconded by Matt Gates. Motion passes by unanimous consent (Page 42).
9. **Move to adjourn** by consent (Page 42).

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

ATTENDANCE

Board Members

Megan Ware, ME, proxy for C. Wilson (AA)	Loren Lustig, PA (GA)
Steve Train, ME (GA)	John Clark, DE (AA)
Rep. Allison Hepler, ME (LA)	Roy Miller, DE (GA)
Renee Zobel, NH (AA)	Craig Pugh, DE, proxy for Rep. Carson (LA)
Doug Grout, NH (GA)	Michael Luisi, MD, proxy for K. Charbooneau (AA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)	Russel Dize, MD (GA)
Nichola Meserve, MA, proxy for D. McKiernan (AA)	Allison Colden, MD, proxy for Del. Stein (LA)
Raymond Kane, MA (GA)	Joe Grist, VA (Acting AA)
Sarah Peake, MA, proxy for Rep. Armini (LA)	JJ Minor, VA (GA)
Nicole Lengyel Costa, RI, proxy for J. McNamee (AA)	Melissa Alberto, VA, proxy for Del. McClure (AA)
David Borden, RI (GA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Ben Dyar, SC, proxy for B. Keppler (AA)
Matthew Gates, CT, proxy for S. Madsen (AA)	Malcolm Rhodes, SC (GA)
Bill Hyatt, CT (GA)	Chris McDonough, SC, proxy for Sen. Cromer (LA)
Robert LaFrance, CT, proxy for Rep. Gresko (LA)	Doug Haymans, GA, (AA)
Marty Gary, NY (AA)	Spud Woodward, GA (GA)
Emerson Hasbrouck, NY (GA)	Erika Burgess, FL, proxy for J. McCawley (AA)
Monica Martinez, NY (LA)	Gary Jennings, FL (GA)
Joe Cimino, NJ (AA)	Ron Owens, PRFC
Adam Nowalsky, NJ, proxy for Sen. Gopal (LA)	Max Appleman, NMFS
Kris Kuhn, PA, proxy for T. Schaeffer (AA)	Rick Jacksobson, US FWS

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

Ex-Officio Members

Caitlin Craig, Technical Committee Chair

David Bailey, Law Enforcement Committee Rep.

Staff

Bob Beal	Caitlin Starks	Katie Drew
Toni Kerns	James Boyle	Jeff Kipp
Tina Berger	Tracey Bauer	Samara Nehemiah
Madeline Musante	Chelsea Tuohy	Jainita Patel

The Atlantic Menhaden Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Tuesday, May 5, 2026, and was called to order at 8:30 a.m. by Chair Joe Cimino.

CALL TO ORDER

CHAIR JOE CIMINO: Good morning, everybody, we're going to get started here. I am going to call the Atlantic Menhaden Management Board to order. My name is Joe Cimino; the Administrative Commissioner from New Jersey, and joined by James Boyle, Caitlin Craig, T.C. Chair.

We also have David Bailey representing us for Law Enforcement, and Katie Drew is here. Online we have Andrew Scheld. We have quite a few agenda items to get through, and most of the morning to do it. Let's see how we do.

APPROVAL OF AGENDA

CHAIR CIMINO: We'll start with Approval of the Agenda. Any edits on the agenda? Not seeing any. We'll consider that approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR CIMINO: Move on to the Proceedings from the February 2026 meeting. I see one hand, Dennis Abbott. Go ahead, Dennis.

MR. DENNIS ABBOTT: Yes, thank you, Joe. The meeting attended, so the previous meeting does not show Doug Grout or myself as attending and we were there, so I would like that correction made.

CHAIR CIMINO: Noted, got that, thank you. Any other corrections, additions to the proceedings? All right, with that one amendment by Dennis we'll consider those approved as amended.

PUBLIC COMMENT

CHAIR CIMINO: The next agenda item is public comment, so if there are any hands in the room or online, this part of the public comment period is going to be for any items not on the agenda.

We have an action item today for a draft addendum, and I will allow public comment during that decision making. Go ahead, I see one hand in the back of the room, Pete if you could just introduce yourself and I'll give you two minutes, and then I'll look to Toni to see if there is any online hand.

MR. PETER HIMCHAK: Thank you, Mr. Chairman. Peter Himchak, Omega Protein. I just wanted to mention that the Science Center for Marine Fisheries has funded a second project for a team of scientists that are well known to this Board; Latour, Gartland and Nesslage, Wilberg and Schuller to continue their work on developing the roadmap of research projects required to determine a biological basis for any biological cap in the Chesapeake Bay. They have identified, they have recognized the foundation of the cap lies in a tag and recapture program that ultimately would have to go Bay wide and they have developed a proposal that was funded by the Science Center for Marine Fisheries earlier in March. They have designed a pilot study to use acoustic pick tags with menhaden, and assess the survivability of menhaden with the tags, and then they would broadcast them into the fishery and try to detect the acoustic pick tags to get a sense of the recaptures.

If you want to read any direct quotes by doctors Nesslage and Latour; they were in a press release that was sent to everybody. If you want to learn more about the SCMFIS research program there is an exhibit set up in the lobby. It is being manned by Joe Myers, he is the Chairman of the Industry Advisory Board for SCMFIS and he represents the Sea Watch International about ocean quahogs and surf clams. With that I'll end my comments if you have any questions, I appreciate it.

CHAIR CIMINO: Pete, I appreciate that. Any questions for Pete? As he mentioned, there is a table outside and I appreciate Joe being here to man that table; it is a lot of great research being done there. I believe we have one hand online is that correct?

MS. TONI KERNS: That is correct, and when you're done with the public comment you can come back to me.

CHAIR CIMINO: Mr. Zalesak, go ahead, you have two minutes.

MR. PHILIP ZALESAK: My name is Phil Zalesak; I am a recreational fisherman with family in Virginia and Maryland. I sent you an e-mail this morning at 8:00 a.m. Here is what it said. In 2002, your state, New Jersey, ended an Atlantic menhaden reduction fishery in New Jersey waters because there was an ecological and economic disaster.

See the length of the New York Post article in your e-mail, it's a great article. Last Friday I sent you empirical data from Potomac River Fisheries Commission documenting localized depletion of Atlantic menhaden in the Potomac River, a critical estuary of the Chesapeake Bay. I also sent you the status of osprey in the main stem of the Chesapeake Bay, which are starving to death due to a lack of menhaden in their environment; see the references I put in there.

As someone who fishes the Chesapeake Bay and Potomac River, I want the same consideration that New Jersey fishermen have had for the last 24 years. I want nothing more, nothing less. I want you to demonstrate some leadership and make a motion to end reduction harvesting of Atlantic menhaden in Virginia waters now, just like New Jersey.

Don't continue with the philosophy of rules for thee but not for me, that would be hypocritical. Finally, if you don't make the motion, I'm asking the Maryland delegation to do so. Maryland commercial bait fishermen and recreational

fishermen have suffered enough. I thank you for your time, have a good day.

CHAIR CIMINO: Thank you, Mr. Zalesak. Toni, was that the last hand online? Okay, very good. Now, as I mentioned, and then quickly skipped, Toni will be announcing any Commissioners that are virtual only.

MS. KERNS: If I can get this right this morning, I believe we have Adam Nowalsky from New Jersey and JJ Minor from Virginia online, and Monica Martinez from New York. I just, for those of you that are not in the room and cannot see, we are being recorded this morning with audio and video.

CHAIR CIMINO: Very good, thank you, Toni. With that we will move onto our next agenda item, and that is Consider Approval of Draft Addendum II on Chesapeake Bay Reduction Fishery, so we'll go to James Boyle. James.

CONSIDER APPROVAL OF DRAFT ADDENDUM II ON CHESAPEAKE BAY REDUCTION FISHERY FOR PUBLIC COMMENT

MR. JAMES BOYLE IV: I'll start with a quick overview and recap of the process until this point, and then I'll move on to covering the content of the draft addendum and the PDTs memo with further information that was requested by the Board at the winter meeting. The goal of today's meeting is to finalize the options in the document and consider approving it for public comment.

First, I would like to give a big thank you to the members of the PDT who spent not just a lot of hours in the meetings that I'm sure many of you are sitting in, but also behind the scenes and doing analysis of all the documents. Okay, so a quick recap of the process.

At the annual meeting in October, the Board initiated Draft Addendum II to develop options and distribute the Chesapeake Bay Reduction Fishery cap more evenly throughout the fishing season, and to reduce the Bay Cap by up to 50%. If the document is approved for public comment today

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

then hearings will be scheduled from June to July and the Board will consider final approval in August.

The first issue topic in the document is the level of the Chesapeake Bay cap and how it is set. As a reminder, the Board will have the ability to choose anywhere within the range of options. But for analysis and public consideration the PDT drafted five options between the status quo and the requested maximum cut of 50%.

Those options include a cut of 10%, 20%, 30%, and 50%. Sub Option 1, the 10% cut. When coupled with the in-year quota periods if any are selected in 3.2 in the next section, they may provide a similar reduction to the 20% cut to the coastwide TAC that was adopted by the Board last October in an average year, if the quota period for some reason prevents full utilization of F. Under Sub Option 2, the 20% cut, reduction in the Bay Cap matches the reduction in the coastwide cap in 2025.

Sub Option 3 provides an additional buffer when compared to the coastwide cap reduction to account for the uncertainty and how abundance in Chesapeake Bay correlates to the abundance of the coastwide stock, and Sub Option 4 provides the most conservative buffer requested by the Board. Section 3.1.2 considers automatic adjustment to the Bay Cap with adjustments to the coastwide TAC. Option A is the status quo, where it changes to the Chesapeake Bay reduction fishery cap can only be made through adaptive management as defined in Amendment 3 to the Atlantic Menhaden FMP. Here is what we currently have now where you require an addendum or amendment to change the Chesapeake Bay Cap. In Option B, the Bay Cap would automatically be adjusted proportionately to the coastwide TAC by multiplying a convergent factor by the annual coastwide cap, however that changes.

That conversion factor as we defined it is the Bay Cap selected in the previous section divided by the current 2026 coastwide TAC of 186,840

metric tons. Once set, if this option is chosen, then the convergent factor would need to be changed through adaptive management.

For example, if the Board selects Sub Option 2 in the previous section, which is the 20% reduction in the cap, that gives you a Bay Cap of 40,800 metric tons, and the TAC was then changed to 150,000 metric tons, the new Bay Cap would be 40,800 divided by 186,840 metric tons multiplied by that new TAC to get 32,755 metric tons.

The PDT did consider an option to utilize the TAC and Bay Cap at 2027 as opposed to 2026 for making this conversion factor, but the PDT felt that having known values was more important than having the number that would theoretically be in place when this goes into effect. The sub options under Option B create potential limits on how high or low the cap can be adjusted automatically.

Sub Option 1 would provide the same minimum protection as the current bay cap, which has a maximum of 51,000 metric tons. Sub Option 2 uses the current bay cap as the maximum value, and the maximum reduction contained in Section 3.1.1, which is a 50% reduction as the minimum Bay Cap value.

Sub Option 3, the Bay Cap cannot exceed 87,216 metric tons, which is the highest Bay Cap value since a coastwide cap has been in place, and would have no minimum value. Sub Option 4, the highest Bay Cap value since the TAC has been in place the same value is the maximum, and the maximum reduction contained in Section 3.1.1, again the 50% reduction as the minimum.

Then Sub Option 5 uses the approximate upper and lower 95% confidence intervals around the 2012 to 2016 approximate mean Chesapeake Bay reduction harvest. Those approximate values used to protect confidentiality, which is the same time period used for the current Bay Cap. I'll also note, if Option B, Sub Option 4 is selected in 3.1.1 then the lower limits of this sub option will be lowered to 25,500 metric tons.

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In Option B, Sub Option 4 in 3.1.1 is a 50% cut that would be lower than this minimum, so if that is selected then this minimum, and this is selected then the minimum would be lowered. Changes to the TAC beyond these limits would not entail adjustment to the CAP until the TAC is within the limits again.

That is to say, if the TAC increases well beyond the value corresponding to the maximum set by one of these options or sub options, then decreases in future year only slightly, the cap is not automatically decreased until the TAC reenters the range of adjustment. With that I can stop for questions on this first section.

CHAIR CIMINO: Questions for James? Not seeing any; go ahead, James.

MR. BOYLE: Okay, moving on to the Chesapeake Bay Cap distribution. Table 4 from the Addendum in briefing materials outlines a series of options to divide the Bay Cap into three or four quota periods, with the objective of alleviating a concentration of reduction harvest that may prevent menhaden from distributing throughout the Bay to stationary gears.

The options here aim to more evenly distribute the harvest throughout the year or delay harvest even further into the year to reduce the pressure on the initial ingress of menhaden into the Bay. I'll make a note that the fishery begins on the first Monday in May and ends on the third Friday in November.

Depending on the year, the length of the fishing season is either 28 weeks and 5 days or 27 weeks and 5 days. The table outlines the length of each quota period for a season, assuming a 28-week, 5-day year. If the year is 27 weeks and 5 days, we simply remove one week from the final quota period for simplicity or implementation.

Options B through E present options that with three or four seasons of roughly equal length,

or as close to equal as can be given the length of the fishing year. Options B and C are the most equal distribution of harvest, whereas B and D give greater emphasis on that objective to delay harvest to lessen the pressure on that influx on menhaden into the Bay.

Options F and G present options with three periods of unequal length, so the extended first period further delays reduction harvest into the year compared to recent performance. But by increasing that short middle period is reflective of the key production harvest in recent years, and the proposed allocations during the season are intended to allow the fishery to operate as usual as possible during this period.

The PDT drafted two options to resolve overage. Option A is the status quo, since there are no quota periods right now there would be no paybacks for exceeding the allocation and quota period. Option B, any overage of the quota period would be deducted from the same quota period in the following year and redistributed to the final quota period in that following year.

If the final quota period of the year incurs an overage that does not result in an overage of the total bay cap there would be no adjustments to the final quota period in the following year. By redistributing deducted quota to the final period, this option achieves the objective of preventing early harvest, while still allowing for full utilization of the Bay Cap.

As an example, if the selected option divides the Bay Cap into three quota periods and the first period has a 1,000-pound overage. Then the following year the first period will be reduced by 1,000 pounds and the third period in that following year will have 1,000 pounds added. There is a key to the objective of moving harvest to the end of the year, but still allow for full utilization of the Bay Cap since there was not in the scenario an overage of the total Bay Cap. If the overage of a quota period is more than the allocation of that period, then the following year that period is simply reduced to zero, and any leftover overage is taken from the next

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earliest period if there is one possible. Again, in those scenarios any removed overage will be added to the final quota period.

The next section considers whether to close the fishery to mitigate the potential for an overage that would need to be paid back the following year. Under Option A there would be no fishery closure, under Option B when 90% of the quota for a period is projected to be harvested, the reduction fishery would be closed for the remainder of that period and be open at the start of the next period.

Regarding rollovers, so Option A would have unused quota from any quota period prior to the last period would be rolled over to the last quota period. This is complementary to Option B under overages, where overages of the final quota period that do not result in an overage of the total Bay Cap are not paid back.

Option B, unused quota would be rolled over evenly to all subsequent quota periods. This option would potentially allow for recouping of underutilized quota for the remaining parts of the fishing year, but ensure that not all the underharvest is caught in the following quota period.

There is a sub option to Option B, where they can only be selected if there are four quota periods, where unused quota from either Period 1 or 2 are rolled over evenly to quota periods 3 and 4. But quota period quota underharvest in quota period 1 is not rolled over to quota period 2. Any unused quota from quota period 3 would then subsequently be rolled over to quota period 4.

This will allow for potential of some recouping of underutilized quota at the end of the year and again ensure that none of the underharvest is caught in the first half of the fishing year to maintain the goal of redistributing quota later in the year. Before I start transitioning fully to the PDTs memo of additional information.

We did consider and reject some additional options. The first option would subtract a quota period overage from the total Bay Cap in addition to reducing the equivalent quota period the following year, thereby eliminating the need that I discuss in Option B of overages to redistribute that deducted quota to a different quota period.

The PDT rejected this alternative option to prevent reducing the total bay cap when it is not exceeded, and similarly the PDT considered and rejected an option to prohibit rollover, to again prevent reducing the total bay cap when it is not exceeded only due to an overage of a single quota period.

The third option would have distributed the deducted quota period proportionately over the remaining later quota periods. Given the stated objective to shift harvest later in the year, the PDT believes that the option for overages in the document, where deducted quota is distributed only to the final period achieves that goal and also simplifies the document and simplifies the overage system. I can take any questions on this section.

CHAIR CIMINO: I've read it a couple times and then James did a fantastic job of explaining it. Let's see if we have any questions on this section. Yes, we have some hands coming up now, so I'll start with Steve Train and then Mike Luisi after that. Go ahead, Steve.

MR. STEPHEN TRAIN: Thank you, James for, I guess doing a great job of explaining it, but I'm still a little bit confused. If we could roll back a couple of slides, I've got a question. The payback periods into the next year, based on the quarter or the trimester that you went over. It doesn't sound like a payback; it sounds punitive in one area. It's not keeping the population in balance there is a punishment for it.

I understand that, because you want to discourage this. The problem I have is, what if the overage isn't found until later. What if we have a computer error or what if we have a reporting error like have happened in other species, where a fishery has gone over at no fault to the fisherman. Then there is this punitive piece in there for it. Is there any way

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if we pass this along like this that we can pull that back out?

MR. BOYLE: I don't think there is a system right now. In this system the reason it is set up this way is that all of the quota accounting would have to be done or could be done between years. In that scenario we're not worrying about monitoring week to week. But in that scenario, if I understand correctly, the fishery doesn't know that they've gone over a quota period.

We find out at the end of the year that quota period 1 was exceeded and then that would be redistributed. There is not a system in this scenario that would have like a forgiveness of that, so to speak, I guess. In that scenario quota period 1 was exceeded they would still get those fish back, but in the end of the year not in that first period if that was the overage.

CHAIR CIMINO: Follow up, Steve?

MR. TRAIN: Like I said, the punitive part is you are taking it out of the part of the year that you wanted to fish in, or caught then in, because you went over with trying to ration it. That wouldn't be, if the mistake was either in the reporting or the software or whatever other reason that is not known to the fishermen, they would still get the punitive part of it, the way it's written now. There is no way to get around that.

MR. BOYLE: No, I don't think so. Maybe I'm not following, but I'm not sure, I don't think so. If they went over in that period and we only find out later, then yes that is an overage. That would still be taken out and moved to the final period the next year.

CHAIR CIMINO: I have Mike and then Renee and then Joe Grist.

MR. MICHAEL LUISI: Just a couple questions; the first one having to do with the timing of the quota periods. James, I wonder, so during the

discussion as we were crafting and coming up with ideas for how this would lay out there was some concern, and I understand the concern regarding the length of time between periods and how much administrative emphasis or administrative burden will be on the state responsible. In Maryland years ago we used to manage our striped bass fishery on a monthly quota that we had to manage each month, opening and closing and restarting and everything and it was a nightmare to get through. It took enormous amounts of time in order to manage that monthly quota throughout the year. When I look at this, I think that some of these options, and I'm asking, but F and G, they have these small windows of time of only six weeks.

That seems awfully fast to be able to turn around management and being able to make sure you have all the data that you need in order to manage that. Was there any discussion about the length of time in those two F and G? Did the PDT discuss it? Were there issues? Did Virginia bring up any concerns about the ability to manage a quota under a six-week time period?

MR. BOYLE: The overage system by making it, we had discussed originally when we came before the winter meeting of having overage paybacks within the same year, so if you have an overage of a period then the next period may have quota reduced or maybe a period after that. That is where that short period issue was brought up.

Once we transition to this overage system in Option B, where the overage is paid back the following year, then all of this accounting, even on a weekly level can be done in between years, and so it seemed like it administratively was enough time that we could figure that out.

CHAIR CIMINO: Follow up, Mike?

MR. LUISI: Yes, thank you, another entirely different question, Mr. Chairman, if that's okay. Going to the rollover section and looking at the rollover section and the options in the rollover and what you presented on your last slide. It would

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make sense to me to have a full scope of options under rollovers, including a no rollover provision.

The no rollover provision was removed; it was rejected. Just from my own edification, can you remind me or give me some thoughts maybe that the PDT had or maybe a previous Board discussion as to why? Was that voted out at a meeting or was that something that the PDT determined that they wouldn't put forward as an option for no rollovers?

MR. BOYLE: That was something determined by the PDT, because when you had a no rollovers option and you have two ways to manage that essentially. The overage system we have now creates basically de facto rollover to the final quota period, because it doesn't incur any penalties if the final period is exceeded, as long as the total Bay Cap is not exceeded, as effectively a rollover to the final period.

The only way to resolve that and have no rollovers would be either the final quota period being exceeded would incur its own type of penalty, in which case either you would have to, if you did the same redistribution thing we're doing, and you're taking quota period away from the final period. The only way to redistribute is earlier, which is against the objective of the document.

If you don't want to do that then the only other thing you can do is take it off the total Bay Cap, in which case you are penalizing the whole Bay Cap for an overage in one period. The PDT had that option drafted at our last meeting, I'm sure some of you were in that meeting and saw that. Then afterwards we discussed it and preferred that if we could get rid of the no rollover option that would resolve that issue, and then we could have just this overage system.

CHAIR CIMINO: I have a few other hands up on this side, so I was going to go to Renee Zobel.

MS. RENEE ZOBEL: I guess Steve and Mike kind of liked some of my questions. I'm thinking about, I'm just not as familiar with the data reporting in this fishery. I'm thinking of this as somebody who was the one who was monitoring in-season for AREA 1A for herring. My understanding now is that there is less in-season monitoring.

Can you just talk a little bit about how the data reporting, I mean there are concrete periods, what kind of monitoring is happening? What kind of communication with the fishery is happening, as far as where they are with the quota. You know how does that work? This gave me a little anxiety as somebody who is responsible for making sure that we were doing a good job of informing people and closing things down when necessary. Just a little more information that would be really helpful for me.

MR. BOYLE: I will defer to Virginia on more specifics on how they interact with the fishery and how they receive the reports. But from our perspective we receive weekly reports on the reduction fishery throughout the year. In terms of monitoring for these kinds of overages on a week-to-week basis, we would have plenty of information to know, like in these weekly quota periods where the quota was, once we got to the end of the year.

I do believe there is at least a two-week delay from when, like if the last harvest might, or when a pound is caught to when that pound might show up in that reporting. That was a concern with the shorter quota periods if you were doing in-season penalties. That may be something to discuss.

We've had discussions with VMRC about if for the option where the fishery has to close when it's 90% projected. That could come up as an issue. Same with there can be large fluctuations week to week so that is the same problem. But at least in between years for determining the overages we have that week to week data.

CHAIR CIMINO: Follow up, Renee?

MS. ZOBEL: Yes, just a quick follow up to that, James. Some of that curiosity, and I know that we're dealing with a low number of participants in this case essentially. But how is any of that feedback is going back to the industry who is trying not to go over those periods.

CHAIR CIMINO: Joe Grist, if you could help us out there.

MR. JOSEPH GRIST: Yes, I'll do my best to help you out on this. I think the comment punitive was pretty good. It's our responsibility to help manage this quota, and to make sure they don't go over. We do it in every fishery we manage, with quotas all around this table. It would be difficult. The way we would operate currently with Captains Daily Fishing Reports. We receive them on Thursday from the week prior. Depending on when that catch report for the week prior is, it would be up to 10, 12 days for some of those catches. Then we get confirmation through the plan a couple weeks later on the catch, so there may be a little difference. Initially in-season we don't see a lot of difference in the numbers from the CDFR from what we get for the update. As we get later in the season there may be a little bit more of a discrepancy, but nothing major.

It's just we just may have a little bit more difference later in the season. It's not set in stone how that happens. Some years it's straight up and some years we see a little change. But the shorter the quota periods are, so if they fished last week and I get to report this coming Thursday, I'm already into the second week of fishing.

If it's a six-week period or seven-week period, I'm only going to get a couple data points, before I've got to be projecting to whether or not I need to tell them Hey, this period is not going to work. It means slow down or you need to stop, before they go over in that particular segment. I mean that could be very difficult to do with the way the system is.

Well, ideally, they will put in daily harvest reporting and all that, great. Give me a person and some money, which I don't have neither. Until I have those resources, I have to deal with the resources that I currently have. The resource I currently have, these make these shorter quota periods very difficult for us to manage.

It would be unfair to the harvesters for us to say, well we'll just deal with it later. That is not good management. We wouldn't do that for any other species around this table. Yes, this total period comes along like C and D and such. They are going to be hard for us to do and work, so is that a kind of answer to part of that question?

Since I did have my hand up, Mr. Chairman, see me just for a couple other things. I'm not going to sit here on a soap box or anything. We've mentioned the administrative burden with some of this stuff does do for us, so that will be taken into account. We are going to do everything we can to ASMFC direct, but some of this is an administrative burden.

On the rollover provision, we already paid the Bay Cap back if there is an overage, which has only happened rarely in history has the Bay Cap been exceeded, but if it does it gets paid back. Worrying about the rollover throughout the season. If the measure is just to set a cap that they have to adhere to, then let's just set the cap.

If there is an overage of the annual cap then it gets paid back the next year, which is commonly done in most fisheries. If there isn't, no harm no foul. They can't catch the fish early on, because the fish aren't there and they are going to get penalized if the fish are there later. But they now can't touch them.

Not having rollover kind of goes against how we've done fisheries management for decades around here. We've almost always had some type of rollover provision. I don't see where that is going to be really tenable to keep that in there. If there is anything else, operational questions or anything, I would be happy to ask members of the Board. We are going to do what we can to help guide you all through what we can do in Virginia, because

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obviously at the end of the day the Addendum is on Virginia. We're the only ones it's on, so I would be happy to answer any questions I can for the Board.

CHAIR CIMINO: I want to welcome Luis Alberto, new Commissioner from Virginia, who is joining us today, welcome. I have one more hand so far on the list, Allison Colden.

DR. ALLISON COLDEN: I am not surprised that this rollover and overage section is getting a lot of interest and conversation. It is quite extensive, so thank you to the PDT and to you, James, for thinking all of these various scenarios through. I did want to just sort of present a potential counterpoint to some of the arguments about rollovers.

I think we have, it might help, James, if you could pull up the quota period options that have the percentages in the chart, thank you. You know we are going to be hopefully, eventually, making a decision on an addendum and we have in front of us the quota period options with expected percentage of the total Bay Cap across these various options.

Presumably they reflect the intent of the Board, in terms of more evenly distributing harvest, or allowing for you know a delay in harvest for ingress of fish into the Bay. I'm sure that making those decisions we all have some expectations that those are roughly the percentages of the Bay Cap that would be achieved during those harvest periods.

But the rollover provisions and the fact that there is not a limit on the amount of rollover in the options we have in front of us now means there could be some significant departures from the percentages that we see here, depending on how the fishery ends up operating.

From my perspective, having an option in the document for no rollovers gives us one, completeness of options, because to me it seems like we typically always have either a

status quo or a no action option, that kind of rounds out the totality of a specific section, but also provides the opportunity for the Board to have certainty that these are the percentages that we would see being achieved in those quota periods.

I think the rollovers just introduces some more uncertainty which we'll have to consider if this document moves forward, and so just have an interest in seeing that no rollover, so we have the ability to sort of think through the totality of those options. Thank you, Mr. Chair.

CHAIR CIMINO: Thank you, Allison. I'm going to head over this way. I have Nicole then Nichola and then in the back of the room.

MS. NICOLE LENGYEL COSTA: I actually shared Renee's concern about the quota monitoring, and it was very helpful to hear Joe speak on Virginia's ability to actually track these periods throughout the year. But where my confusion lies is when we read the document, and James did a nice job of explaining how most of those sub period overages were going to be handled in the following year.

However, when Joe was speaking, he was talking like we typically manage quotas throughout the year, where we're proactively tracking the quota throughout the sub period and then we use the previous weeks landings to do projections, so we know if we have to have an early closure. It is not typical for an FMP to specify quota periods. Typically, we specify an overall quota, and then we leave it up to the states to manage it how they wish. But given that we are specifying the quota periods,

I think it would be helpful to have some language in the document that Virginia is going to be doing some in-season tracking, and that they are going to be doing early closures when possible. But I still have concerns, given what Joe said about their ability to do so without incurring large overages on a regular basis, given the delay in the reporting.

CHAIR CIMINO: For something like that I am not necessarily going to look for a motion. If any Board

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members had concern with that language, we'll let a hand come up, but otherwise I think that that is something to get in there. Nichola, you're next.

MS. NICHOLA MESERVE: I just wanted to make sure that I am on common ground with others. The document refers this table to nine weeks, ten weeks. I believe that the reference period for those is the first Monday of May, or whatever it is in Virginia regulation that establishes when the reduction fishery can begin

I'm seeing Joe Grist nod his head, so I think for the public's understanding of what these time periods mean you might want to include that as a point of information in the background. I would note, however, that that start date is not set in the FMP, so Virginia could potentially change that.

It leaves me a little bit questioning how that then applies to the selection of any of these options if the FMP set its seven weeks from the start of the purse seine fishery, but then the reduction fishery in Virginia could change that. It feels like a little bit of a disconnect. Then I also had a question about some of these options.

For example, D here, where it puts most of the harvest late in the last period and some of the rollover provisions that would likewise allow for kind of the accumulation of allowed harvest since the last period. When I look at the beginning of the addendum and it says that the intent is to reduce the concentration of the harvest, and even going back to the motion that initiated the addendum, which was to spread it out.

It seems like those options are a little bit different from the intent as stated. I just wanted to make sure that my understanding of the PDT has kind of adapted that intent to not just be to spread it out, but also to potentially push it to later in the year. Can you just kind of

confirm that. I think that is okay that the PDT did that, I just want to make sure that that has been reflected in the document.

MR. BOYLE: Yes, there are two kinds of similar objectives or related objectives. One is spread out more evenly, and the other was to push it later to protect the ingress. The 25-25-50 Option in Option B came from the Board in the winter meeting, and so those two objectives we tried to work together and also this is like this is how the overage system works. But it is trying to match these two things up as best we could.

CHAIR CIMINO: Joe, did you have a response to the time period?

MR. GRIST: Yes, I just wanted to make note. It is not a simple process actually for us to change that season. That is set in the code of Virginia, so it will actually take legislative action to change that reduction season in the Bay. That is in code, so that is not an easy process. That is not something the Agency could do to a standard mostly regulatory process. It would have to be a bill introduced and have to be debated. Could it be changed? Theoretically yes, easy to do it? No, not easy to do it at all.

CHAIR CIMINO: Okay, I think Malcolm, you were the only other hand I have.

DR. MALCOLM RHODES: I understand all the issues of administrative work, and believe me I know we're run short in South Carolina all the time. When we're talking about the reduction fishery, we're talking about one entity, which I'm sure keeps quite records. Why don't we throw the onus on them. It must be real time, you're not having to collate 4 or 5 different operators, but 1 single operator.

I don't see why we require real time for a lot of other fisheries, why they can't have an up to date, and the onus goes to them and they all proof it. I'm just throwing out what I'm hearing this. I don't see why we don't throw it on the industry, since it's one entity, and when they come into Reidsville, they know what they offload and it should be almost a

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real-time reporting. I may be incorrect, but just when I listen to this discussion.

CHAIR CIMINO: Joe.

MR. GRIST: We regulate by the vessel, not by the entity, not by the owner. You are talking, I forget how many total, are in the fleet at this point. There are individual vessels. The other thing, just because it is a common owner they are protected by the confidentiality rule, so there are some complications to how that would be handled.

But we do monitor the vessels, so if all the vessels are out, I think there should be a total of 7 or 8 different reports that we're getting in from the different vessels that are due on that Thursday. It's still on us to do all the verifications at the end of the day, I mean we're the enforcement authority for the Commonwealth, so we have to be the ones that have the tool to do it. I understand the perspective, but there are some complications to that.

DR. RHODES: Just to follow up though. We have other reporting systems where the dealer has to do reports from all the different people. Would this not be the same? You wouldn't need the 7 operators, but when they are offloaded in Reidsville, they know what they've bought, and it seems like that would be real time and that would get around to confidentiality issues, you know essentially make them a secret dealer that is making the report, I'm thinking. We don't deal with this in South Carolina, but it's just thoughts that were coming to mind.

CHAIR CIMINO: Dennis Abbott, you had your hand up?

MR. DENNIS ABBOTT: I would like a little clarification. Joe Grist, I think he mentioned that he would have to go back to the Legislature. I was under the impression that menhaden management was removed from the

legislature in Virginia and given to the Agency. Is that not correct?

MR. GRIST: It is correct that we have regulatory authority, but there are still certain provisions established in the Code of Virginia that set certain standards we can't change and one is the season. The season is still set from the code. All our power comes from the Code of Virginia. The code can establish boundaries that we have to adhere within, and that is an established code of Virginia boundary is their season. That is how come we can just go and change on our own. We have to have the boundaries changed for us to operate within. That sets our regulations.

CHAIR CIMINO: Thanks for the clarification. Eric Reid.

MR. ERIC REID: It's an interesting conversation about who has to report, where the onus is and all that. I mean for the boats that I deal with, you know they have federal permits and they have to have their VTR filled out when they hit the dock. You know then the dealer has to report twice a week and that's how it goes, and so there are a check and balance there.

But in the menhaden fishery it is really interesting, because the boats that actually catch the fish are not landing the fish. It goes into carrier boats, so it kind of compounds the problem of who is going to report what and when, so we have to keep that in mind.

I'm sure there are some boats that are, you know they pull past the net and there is a skip that does the rest of it and they carry their own fish. But in the case of some of these bigger operations, the guy that is landing the fish didn't catch them, that's all. It's kind of weird. Things that make it only more complicated, so I don't know how we figure that out.

CHAIR CIMINO: Thanks, Eric. To Toni, for any hands online. Okay. Winding down on questions, it seems. Emerson.

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MR. EMERSON C. HASBROUCK: Kind of a simple question here. In terms of harvest that goes against the Bay Cap. Is the pound net catch included in the Bay Cap or is that part of a coastwide quota?

MR. BOYLE: Only the reduction fishery catch is counted towards the Bay Cap, but all landings are counted towards their state quotas. The Bay Cap is still within Virginia's allocation. But the bait landings are all separate.

CHAIR CIMINO: I guess James has a couple more slides, so I'll turn it back to him.

MR. BOYLE: The Board also requested analyses for further consideration, including compare reduction effort with harvest data within the quota periods to investigate the pound net and production catch rates, to determine if pound net landings are correlated with the timing of the reduction fishery and changes in pound net participation over time. There is some discussion in the initiation of the Draft Addendum on the use of harvest or effort to develop the quota periods. This table, which is also included in the PDT's memo in briefing materials shows the approximated average landings in 2018 and 2024 since the current Bay Cap has been in place. The approximate average percent of landings in effort for quota period further options in Draft Addendum II.

Since 2020 the distribution of effort is generally spread relatively evenly across the fishing season with about 5 to 10% of the total effort occurring in most weeks with occasional spikes and drop-offs. In 2018, more effort occurred early in the fishing season, 2019 it was primarily in two stanzas with very little effort for most of the month of July.

The relative trend in catch per unit effort of CPUE was most variable in 2018 and 2019. For the question regarding catch rates in the Maryland pound net and reduction fisheries, the PDT conducted a preliminary analysis to evaluate any potential link between the two,

but does recommend to the Board that the Technical Committee would be a more appropriate avenue to conduct a more detailed analysis.

In general, changes in the harvest may be caused by changes to fish availability, changes to effort, and/or changes to fishing efficiency. Assuming for the sake of this analysis that there were no major gear changes to the fishery that would affect efficiency, the PDT investigated the variability in effort and availability as potential causes for the declining harvest that had been reported out of Maryland's pound nets.

Figure 3 in the memo, which is on the slide, shows that harvest and effort in the pound net fishery, again this is just for Maryland, was stable from 2018 to 2022, but declined significantly in 2023 and 2024. While true abundance or availability is unknown, the PDT used CPUE as a proxy for abundance, assuming again that there were no major changes to how the fishery operated between years.

These data show that although annual CPUE has declined recently, the decline is not as dramatic as observed in the catch and effort to just seeing that the decline in landings is primarily driven by reduced effort. If we look at Maryland DNR Choptank River Independent Survey as for comparison between 2018 and 2023, the abundance appears to have been relatively stable before a dramatic decline in 2024 and remaining low in 2025.

To break this down even further, to investigate seasonal impacts, CPUE was evaluated on a weekly basis beginning in week 13 of each year. In weeks 13 to 26 CPUE in both 2023 and 2024 is low relative to the average of 2018 to 2022, although it is unlikely to see a reduce in the reduction fishery, as the reduction harvest does not usually begin until week 19 and was delayed until after Week 23 in both of those years.

The second half of the year after Week 27, weekly CPUE in 2023 is generally equal to or greater than the average from 2018 to 2022, until Week 46, but it again suggests little influence in reduction fishery

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as by that time both fisheries have achieved greater than 95% of their annual catch and are generally winding down. By contrast in 2024, CPUE is generally below the 2018 to 2022 average from Week 31 through the end of the year. That year the reduction fishery began in Week 23, approximately five weeks later than they normally had from 2018 to 2022, but by Week 33 had caught about 60% of their annual harvest, which is in line with those earlier years. It is possible that those higher-than-normal catch rates may have affected the availability of fish in the upper Bay. Although the PDT does know that this is not conclusive and that any link between reduction harvest and availability in the upper Bay would be a joint function of fishery dynamics and migratory patterns at a finer scale than we could consider it for this analysis.

Finally, the Board requested it show analysis to explore trends in the number of participants in the pound net fishery for Maryland, PRFC, and Virginia. Overall, all three jurisdictions saw a decline in the number of any participants from 2018 to 2024, with Maryland seeing the biggest decline from 2018 through 2021.

Since 2021, all three states and jurisdictions have between 10 to 16 participants per year. When looking at the number of any participants by month, and there are further figures on this in the PDTs memo. There appears to be fewer participants by month during 2023 and 2024 for all three jurisdictions when compared from 2018 to 2022, although there does seem to be consistent variability by month throughout the time series without a clear trend. With that I can take any questions.

CHAIR CIMINO: Questions for James on the memo. I have Emerson and then I'll go to you, John.

MR. HASBROUCK: Thank you, James, for your presentation. Do we know what might be causing the reduction in pound nets being fished in those states? Are people just getting

out of the fishery, are people retiring out of the fishery? I know some of this discussion had it related to menhaden availability, but is there any correlation there between number of pound nets being fished and menhaden availability, you know a statistical correlation?

MR. BOYLE: I can't speak to why participants have been leaving the fishery and saw that decline. But from this brief analysis the catch per unit effort does seem to be relatively high compared to the decrease in participation. The CPUE has decreased in '23/'24, but it is not as dramatic as the loss in participants, which suggests there is some availability there at least.

CHAIR CIMINO: John Clark.

MR. JOHN CLARK: Mine is kind of a follow up question on the topic that Emerson brought up. I'm just curious. I mean there is a good economic analysis in the Draft Addendum about the potential economic cost to Virginia to the reduction fishery if the reductions are made through the Bay Cap.

Just curious in Maryland if any work has been done, how it has affected employment in the fishery in Maryland that would be similar to what was done for the reduction fishery, because as you showed there the participation has gone down. I was wondering, as Emerson did, how much of that is due to the availability, if people aren't setting the nets, or whether it's just gotten to be one of those things where it's a difficult fishery. It's a lot of work, to work pound nets and people just have other ways of fishing, what the deal is.

CHAIR CIMINO: Okay, one of our Maryland Commissioners is going to help out there, John. Russel.

MR. H. RUSSEL DIZE: Joe, I was talking to a friend of mine, a commercial pound netter, two days ago before I came up here. The reason why we're losing pound netters is they can't exist on just catching what we call rockfish, striped bass. For instance, Rob said that he went to his nets Friday and she was full of striped bass, so you can't save striped bass, so he has to lower them and let them go.

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But they can't exist on just catching striped bass. They need the menhaden. Menhaden is the staple that keeps them on the plus side so there is a profit. If they can't catch any menhaden, they don't have a barrier between that and the striped bass. Normally they just catch striped bass and menhaden.

Without the menhaden, and that's why we're losing our pound netters in the last two or three years. I mean around my area several of them have just quit because it's just too expensive. Used to be you go in the woods and you cut 60 poles for a net or 100 poles for a net. The wood, the guy would let you cut them. Now they are \$6.00 and \$8.00 a piece for every one of those poles you catch. That is what is happening in the pound net industry at home.

CHAIR CIMINO: Thank you for that insight. Other questions on the memo. Eric.

MR. REID: My question is, is it the fishermen? Does the license go to the fisherman or does it go to the trap? I guess that is my first question. I'm not sure if I have another question after that. Maybe I do, but how does that work out? Does the trap have a license or is it the person?

CHAIR CIMINO: Mike Luisi.

MR. LUISI: A licensed fisherman, a fisherman is licensed. That license gives him or her the ability to harvest fish with whatever means that license allows, and we have a range of different licenses that will offer different gears. You have a license that allows you to set a pound net. In order to set that pound net you have to have a declared sight.

We have a sight registry around the Bay. You have to have a location for that fixed gear to be placed. It has to meet all of the other regulations about distance from this or distance from that. It is established as "yours" as a license holder I have that spot reserved for my harvest. Before the season we ask fishermen to give us an indication on how many nets they

plan to set and fish that year. How accurate that is it's hard to tell. I assume that it is mostly accurate.

We're getting a decent handle on the number of nets set. But after that, once they have declared their intent, they have their net location and they've told us that they are planning to set three nets and fish them this year. They have three locations, that's as far as it goes, as far as their legally being allowed to harvest from those nets. That is how we administer. We don't have any special permits. It's a gear that is associated with a license, and that information is given to us prior to the season.

CHAIR CIMINO: Ron, did you have something to add for PRFC?

MR. RON OWENS: Yes, so in Potomac River it is a little different. By regulation we only have the availability for 100-pound net stands and they are held by a handful of watermen, so it is a little different on that.

CHAIR CIMINO: Are there questions? Russel.

MR. DIZE: To go a little with what Mike was saying. When you stake your pound net it has to have a license displayed on the pound net, so each pound net would have his license. My license would be displayed on that pound net so it could be seen by DNR, whoever wants to see it.

CHAIR CIMINO: Okay, I think we have our answer there. Eric again? No, okay. Spud.

MR. SPUD WOODWARD: It's kind of intriguing. I'm curious of the CPUE determination. Is that based on the catch divided by the number of nets that we know to have been fished or the total number of nets that were actually allowed to be fished?

CHAIR CIMINO: Yes, good question.

MR. BOYLE: I believe it is net sets which we know to be fished, but I can doublecheck offline on what data we got from the states.

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CHAIR CIMINO: Joe Grist.

MR. GRIST: This is why they started printing them, so checking back in with the team that was doing it. They decided the data included number of nets fished, is what they've responded back.

CHAIR CIMINO: Thanks for that clarification. Not seeing any other hands on the memo. Matt, go ahead.

MR. MATTHEW GATES: I might have missed it in the presentation, but I do see sort of a recommendation in the PDT memo for the TC to maybe do more work on the CPUE analysis, and I'm just curious. Is there anything more that the TC could do with the available data, to try to go a little more in depth with that analysis? I'm just curious.

CHAIR CIMINO: Well, yes. I guess there is some level of, maybe of speculation, but if there has been a conversation, Katie.

DR. KATIE DREW: We have not, the TC has not talked about this or seen these data. Obviously, the TC would also need to get confidential access for these data. I don't believe this analysis used any environmental data in it. I mean I think there is maybe some additional things the TC could look into, but I don't think there is necessarily anything we could do to increase the confidence in the results given, especially the short time period we're looking at right now.

CHAIR CIMINO: Mike.

MR. LUISI: Just one little extra piece of information, just I got from staff too. I did the phone a friend earlier this morning. I just want to clarify. What we would be looking at for the unit of effort is the nets set per day, it's how many nets were fished during a day. The thing that I want to make clear though is that pound nets are stationary fixed gear, and they are not always there to target one particular thing.

Just last year we had 29 different species reported using from pound nets in the Chesapeake, with the highest harvest being channel catfish, striped bass, gizzard shad, menhaden, blue catfish and white perch. These fishermen are out there fishing all sorts of the areas of the Bay for all different types of species.

The catch per unit effort part and how many nets they fish and what their expected catch is, I think may complicate that analysis. But I need to think through it a little bit more to understand it in my mind better. But I just wanted to lay that out there for just a little background as to how our pound net fishery operates.

CHAIR CIMINO: Every time I say I'm not seeing any hands I see a new hand. But I think we are at a point where we can start moving into discussion on the Draft Addendum. I think part of that could be starting us off with motions, if that might help a discussion along. I'm not going to object to that.

As I mentioned, before we do take final action I will go out to the public for public comment. Actually, I'll do that for any motions we have. Pleasure of the Board on the Draft Addendum, and I will mention that we did have some suggested text edits. Once we do have a motion, if this is going to be going out, that that motion would ask it to be as amended today. Okay, James, go ahead.

MR. BOYLE: Just to jump in. I have a few more edits that I received. One of them is to, in the Option B of Section 3.1.2, which is the automatic Chesapeake Bay Cap adjustment. It is to add language on if the Board would like to go forward with the sub option but having minimum and maximum.

Why the Board would want to see further justification for having a minimum as well as a maximum. In addition, more language in that text will be added to clarify what adaptive management is, and show the section in Amendment 3 as a minor change, and then language to show that the minimum does not affect state allocations that the Bay Cap. Further clarification where Bay Cap does

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not affect state allocations, and to clarify that Table 2 of the same section, just clarify that table that the option is referring to, referred Option 3.1.1 not 3.1.2.

CHAIR CIMINO: Erika.

MS. ERIKA BURGESS: Before we go into motions I want to thank James for his time. He met with me on Friday. I found, as I think others around the table have found, that the document was a little challenging to follow. I think these changes will help the public, which this document is intended for, to understand the options in the document. I also hope that the Board can narrow down some of them and state more clearly their intent and the purpose for these actions, so that the public can provide meaningful comment on them.

CHAIR CIMINO: Thank you for taking the time and going through that, I appreciate it. Pleasure of the Board, Mike Luisi.

MR. LUISI: Somebody has got to break the ice, right, Mr. Chairman. I mentioned earlier what the PDT discussed regarding rollovers. We talked about it briefly. James provided some thought about the rollover provision and why the PDT decided not to have a no rollover provision in the document.

I would feel more comfortable if this Board decided that, to decide whether or not that no rollover provision should be an option in the document. I would make that motion, Mr. Chairman to include. The motion would be **move to add a no rollover provision to the rollover section of this document.**

CHAIR CIMINO: Okay, thanks, then we'll get that up on the board for you, Mike. It looks like we're starting to dial a phone number. We'll get that in and then we'll see if we have a second. We do. Rob, I'm assuming that's a second, so a second by Rob LaFrance.

MR. LUISI: May I provide some rationale, Mr. Chair.

CHAIR CIMINO: Yes, let's do that, Mike.

MR. LUISI: Yes, this is more, for me this is more about the completion of the section and having a full rounded out, all the different degrees of options from no rollovers to have the rollovers as they are already addressed in the document. I just think it offers a more complete picture of the situation.

At this time right now, thinking it through, I would need to think through how it all works as to whether or not I would support this at the end. But I definitely think that the public deserves the opportunity to consider this as a management tool for how we deal with the Bay, with the Bay Cap. For me this is about process and inclusion to be more complete.

CHAIR CIMINO: Rob, as the seconder.

MR. ROB LaFRANCE: I think that accurately states the reason I would be supporting this motion as well. The notion of setting out all the different options for the public to be able to get an understanding of. I think after this happens, I'm also after hearing some of the debate here, thinking about some of the other things we have to do in the document.

This sort of sets a placeholder or an explanatory perspective, and I think it's important for us to do that. I think there is going to be other changes to the document, in terms of its complexity. I think this actually simplifies.

CHAIR CIMINO: Okay, further discussion, let's go around the table. Joe Grist.

MR. GRIST: I understand the arguments being made. I find this motion is punitive. If we have a situation where we're not overfishing, we're not overfished, we're nowhere near the Bay Cap. The first two, three segments they didn't catch up because the availability of the fish wasn't there.

We are seeing some changes in availability year to year in the Bay now to times of the year when the

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fish are actually available. They don't operate by a calendar, as much as all of wish they did. It would make our lives a lot easier around this table. I see this as an option that, if it were to make it all the way through it would be very punitive.

It's not any fishermen's fault if the fish don't show up at a certain time of the year and they don't get to catch them. But later in the year they do show up. The cap is cap. At the end of the day, it is the total cap and the annual that is going to rule the day. The segments is a management tool, but now we're talking about basically making individual segments caps, mini caps, completely independent of the next. That just seems very punitive in this approach.

We have an overall Bay Cap annually. You want a management by segments to control the harvest through the period, fine. But now this literally, if this were to go all the way through with public opinion and this Board. Something like this would basically create three or four Bay Caps in a year, and that makes no management sense. I don't understand the argument for that whatsoever.

CHAIR CIMINO: Other discussion around the table. John Clark.

MR. CLARK: I agree with Joe. I mean we have a cap for the Bay, and as you said, this would be a situation where each one of these trimesters or quad-mesters, whatever they are, is its own individual cap, and that, I think, is beyond the scope of what we were considering before. I don't think this should be in.

CHAIR CIMINO: Doug Grout.

MR. DOUGLAS E. GROUT: Just to be clear, we currently have a no rollover provision for the total Bay Cap, is that correct?

MR. BOYLE: The Bay Cap cannot rollover from year to year.

MR. GROUT: From year to year, yes. This is specifically talking about having a no rollover option between periods only. Okay.

CHAIR CIMINO: Thanks for that clarification, I think that is good for everybody. No hands online. Allison.

DR. COLDEN: I already spoke about this concept a little bit earlier in the Q & A portion. But I think something that Joe mentioned just struck me, in terms of the availability of menhaden in the Bay and the changing availability of menhaden in the Bay. I think this no rollover provision also provides an opportunity for some really important information to be gathered in that regard. You know if there are changes to timing or availability for various reasons. Not being able to catch the cap in any particular quota period is really important information for this Board to kind of understand those dynamics, especially in the absence of having a menhaden specific survey within the Chesapeake Bay. I think that this is just another tool as well, considered across the entirety of all of the options that we have in the document. That could provide us some of that much needed information that we're missing.

CHAIR CIMINO: Other hands around the table. Not seeing any, I will give the public a chance to comment directly to the motion. Anyone that wants to speak will have one minute. If you could introduce yourself.

MR. BEN LANDRY: Hi, my name is Ben Landry. I'm here representing Virginia's menhaden fishery. We oppose this motion for the very reason that Joe Grist laid out. It's a punitive measure to ensure that less fish is caught in the Bay. If the goal of this entire effort is to reduce fish at the beginning of the year, then catching it on the back end of the year should not be the goal.

Joe laid out the fact that you now have a coastwide quota, you have a Bay quota that applies to one company and one company only. The bait fishermen can catch whatever they want. A menhaden used for reduction, serves the same ecosystem role as menhaden caught for bait. Now

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you're creating 3, possibly 4 subregional bay quotas. Without the rollover provision it is just a punitive measure. I appreciate your consideration.

CHAIR CIMINO: I see some other hands, Will, go ahead.

MR. WILL POSTON: Will Poston with the Chesapeake Bay Foundation. I'll speak in support of this motion and touch on something that hasn't been mentioned yet. The utility of this option is really defining the range of alternatives for this Board's consideration, and without it the Board is fundamentally constrained in what it could consider in a final action period.

I think including this option in public comment will grant the Board flexibility in potentially making a final decision. Again, the utility of a quota period in the Chesapeake Bay Cap is to buffer against this changing availability and changing menhaden dynamics that will provide a buffer for Chesapeake Bay ecosystem needs, and again does not preclude this industry from fully utilizing its quota. This option would just prevent over utilization in the Chesapeake Bay.

CHAIR CIMINO: Go ahead and state your name.

MR. BRIAN COLLINS: Good morning, happy Cinco de Mayo there. My name is Brian Collins; I'm a citizen of Alexandria, Virginia. Regarding the amendment, I think there is a major flaw that has not been considered, and that is that you all, I'll say it like that, authorized 277 million pounds of menhaden to be caught all in Virginia.

I'm not sure you all ever think of it that way, 126 thousand metric tons, granted the industry can all be caught in Virginia, even though we know there are other areas. It doesn't appear there is any acknowledgement that the highway along the eastern shore of Virginia into the Bay is crucial for the population that is actually in the Bay. I'm not saying I'm technically certain

of this. But I think it's highly likely that industry could cut off the flow into the Bay, and they do that. They fish heavily along the eastern shore. Essentially what we're saying is there is no need to leave any menhaden behind for the wildlife, the osprey in collapse, striped bass in collapse, all-time lows in blue crab.

CHAIR CIMINO: Thank you, Sir. Other hands, Pete, go ahead.

MR. HIMCHAK: Thank you again, Mr. Chairman. This comment made at the Board table, whereby the justification for no rollovers. Was that in a particular interval? If there was an underage and, in another interval, there is another underage.

Then you would be learning something about the entry of menhaden movements in and out of the Bay. Well, that doesn't seem like a justification for not having rollovers. If there is an underage and you allow for a rollover, you will still know that there were fewer fish caught in whatever interval you're being measured.

CHAIR CIMINO: That is all the hands I see in the room, so I am going to come back to the Board. Are we ready for the question? Do we need a caucus? Okay, one minute for caucus. All right; I think one thing to consider before I ask the question on the motion. I think part of the PDTs concern was that perhaps this did not fit with the intent or the statement of the problem. I think the Board does need to consider the additional language for adapting it may also need to be included if this does pass.

MR. BOYLE: Just a follow up, Mr. Chair. If this does pass, I will also need to come to the Board for how the Board would like us to handle the overage provision.

CHAIR CIMINO: To the question, and I can read this very brief motion with a lot of numbers. **Move to add a no rollover provision to Section 3.2.2.3. All of those in favor, please raise your hand.**

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MS. KERNS: Rhode Island, Massachusetts, Connecticut, Pennsylvania, Florida, Georgia, South Carolina, North Carolina, Maryland, New Hampshire.

CHAIR CIMINO: All of those opposed to the motion, please raise your hand.

MS. KERNS: Maine, Delaware, Potomac River Fisheries Commission, Virginia, New Jersey, New York, New Jersey no.

CHAIR CIMINO: Null votes.

MS. KERNS: New Jersey.

CHAIR CIMINO: Abstention.

MS. KERNS: Fish and Wildlife Service and NOAA Fisheries.

CHAIR CIMINO: Okay, so the motion passes 10 to 5 to 2 to 1. All right, so we gave a preview of what would happen if this motion passed, and now that it has, I would like to hear some comments on how this now may change the problem statement. Then as James pointed out, the important discussion on how to handle quota overages. Thoughts. Matt, you had your hand up?

MR. GATES: I would like to wait, I had a thought there, but I do have some thoughts on this when the time is right.

CHAIR CIMINO: Okay, we'll let James get us started.

MR. BOYLE: Just as a reminder of like what the PDT discussed when considering this option is, and as I alluded to a little bit earlier in the questions is that if you have a no rollover provision there are a few ways you can go. Either you have every quota period, an overage in a single quota period simply comes off the total Bay Cap from that period.

The Bay Cap is lowering as quota periods are lowering, that is number one. Another way would be what the PDT had drafted in our last meeting, and then once we removed the no rollover option this was what was removed, which is that in overages of the first early quota period, so 1, 2 in a 3-quota period system or 1, 2, 3 in a 4-quota period system.

Those would be distributed to the end, oh no, sorry, no rollovers. But an overage in the final quota period, the upshot of that was the overage in the final quota period would come off the total Bay Cap. Those were two options that the PDT had discussed as ways to move forward with this. Obviously, we can consider those also open to other suggestions from the Board.

CHAIR CIMINO: Matt, are you ready?

MR. GATES: I was going to address some issues that the problem statement starts with. Right now, the problem statement talks about the need for reducing or distributing the catch throughout the quota period. I think one part missing from that is something I think we saw in an earlier draft. The Board initiated this action as a precautionary measure, not just willy nilly. Certainly, it was a precautionary thing, so I think that is something we need to include in there.

CHAIR CIMINO: To that, Toni.

MS. KERNS: I am going to ask this Board to be very specific, because the PDT cannot read into your minds. Why are we being precautionary? What is it that you want the PDT to put into their statement of the problem?

CHAIR CIMINO: Matt, did you have a follow up, and then I'll go to Allison.

MR. GATES: You can go to Allison first and then I'll say something.

CHAIR CIMINO: Okay, go ahead, Allison.

DR. COLDEN: I was also struck by the problem statement, and it's already been touched on once during the discussion today that there are several motivations, I think, based on our Board discussion. I did note this morning, looking back at some of our previous documents for the Chesapeake Bay.

A Precautionary Work Group Report came out a year ago, and there was a lot of discussion around initiating that work group. There was a lot of discussion around the outcomes of the report of that Work Group, and so I can understand how over the course of more than 12 months of discussion that has led up to today's meeting in this Draft Addendum, that those conversations have ebbed and flowed and evolved over time.

I do think that what the problem statement is currently lacking is information, some of which was captured in the Chesapeake Bay Work Group Report about concerns about changes in availability. Whether those are driven by environmental changes, by fishery changes. But the dynamics that we were observing in the Chesapeake Bay in addition to just the bait fishery dynamics.

But also, some of the ecosystem and ecological dynamics that were sort of the impetus for kicking off that workgroup report, and that's where we get into some of the multiple objectives of this document that were discussed earlier relative to the quota periods.

We have options that more evenly distribute the harvest across the entire season, which was something that was in certain cases related to the ecological concerns. We have things that move options further, move more effort or more landings further into the season, which is related to some of the ingress concerns.

I think that as drafted the options in the document really capture those multiple conversations that we've had, and the multiple motivations that have been expressed by this

Board, but that the problem statement in the background doesn't necessarily reflect the totality of what is seen in those options. If it could be drafted to reflect not just that sort of ingress concern, but also some of the ecological concerns, I think we would have a more complete background.

CHAIR CIMINO: Further thoughts. I think it would be valuable to have a discussion about the overages. Go ahead.

MR. BOYLE: A follow up question to that one. If the even distribution is responding to the ecological concerns discussed at the Board, can you be more specific on how that is achieving those goals that we can put into the document.

DR. COLDEN: Okay to respond, Mr. Chair? I don't want to sort of speak single handedly for everyone around the table. But one of the things obviously that came up in our work group was extensive conversations about ospreys, for example, and the concerns about May through July and August, being when fledglings are most in need and the predatory demand of osprey in the Bay are the highest. Things that redistribute that heat in the summer are things that are more likely in my mind reflective of the ecological concerns.

CHAIR CIMINO: Joe Grist.

MR. GRIST: I want to go back to the whole discussion on overage and payback from the same gear, as I'm understanding it. Operationally that can be very challenging. Maybe we can respond quick enough from the first segment, and apply that to figure out what the last thing, whatever that looks like could be, maybe. There is an in between segment we'll be working off of too.

If I'm hearing some discussion correctly, the thought is we would cut in season, if we saw an overage in say segment 1, segment 2, we're responsible to cutting segment 3 or 4 to make up for that overage. Operationally, the way the system works today that would be extremely difficult to do. I understand the comments that were made earlier about constantly reacting to a new system.

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The last time I remember we implemented something around this Board in one of the more recent meetings that requires a state to change how they did things, we gave them 2 to 3 years to implement that. We were reasonable about it. They want this in place for next year, is my understanding around the Board. I'm not going to be able to do that.

Let's be realistic about some of these recommendations operationally, because again, we're the ones having to do it and it's easy to say we'll change your system and all that. It is not that easy to do in a short amount of time. I need some resources; I need the time to plan for something like that. Even then, short segments are very hard to manage on minimal weeks.

I just would like to keep some reality in managing those. If we are going down this path, at least make it where it is realistically achievable. Otherwise, Virginia is going to be kind of set in a really bad spot trying to achieve something we may not be able to achieve. For the state directors around the table I think you know what I'm talking about. We don't like to be set up for failure.

MS. MESERVE: I think if I understood the proposal properly that an overage in an early period would be paid back in a same year later on. It seems like there is not enough motivation in that situation to uphold the intent of the quota periods, so it would essentially allow all the harvest to happen in the first period, and the only payback would be like you can't harvest in the third period to stay within the Bay Cap.

I think the only option I'm seeing to include, along with the no rollover option is that an overage is paid back in the same period in the following year. That would be my suggestion, and that was one of the things that the PDT removed, along with the rollover being prohibited. It seems to me that those two things both have to be in there. The quota

period deduction in the next period has to be back in there if the rollover is prohibited.

MR. BOYLE: Just to clarify, so in that scenario you take it from the same period the next year and the total Bay Cap is lowered by the same amount the next year, right?

MR. LaFRANCE: Can I ask a question about that?

CHAIR CIMINO: Go ahead.

MR. LaFRANCE: The total is reduced in the next year, but also that individual time section. That particular quota period would be reduced. For example, if you overaged in this year in the first period then the overage would be reduced the following year in the same period. Okay.

CHAIR CIMINO: Toni.

MS. KERNS: Is it the Board's intention if the Bay Cap was not exceeded in that first year to still have the entire overage from that first period come out in the second year, so in essence lowering the Bay Cap in the second year, even though there was no total overage?

MR. LaFRANCE: If I could respond. My own perspective on that would be, you wouldn't change the overall cap, but you would reduce that first period in the following year, so more could be theoretically caught in the second and third using three periods.

MS. KERNS: You would redistribute what you took away from period one into period two and three?

MR. LaFRANCE: In the following year.

MS. KERNS: In the following year.

MR. LaFRANCE: Because currently you are basically saying, you took it in this year. The reason we were trying to discourage that means you won't be able to do that the following year. But I don't think it should affect what the overall Bay Cap is, that is going to be a separate discussion.

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MR. BOYLE: If I can think back. This is what the PDT was discussing. If you have an overage in period one, you remove it from period one the following year and you have two options, either the Bay Cap is lower by that same amount or you redistribute it to the third period, as we have set up.

But then what happens if there is an overage in the last period? That is where the overage in Option B comes in, where we say specifically that overage in the final period that do not eclipse the total cap are not paid back, which is effectively a rollover. I'm looking for what the Board wants to do if there is an overage.

The overage in period one and two, then that's fine, we can distribute it to the next years of three. But then if there is an overage in that third period what happens? The option the PDT considered was that only for overages of the third period that do not exceed the Bay Cap, then the Bay Cap is lowered by the same amount, because you don't want to redistribute it earlier according to the objectives.

MR. LaFRANCE: If I understand your scenario, in the last period you are having an overage. There are two options there. There is an overage of the entire Bay Cap and then there is just an overage of that last period. In the event that it's an overage of the entire cap, is that mathematically possible, I guess is the question? Oh no, it is possible, I'm sorry, so yes in that regard as the status quo if you go over the cap, the next year's cap would be reduced by the amount that you went over. That is my understanding.

MR. BOYLE: Yes, but in the scenario where the total cap is not exceeded but just the last period. Then because we don't want to redistribute that overage that you're taking away to another period, an earlier period. What happens to that quota you take out of that third period?

MR. LaFRANCE: Wouldn't it be the same as before? In other words, the overage would then be reduced in the third period. I understand the distinction you are trying to make, but it is the third period that is being overaged, so you would just move it forward into the following year. That would be my sentiment.

MS. KERNS: But Rob, what we're trying to say is you said before that you are not going to penalize the Bay Cap in the next year if you don't exceed it. You said before that if there was an overage in Period 1 or 2 you would redistribute it back to Period 3.

But if the period three is where the overage occurred and the Board is telling the PDT you cannot redistribute to Period 1 and 2, then you are penalizing that overall quota in Period 3, because you are taking it out of Period 3. That second year's quota is effectively reduced.

MR. LaFRANCE: But it is being penalized, because the overage in that third quarter from before.

MS. KERNS: But there was not an overage of the full Bay Cap.

MR. LaFRANCE: I understand. I mean I see your point, but I guess my point is you're trying to get people.

MS. KERNS: It's changing the statement of the problem again. I'm just putting it out there for everybody.

MR. LaFRANCE: I don't know that that statement of the problem gets to that level of detail. That is the point of this particular issue. Now you're going to have this go to public notice and people can have their opinion as to whether that is or isn't punitive. I guess that is what I'm trying to say is, I think we should look at it that way, which is part of the reason we included it to begin with, because we wanted to have people have the option to discuss it.

CHAIR CIMINO: Okay, we have a few other hands. I saw Nicole first and then I'll go to Steve.

MS. COSTA: Okay, I just want to make sure that I am understanding, because I feel like some people around the room might be confused. What you are trying to explain is that if you have an overage in the third period in a three-period scenario, that in the following year if you don't exceed the entire Bay Cap, you would essentially be reducing the Bay Cap in the following year by taking it just out of Period 3. That is what you're trying to say. Even though we didn't have an overage to the full Bay Cap, you would be reducing it in the subsequent year, because there is no redistribution to Periods 1 and 2. I don't see any other options, unless the Board, maybe if we don't redistribute it to Periods 1 and 2, we could just redistribute to Period 2.

But that is still transitioning it to earlier, but it also is complex, because some of the options for the periods vary so drastically in the percentages. It's kind of hard to work through not knowing what those percentages are going to be, because in one scenario it may be okay, but in another we may not be comfortable with that.

CHAIR CIMINO: Yes, and I think this is precisely why the PDT didn't want to go there, because you know their understanding was that if we were not going to force a penalty on the overall Bay Cap if there was not an overage the year before, then this situation, well, new marching orders. Steve Train, and then Allison and Joe.

MR. TRAIN: We've already been through this, but I just want to read it one more time and see if it helps, because I can add one thing afterwards. On 3.2.2.1 Option B. Any overage of the quota period would be deducted from the same quota period the following year and redistributed. We all know that.

If the final quota period of the year incurs an overage that does not result in an overage of the total Bay cap there would be no adjustments to the final quota period of that year. What I see here is, if we're worried that

because we're setting these numbers that period continues to be in violation, because they are going to catch up whatever was left over from other periods.

Then we either say, well we're going to accept it because we're not punishing then we just make that last period basically whatever is left every year or we state that it is going to be dropped from the quota. If we decided that this many fish should be harvested. In our science and around this table with all our knowledge we said, you can take this tonnage out of the Bay. I don't know why we would punish them for taking it all at the end if they didn't get it earlier.

CHAIR CIMINO: Allison and then Joe Grist.

DR. COLDEN: James, I guess I could, just asking for maybe a recounting possibly again. Since the no rollover option and the option to take an overage in the final quota period off the top of the cap were the two options in the document, put forward by the PDT and then later removed. Can you just state one more time those two options, and kind of the discussion with the PDT around those two options?

MR. BOYLE: Yes, so the PDT prefers the overage grafted option, Option B, which is where because we think it fits the objectives given to us the best, where you are moving harvest later. If there is an underharvest in Periods 1 and 2 but they catch up to the cap in Period 3 that is fine. For rollovers, they were kind of created in a, not a silo, but separately to consider the full range of possible rollovers.

You had no rollover, full rollover, partial rollover. There was then realizing that having a no rollover option meant we had to have some sort of overage option that wasn't Option B, to account for that third period. If there was an overage of that period that did not cause an overage of the total Bay Cap, but where Option B allows for that to catch up to the cap. A no rollover option would not allow that. Given the instructions, the PDT figured you can't redistribute that overage earlier to the year to allow the full Bay Cap to be harvested. Your only other

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option is to take it off the cap, but only if it is an overage of that period.

It can still be distributed from Periods 1 and 2 if its 3 periods. But then if it's that third one that comes off the cap. They drafted that to resolve that conflict, but then decided that it was preferable to remove the no rollover option to resolve that conflict, instead of having a situation where you would be taking off the Bay Cap that wasn't exceeded, because that is what they interpreted the Board's instruction to be.

DR. COLDEN: Thank you for that recounting. I think with the motion that just passed the Board, it seems as though the Board has interest in the no rollover option, and if that is the case and the PDT developed an option that would resolve that, and obviously the PDT has a preference for one option, the Board has a preference for the completeness of the no rollover option.

It seems to me as though, and I don't think it would be unprecedented for a management document to have kind of an if/then approach between the two sections, that if Option A is selected no specifics here. Option X is selected then Y in the next section.

If Option B is selected, then C or whatever, because one begets the other, even though they were created in silos, because those conversations happened differently. I see a situation in which, because they are complementary and linked to make this system work. Maybe that is just how we communicate those options in the document that makes that a feasible option.

CHAIR CIMINO: Joe Grist and then Mike Luisi.

MR. GRIST: Listening to the discussion and everything it dawned on me that this discussion sounds a little familiar for some of us on the Council. If anyone on the Council, Mid-Atlantic Council remembers, last meeting we had a very robust discussion about scup. We have three

periods and the way the scup fishery works is the individual periods. They have overages to pay it back the next year, if and only if the overall annual is exceeded.

That management strategy works great. A lot of people that know about the scup fishery this year know that winter period had a very large overage this year, and we're going to be holding our breath through the year to see if there is an overage of the annual to see if that has to be paid back or not. But the really striking thing about that overage was it wasn't the industry's fault it was the manager's fault.

It happened; in fact, we had some industry members stop fishing when they knew we were probably at the quota. Managers couldn't act fast enough and we still ended up with a big overage. Some of this discussion reminds me of that Council discussion with scup. We have the rollover situation. If there is an overage in its segment, whatever we want to call these things. Say there is an overage in Segment 1, but if we get to the end of the year we didn't go over what this Board sets as the cap, then why does that segment need to do a payback next year, unless we're going down again the same path of we're basically setting multiple caps, which never was the intent of this addendum and document, from what I remember when this was introduced last August.

CHAIR CIMINO: Mike.

MR. LUISI: I'll be brief. I'm thinking along the lines of what Joe just brought up. I am struggling with a statement that I keep hearing, and the statement is, if there is an overage of the last quota period but there is no Bay Cap overage, what do we do? My question to this group is, how does that happen?

How do you have an overage of a period at the end of the year that is essentially kind of a catch all for all of the leftover slop that happens either the previous year or this year. That last quota period is everything that is left. How is the situation one that you exceed the quota period but not the Bay Cap, because it should be equal.

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Whatever you catch in that last quota period should be all that's left over from all the other calculations for that particular year to the current 51,000 metric tons. I'm having trouble figuring out how you have an overage in the quota period at the end and not exceed the Bay Cap. Maybe somebody can help me.

CHAIR CIMINO: Yes, Toni is going to help.

MS. KERNS: Mike, I guess I have a question back to you, because the motion that was just passed said you are not allowed to roll over from period to period, so it is not a catch all, and you can't roll over underages, so it is not a catch all. It is only what is allowed for that period. Your rationale doesn't add up for me.

MR. LUISI: In 2027, if I exceed the first period quota by a thousand pounds, in 2028 the first period quota would have a thousand pounds less to start out, but quota period 3 could potentially have an extra thousand pounds added to it. That's the calculus that gets you to setting up the current year.

That last quota period with that additional thousand pounds should be the quota period quota, not the baseline quota that was assigned to it given the percentage. But what is established as that period's quota should be the quota, and then we should just be held to that. That is how I am thinking this through. I don't know if that addressed your question, Toni.

MR. BOYLE: I think there is a disconnect between what happens between years and what happens within a year. The no rollovers are referring to within a year. Even if between years you resolve some sort of overage so that the third period may be higher for some reason because of an overage in a previous year.

You still end up in a situation within that year where you could underharvest Period 1 and 2. You get to Period 3; you didn't allow rollover. All that underharvest is lost. All those pounds underharvested is theoretically lost in the no

rollover situation. Then you could have an overage in Period 3 that does not exceed the Bay Cap. Then your options are either allow for redistribution the other way, earlier, or take it off the total Bay Cap. We could do to Allison's point we could do an if then, kind of linking overages and rollover options. But yes, I just want to be fully clear on what the Board would like to see as how do we resolve that last period overage.

CHAIR CIMINO: I have Eric, Erika and the list goes on.

MR. REID: We've been talking about this for two hours now. I think we've gone backwards quite a good way, that is my opinion, you know with if we do this then we're going to do this. But maybe we're not going to do this. I really think we should stop. Stop. No offense, James, but maybe you ought to take another shot at giving us this document again, because it is not ready for primetime.

I mean there are a lot of smart people here so confused I can't keep up with you. That would be my suggestion at this point. You can go on as long as you want, Mr. Chair, but I think we have to take a little pause here, before we move this document ahead. Thank you.

CHAIR CIMINO: Yes, it is certainly a thought, Eric. I don't know that we'll get to a comfort level on this that the Board isn't going to want to see it again before it goes out. But we do have some hands up, we'll try and get through them. I'll go to Erika, Emerson, Ben.

MS. BURGESS: Eric and I are having a mind meld across the table here. I had the same concerns when I read the document that was provided in the briefing materials. I am also hearing the conversation here and hearing more confusion among the Board members, whether something is an in-season or an intra-season action, and I think that needs to be more clear.

I think people are voting on things and having discussions about things and talking about very

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different things. We're going to get into a more and more complicated place. I think sending this back to the PDT, having them come up with more descriptive words in the document, to make sure that everyone feels comfortable that they are talking apples to apples is really important, the only way we're going to be able to move this conversation forward. Thank you.

CHAIR CIMINO: Noted, thanks. Does anybody remember what I said? Emerson, Ben, Doug.

MR. HASBROUCK: I am glad to hear the previous two comments from Erika and Eric. I've been getting a little frustrated, you know listening to this go around the table and back and forth. I'm wondering where we're going with this.

I mean if James and Joe, Mr. Chair were trying to get a sense of the Board, I don't think we've got any kind of sense of the Board here. If we're going to continue this discussion, I think we're better off if somebody puts a motion up and we debate the motion and we get to an end point, rather than just keep going around and around the Board, around and around the tables here.

CHAIR CIMINO: Okay, go ahead.

MR. BEN DYAR: I'll try to keep it brief. I wouldn't oppose some of those comments that were just made. But I did want to speak one point to the no rollover and just if this is an offset, it sounds like James is taking kind of notes on what is the intent. The intent was, when we're voting was to be rolled over the next year, not in season, and also that they would never expect the full cap.

Is it something that could be suggested that if there was this no rollover as voted, that it would only pertain to the first portion, it actually would not even pertain to the last. You wouldn't even have that issue. It doesn't have to pertain to that last piece if there is enough

quota left in that last period, whether it's third, fourth, whatever it is.

Then they should be allowed to have that, since that is the cap that was determined. I think that was some of the comments, and that was the intent when we were voting. I don't know if that is an option, but wanted to put that out there.

MR. BOYLE: Yes, I guess I would just like to confirm my interpretation was referring to the rollover section, we're talking about within year. If it was the interpretation of the Board that we were talking about between year rollovers, then that is perfectly fine, and then this issue is still resolved.

We don't allow rollovers between years, we don't intend to allow rollovers between years, at least in the PDT discussion. That would not cause a conflict. I don't know if there is disagreement on the Board on what the motion meant.

CHAIRS CIMINO: I do have a few more hands up. I think we should be going along with the presumption that this is a document that needs to come back to us and we can start talking timelines soon. But I'll try and get through the other hands. Doug and then Allison, you had your hand again.

MR. GROUT: I was going to make a motion to reconsider a previous decision considering rollovers. It seemed like this is when we really started getting wrapped around the axels, because of the consequences of that now being part of the document, and how that would affect future year's quota, particularly when we're dealing with if the overage was in the third period now.

As a state that was on the prevailing side, I'm going to try that. I'm going to make **a motion to reconsider the previous motion** that we just, and see if we can change that and go back to looking at the document as is. We may end up having to delay it anyways, but it seemed like that was the thing that really got us wrapped around the motion.

CHAIR CIMINO: Thanks, Doug. This will require knowing Roberts Rules and math. Do we have a second to reconsider, another hand?

MR. GRIST: Point of order.

CHAIR CIMINO: Joe Grist.

MR. GRIST: I believe you need both the motioner and seconder to be from the prevailing side, so you've got to make sure they're from prevailing sides to do this.

CHAIR CIMINO: Malcolm, was that your hand as well for that same point of order? Okay. Your hand is to reconsider. I think it was to the point of order, correct, Malcolm? We still need a second from the prevailing side. Bob.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Do you want me to read the list of prevailing states to maybe help people out? Rhode Island, Massachusetts, Connecticut, Pennsylvania, Florida, Georgia, South Carolina, North Carolina, Maryland and New Hampshire. Those states were on the prevailing side of the motion that was passed today.

CHAIR CIMINO: Thanks for that and for having that on the record. Not seeing any other hands.

EXECUTIVE DIRECTOR BEAL: Not commenting on the motion or begging for a second. It seems to be, just listening into the conversation, a inconsistency with the use of the term rollover. I think some folks are viewing rollover as an underage, some folks are viewing rollover as an overage. In other words, what do you do with underharvested fish and what do you do with overharvested fish?

I think the term rollover, we may just want to change that or take that out of the conversation and say underages and overages, or something that is very clear what everyone is talking about. Because I think some people are viewing that term differently, and that may be causing some confusion.

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CHAIR CIMINO: Yes, and one of those, it creates the situation that has been mentioned a few times, which is each segment would act as its own individual cap that would have to be tracked. I think that is one of the many issues we seem to be still struggling with.

I think one thing I would like to do is talk timeline on, does there need to be back and forth, potentially, as in the Board getting some chance to clarify, even by e-mail exchange as the PDT tries to work through this. Then just to know what would be that timeline. When would we see a document again for consideration to go out?

EXECUTIVE DIRECTOR BEAL: You just said it there, but I was going to say, just say hey James and the PDT give it another shot. I think that is not enough. They need some guidance from the Board. What are the underlying principles that this Board would like to achieve, or at least have the range of options achieved in this document?

There seems to be quite a range of that around the table right now. One of the things that is in the FMP now and has always been part of the FMP is that underage of the Bay Cap is not allowed to be carried forward to the next year and added to the subsequent year's quota. I assume most folks around the Board want to maintain that sort of premise of how the Bay Cap operates. Establishing a few of those definitive guidelines to the PDT I think would be really helpful. I don't know if we can do it today, I am reluctant to set up another working group, but maybe we need a working group report members to advise the PDT, or at least to be a sounding board for the PDT as the PDT moves forward. Any way staff can help we're willing to do it, but we just need some guidance from this group.

CHAIR CIMINO: Spud just volunteered to be the Chair (laughter).

MR. WOODWARD: What is the status of this motion, because we don't have a second?

CHAIR CIMINO: Correct, there was no second to the motion, the motion failed.

MR. WOODWARD: I would like to offer a second, because I think if we don't clear this up about the rollover, we're actually tying the hands of the PDT for the next iteration of this, because now we've got a motion that says no rollover. For the reasons that Bob was describing, rollover could mean too many different things to too many different people in too many circumstances.

If we remove that, will that not then allow the PDT to have the flexibility to address this differently, like has been discussed with terms that mean what we think they mean, which is underages, overages that sort of thing. I would offer a second so we can reconsider that and maybe clear that up if that is necessary.

CHAIR CIMINO: Yes, yes it would be. We do have a second from the prevailing side, so we have a motion before us to reconsider including the no rollover option. Bob, you should have sat closer.

EXECUTIVE DIRECTOR BEAL: I think we're just procedurally where we are right now, now that Spud has seconded this motion is that if this passes it is just setting up the Board's ability to reconsider that motion. By passing this it doesn't automatically null and void that previous motion.

This is just sort of allowing the Board to go back and talk about that previous motion and reconsider it, then take another vote if they want to either change the outcome of that previous vote or just sort of remove that motion from the record. Procedurally we're in a spot where it's going to take two votes to either modify or remove the motion that was passed earlier in this meeting.

CHAIR CIMINO: I'm glad all of that is on the record. With that, I'm not looking for a great deal of discussion on this, but I do want to know if folks need a chance to caucus or Roy, did you have?

MR. ROY MILLER: Mr. Chairman, my recollection is this would require a two-thirds vote, is that accurate?

CHAIR CIMINO: Yes. Sarah.

MS. SARAH PEAKE: Mr. Chairman, if we check Robert's Rules, I think a motion to reconsider is non debatable.

CHAIR CIMINO: Yes, thank you, Sarah. I just did want to know if folks needed a chance to caucus though. Yes, okay. We'll give one minute and we will ensure that the two-thirds applies here as well.

EXECUTIVE DIRECTOR BEAL: Joe, the motion to reconsider only takes a simple majority. I think folks may be thinking about the Commission's special rule on reconsidering final actions, where if a quota is set or an FMP was approved or along this conservation equivalency, et cetera, are approved. Those do take a two-thirds vote, but this motion does not fall under that Commission special rule, so it is a simple majority.

CHAIR CIMINO: Okay, somehow, we're getting rowdier so I would like to bring us back to the table. All right; I'm going to **call the question to reconsider. All of those in favor.**

MS. KERNS: Connecticut, New York, Pennsylvania, Florida, Georgia, South Carolina, Virginia, Potomac River Fisheries Commission, Maryland, Delaware, Maine, New Hampshire, New Jersey.

CHAIR CIMINO: Opposed.

MS. KERNS: Rhode Island, Massachusetts, and North Carolina.

CHAIR CIMINO: Null votes. Abstentions.

MS. KERNS: U.S. Fish and Wildlife Service and NOAA Fisheries.

CHAIR CIMINO: Motion passes 13 to 3 to 2 to 0. We'll bring up the motion. Okay, further discussion, Doug.

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MR. GROUT: I just want to be clear on what proper process would be here. If I was to just essentially to say Move to remove the no rollover provision from Section 3.2.3 would that be accurate, vote this?

CHAIR CIMINO: Over to Bob.

EXECUTIVE DIRECTOR BEAL: Yes, essentially just revote on this, and if the will of the group is to not add a no rollover provision, vote against this. It doesn't have to be changed. Essentially, we're resetting ourselves to about an hour and a half ago and revoting on that motion we had this morning.

CHAIR CIMINO: All right, so a motion against this would simply keep it out of the document.

MR. GROUT: You're going to be allowing discussion on that, right? Well, again, if I may, Mr. Chairman. I feel we had a document before us that could have had some minor modifications to it and be ready to go out to the public. But when we started adding this in, as much as I saw what the state of Maryland was trying to do, give you know more options. It seems to have affected what the purpose of the document was, when you have to come up with a different document, and it was going to delay this going out for public hearing. I would support a no vote on this rollover position.

MR. ABBOTT: I support my fellow Commissioner's position. I think when we voted initially in favor of this, we didn't understand the bag of worms that we were creating. It's been in history that we've put a lot of things into documents that we knew weren't going to pass, or whatever. But this is one that has really caused too much of a problem. Again, I oppose this motion.

CHAIR CIMINO: Steve Train.

MR. TRAIN: I'm glad we are going to revisit this. When you're working on the water in the fishing season there are a million things that

can affect what happens, whether it's a cold spring, cold summer, hurricane, oil spill, ship hit the bridge. You might not be able to get what you want to fish; you might not catch a quota. We've decided how much quota could possibly be harvested in this area and give the fishermen a chance to catch it at whatever time of year is available to them I think is a good idea, so I'm glad we're going to get a chance to do this again.

CHAIR CIMINO: Mike Luisi.

MR. LUISI: So much for breaking the ice, Mr. Chairman. We did have a lot of ice down here this year, and the ice was thick. Joking aside, I had no idea when I made the motion that something that would be more inclusive was going to create the chaos that ensued over the last hour and a half.

Personally, I am viewing this as, I prefer action over delay and more complications in us trying to solve some kind of math riddle that is just going to be overly burdensome. After having the hour and a half conversation it has opened my eyes to what would have to happen as a result of having these no rollover provisions in. At this point right now again, action over delay and having it be more complicated, I'm inclined to oppose adding the no rollover provision and I will change my vote on that.

CHAIR CIMINO: Other discussion. Need to caucus? I see a hand from the public, do you want to comment on this? Okay, please come up, you have one minute.

MS. KATE WILKE: Thanks, Mr. Chair, Kate Wilke with the Nature Conservancy. I understand not wanting to get wrapped around the axle and delay this action, but I just want to say, there has been a lot of discussion about punitive measures and trying to avoid them. This Addendum is not meant to be punitive; it is about responding to an ecological warning sign.

When menhaden aren't being caught during a certain quota period, it's a canary in a coal mine. It's a signal and the fish aren't available. Low catch rate means low abundance, and the quota period

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structure simply ensures that we're paying attention to that canary rather than ignoring it.

Importantly the fishery can still operate and harvest menhaden outside of the Bay. Just something to consider, sort of the heart of this Addendum. I'm not really in favor of doing or not doing, I just wanted to put that on the record. Thank you.

CHAIR CIMINO: Thank you, appreciate that. I have one other hand in the public; can you please state your name. I will start the clock.

MR. JASON JOYCE: Good, well I was going to say good morning, but it's good afternoon almost now. My name is Jason Joyce; I serve as the Director of Advocacy from the New England Fishermen's Stewardship Association. We just witnessed an hour and a half of a cautionary tail of, in my opinion, putting the cart before the horse as an agenda, and NEFSA respectfully, I'm their advocate for their fishermen.

We respectfully urge the Board to pause this action, refer these questions to the Technical Committee, ensure decisions are grounded in a full objective scientific review. We've seen this, I'm on several boards in my state and we've seen this happen. I agree with Steve. When Steve Train brought this up, I was like, you're right on.

As I listened it was like, wow, you just created a giant mess. My fear and our association's fear is that this is full of this and it's going to create more of a problem. We would like to see this go back and come back to your committee. Thank you.

CHAIR CIMINO: I'm going to bring us back to the table and just a reminder that as Bob stated, this motion is to add one item, so we are completely restarting, so go ahead, Matt.

MR. GATES: I don't think I'm ready to change my vote on this one. I only say that because I don't think we had a discussion where

everybody understood what each other was saying. We were using terms interchangeably. I don't think that discussion was reasoning through a resolution that I felt comfortable with, that we all knew what we were doing. I'm just not ready to take it out yet, but that is just explaining my vote here.

CHAIR CIMINO: Okay, not seeing any other hands, I'm going to call the question; and I'll read it once more. **Move to add a no rollover provision to Section 3.2.2.3. All those in favor, please raise your hand.**

MS. KERNS: Connecticut, North Carolina, Rhode Island.

CHAIR CIMINO: Those opposed.

MS. KERNS: Massachusetts, New York, Pennsylvania, Florida, Georgia, South Carolina, Virginia, Potomac River Fisheries Commission, Maryland, Delaware, Maine, New Hampshire, New Jersey.

CHAIR CIMINO: Null, abstentions.

MS. KERNS: U.S. Fish and Wildlife Service and NOAA Fisheries.

CHAIR CIMINO: Motion fails, 3, 13, 2, 0. James puts the proper thing in order there, so 2 abstentions, 0 nulls. We've had quite a few comments about the need for this document to go back to the PDT regardless of whether or not there was this addition. I would like to get a feel for the will of the Board, unless there is an objection. Allison.

DR. COLDEN: I didn't mean to interrupt you, mid-sentence, Mr. Chair. Happy to have you finish your thought if you would like.

CHAIR CIMINO: I was going to say, unless there is a motion to try and move this forward then I would like to confirm a timeline on what happens between now and our next Board meeting.

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DR. COLDEN: This is actually what I had my hand up about, about 10 or 15 minutes ago, whenever that was. You know I understand we have spent a lot of time on this document, and I'm not surprised. It's a very complicated document. However, we still have about 40 minutes left in this meeting and at least three sections of the document that we haven't discussed.

But I think the PDT could also use some guidance on and potential for clarity and simplification from the Board that we wouldn't have to spend time doing, if we do send it back to the PDT and come back to another meeting. You know I personally would have a preference to just kind of continue grinding through, if it is the will of the Board and your discretion, Mr. Chair.

CHAIR CIMINO: Yes, thanks. I think one other thing we can do is go onto the other items, and then get back to James, and we can lay out a little bit more of what the timing would look like. Nicole.

MS. COSTA: I just wanted to bring us back to a suggestion that Bob had made earlier. I think everyone is in agreement that there is a lot more work to be done on this document. I'm not against what Allison said, but I'm still not sure that we're going to be able to get through everything that people want to get through in the next 40 minutes. I'm wondering if it is possible to form a work group to work with the PDT, so that at the next meeting we don't have to delay this action further.

CHAIR CIMINO: Okay, if we do a work group I would like a motion, and I would like a motion that discusses potential membership. I have to admit I don't remember how the last working group was formed, somehow ended up on this, but I don't remember how we formed it. Toni.

MS. KERNS: The last time we had a work group we accepted nominations from the Board, and then the Chair identified who would be put on

the work group, so usually 6 people. The Chair is not always the Chair.

CHAIR CIMINO: Isn't that right, John. We can do that. That would be something the Board would see through any exchange on nominations, is that correct?

MS. KERNS: Yes.

CHAIR CIMINO: Nicole, would you mind making a motion to that effect, if that is what you would like to see?

MS. COSTA: Sure, I can make that motion. **Move to form a Working Group of the Atlantic Menhaden Management Board to work with the PDT on the Draft Addendum for the next meeting in August.**

CHAIR CIMINO: Second by John Clark. Would either of you like to speak to it?

MS. COSTA: I just again think that this Board had a lot of changes they would still like to be made in the Draft Addendum. I think the PDT did a great job, but these matters are just very complex, and sometimes it's very difficult to review all of these items and get everything done in the first shot. I think the Board would just be more comfortable having more time.

But we also don't want to delay approving this for public comment past August, and then get into implementation issues for next year. I think by forming the work group we can provide some really constructive feedback to the PDT and get a more solid document back in August that would allow us to potentially approve it for public comment at that time.

CHAIR CIMINO: John, anything to add?

MR. CLARK: I agree with what Nicole said, you know the document because of what the Board already asked is very complicated, so it would be great to streamline it. I would just further suggest that perhaps just reconstituting the working group

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that we already had might streamline things, and would put you right back in it, Joe.

CHAIR CIMINO: Thanks, John. Further discussion, Rob?

MR. LaFRANCE: I agree with John on that last part. I think that the group that worked on this and put together the Working Group Report is knowledgeable on the issues and would have the opportunity to kind of come back and work with the PDT. I think we are trying to move this along. I do think you already have people educated on the topics, and I think it would definitely help them be more efficient.

CHAIR CIMINO: Well, those sentiments aren't specified either way in the motion, so I think I will want to hear more about the Board's will on that. I saw some hands here, was it David? Did you have your hand up?

MR. DAVID V.D. BORDEN: I was just going to say, I can support this. But I think to try to eliminate some of the confusion we heard today, it would be useful to have a time period, 1, 2 weeks, whatever, to allow Board members to submit written comments, so that the staff and the PDT get very specific advice on the revisions that come forward.

CHAIR CIMINO: Yes, I think we could do that with consent. Unless there is objection to that notion, I agree. Eric, you had your hand up?

MR. REID: Yes, I fully support the motion. Whether or not the working group is the previous working group, maybe some fresh eyes might be good with that. But I certainly hope that, but I certainly hope that, I was listening to Mr. Grist from Virginia, there are operational difficulties he's going to have with some of these options. I don't want to have a list of options that are not doable, so hopefully that will be some of the discussion, these aren't workable. Maybe we will remove some of the undoable stuff from this document.

CHAIR CIMINO: Okay, I think that's fair, and I would expect that our partners in Virginia will be paying close attention to this. I think we can handle this motion without necessarily defining who is on the Work Group. I think we should allow some time for past members to step down if they need to, and we can look at other nominations, I think through an e-mail process. Russel, I saw your hand up and then I'll go to Doug.

MR. DIZE: About three years ago, when I spoke and said we had a problem in the menhaden industry in Maryland. I didn't say what the problem was. I didn't say what this Board has done, in my opinion, has taken the reduction fishery and set them out like I laid out. That's the problem. You can't tell me that that is the only problem we've got with menhaden not coming into Maryland coming up the Bay.

You can blame it on the reduction fishery if you want, but I remember when three companies were working out of Virginia, Haney, Smith and the company working now. There are other problems, and I don't think that we're touching them at all. I don't think the last working group touched them. Sorry, but I just don't think it did.

There is something wrong where the Chesapeake Bay is not allowing fish to come up into Maryland. They've done it for hundreds of years and we've caught them. But all of a sudden, in the last three or four years they've stopped. In my opinion, you can put all the rules on the reduction fishery you want, but you are still not going to find the problem, until we fumble into what is causing it. We haven't done that.

It's our responsibility to find that and not just say, oh well, it's easy we'll blame this one group. I don't believe that. I'm coming from a history of pogeys boat captains. My two nephews are captains, my cousin's husband was a captain, my brother was a captain for 40 years, has been part of Louisiana in the menhaden industry, and I just don't think they are all the culprit. We've got other problems. I'm not saying they're not part of it, but I'm saying we

should find something. That we should look for something else. Thank you.

CHAIR CIMINO: I saw Doug Grout; you had your hand up.

MR. GROUT: Now that we have half an hour left, my suggestion was going to be yes, let's vote up this Committee. But let's spend the time that the Board has here trying to work on some of the issues right now, as opposed to sending to a committee and then having debate and discussion about that later.

I think the last two items on our agenda we could easily move to the next meeting, if it's your will. But obviously we're not going to get through the entire Addendum right now. But I think this is more important that we start the discussion right now and then let the committee finish it up.

CHAIR CIMINO: Yes, and believe it or not we haven't really gone through that possibility of delaying the other two report outs to us. But I think with this motion that I would like to call, but I think this is going to formally be potentially, if this motion passes, the action as far as the Draft Addendum. It is going back and it's going back with a group that is going to be working on it.

If we do need to cover still further direction, I guess yes, I would rather stay focused on that and not lose time, or be doing everything by e-mail exchange alone. I guess, is there further discussion on this or can we, John?

MR. CLARK: Not further discussion, just curious as to whether we need to add anything in about the PDT asked if the Technical Committee could review some of the things such as the catch per unit effort. When I looked at the CESS Report, as I mentioned earlier, it was really great about the reduction fishery.

But I was just curious if we can get some economic analysis of what has happened to the

pound net fishery in Maryland, since we heard so much about it. Surprised to hear from Mike that blue catfish are actually a fish caught and how that has affected the economics of the whole thing. Just interested.

CHAIR CIMINO: John, is that something that you would like to see as a separate item, kind of like what we have as some of these later agenda items, or is that something you're saying should be part of the back of it?

MR. CLARK: Right, for just to help when we do get back to the Addendum next time, just for our discussion. I mean there was some question about what is going on between the catch per unit effort and the pound net fishery compared to the reduction fishery. The economics, as I said, just something I am just curious about there, what the impact would be in terms of the effect on employment and so on.

CHAIR CIMINO: Toni.

MS. KERNS: John, we can look into the economics. I don't know if the state of Maryland has any data that they would be able to give us for the pound net fishery. But right now, the CESS report does have no specifics on economic data.

CHAIR CIMINO: One other thing, John, that I think it helpful that you noted, and I guess then the question would be the ability of this working group to possibly use the Technical Committee for any further analysis, or is that something that we would like to see specifically passed?

EXECUTIVE DIRECTOR BEAL: Generally, a management board task technical committee would work. But if the Board is comfortable delegating that to the working group, I think that is completely in bounds, and in this case probably reasonable. It sounds like this Board wants to be in a position to approve this document in August for public hearing. We would have to streamline the process to get it from where we are now to, approvable in August. Anything you can do to make that efficient is in bounds, I think.

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CHAIR CIMINO: All right, so I would like Board members then to consider that, that with this motion that there is an assumption. This motion is clear that this Board Working Group will be working with the PDT. The PDT had mentioned that they would like to have the Technical Committee look at some of the analysis. I would say then that voting in favor of creating this working group is with the assumption that that would happen. Are we ready for the question on this? **All of those in favor, please raise your hand.**

MS. KERNS: Rhode Island, Massachusetts, Connecticut, New York, Pennsylvania, Florida, Georgia, South Carolina, North Carolina, Virginia, Potomac River Fisheries Commission, Maryland, Delaware, Maine, New Hampshire, New Jersey.

CHAIR CIMINO: Any opposed? No. Abstentions?

MS. KERNS: U.S. Fish & Wildlife Service and NOAA Fisheries.

CHAIR CIMINO: No nulls. Motion passes 16 to 0 with 2 abstentions. Doug, I think to what you were saying. Again, unless there is anything more specific, I think we can consider this action item done until that Working Group is formed. Toni.

MS. KERNS: We'll ask for those nominations pretty quickly out of e-mail, but I wanted to, I think David Borden suggested some time to allow Board members also to provide edits. I think what we're going to do is send you a Word version of the document. I think we would most appreciate just like lining it, so track the changes and send them back to James, in order to most efficiently try to deal with that. Harder for us to read your minds when you give us concepts, versus you all doing the editing.

CHAIR CIMINO: The only other thing I think that we want to be sure is that it's again, not in a motion, but the idea would be that the

Menhaden Board would be on the ASMFCs next agenda for a meeting, and then we'll pick all this up on where we are. All right, so with that we can move on to our next agenda item, the long overdue, sorry about that Caitlin. Oh, Bob, sorry.

EXECUTIVE DIRECTOR BEAL: Just the scheduling thing. If we can squeeze in the next two presentations and then my brief comments on the Chesapeake Bay work by 11:45 that would be great, a few extra minutes. Do we think that's workable?

CHAIR CIMINO: That would be my hope, yes. I'll turn it over to Caitlin for the TC Report.

REVIEW TECHNICAL COMMITTEE REPORT ON BOARD TASK

MS. CAITLIN CRAIG: Hi, everyone, my name is Caitlin Craig. I'm with the New York State Department of Environmental Conservation and I am the current Atlantic Menhaden Technical Committee Chair. I'm just going to go briefly go over the Menhaden environmental literature review that the Technical Committee conducted over the last few months. The literature, these stem from two Board tasks, one being to evaluate the possible effect of cold water on the Continental Shelf on menhaden migration, migratory patterns and particularly in relation to the timing of osprey arrival, nesting and feeding. The other task was to consider what role water temperature, dissolved oxygen levels, shoreline hardening and other environmental factors play in the local abundance of menhaden and other forage fish species in the Chesapeake Bay.

As a response to these tasks, the TC discussed that in order to provide a comprehensive, quantitative answer to these specific tasks would require significant amount of time and data. As a first step the TC prepared this literature review on just some key topics that are identified by the Board.

The review summarizes the current state of knowledge on these topics and can serve as a basis for further quantitative work if the Board so desires. This presentation is just going to focus on some high

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level take aways from each of the topics that we looked at, and for more detailed discussions you can see the full memo that was in the supplemental materials.

IMPACTS OF CHANGING ENVIRONMENT CONDITIONS

MS. CAITLIN CRAIG: The topics that I am going to go over briefly today will be the 2025 State of the Mid-Atlantic Ecosystem, menhaden environmental preferences, osprey timing and milestones, environmental preferences for other forage species, shoreline hardening impacts and then briefly just some TC notes on what we found.

The Northeastern, so first topic the 2025 Ecosystem Report. The Northeastern U.S. shelf waters have experienced a long-term warming trend in annual and seasonal temperatures. In 2024, however, the shelf environment was unusual compared to 2020 through 2022. The shelf waters were cooler, they were less saline and they were less buffered.

Also, the cold pool was larger and more persistent and it was also noted that the timing and availability of some species to different fisheries was reported as being different in 2024 than the other years. In 2024 the Chesapeake Bay did not actually experience the similar anomaly that was seen on the shelf, and there was continued trends for above average water temperatures and low dissolved oxygen.

The 2024 shelf conditions related to the variability in the Gulf Stream, so when the Gulf Stream is further north, they are getting warmer waters in the Mid-Atlantic, but when it's further south they are getting cooler waters in the Mid-Atlantic. This variability with the Gulf Stream moving between the north and south will continue in the future, but this isn't necessarily going to reverse the long-term warming trends that have been seen.

Because of this, this makes short-term predictions about the environmental conditions more difficult. The next topic was menhaden environmental preferences. Adult migration patterns have been documented from tagging, fishery and ichthyoplankton survey data. Menhaden spawn offshores of the Carolinas in winter, and then begin migrating inshore and northward in early spring, with some reaching the Gulf of Maine by June.

Larger and older fish tend to migrate further, and then in fall they begin migrating south to the Carolinas again. Not all of the adults migrate, and this has been shown through tagging data, larval data and recent survey data, and these different datasets indicate that many adults actually stay in the Mid-Atlantic of the Southern New England region over the winter, and they spawn there. The highest larval abundance tends to be south during the winter, but larva present almost year-round up to Southern New England indicating a protracted spawning season across a wide spatial range. Larvae carried inshore to nursery grounds, and so recruitment to any one estuary or region is influenced by numerous environmental and biological factors.

This could include time and location of spawning, number of eggs produced, Gulf Stream patterns, temperature, wind storms and other factors. There is in general a large body of literature on the environmental factors influencing Atlantic menhaden recruitment and growth. However, there is less information on the environmental preferences of adults and how that affects the abundance and migration patterns.

Overall, in the literature, adults seem to have generally just a broad habitat envelope that they can encompass, but there does seem to be a preference for shallower, inshore waters. The next topic was osprey timing in the Chesapeake Bay. The birds arrive in March, and then they lay the eggs in April.

These guys hatch during mid-May through mid-June, and then fledging are periods mid-July to early August, and then departure for birds out of the area

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occurs late August to mid-October. No information on the environmental queues that are driving these particular events was found, and there is also no information on whether the timing has changed for these events over time.

The next topic was looking at other forage fish environmental preferences. The TC focused on a limited number of species that have been identified as important forage within the Chesapeake Bay either currently or historically, these include alewife and blueback herring or river herring collectively, and bay anchovy, juvenile spot and croaker.

Alewife and blueback herring, their spawning migration and the juvenile out migrations in the Bay tend to be triggered mostly by temperature. For bay anchovy they have a wide range of suitable temperature and salinity conditions and are seen up and down the coast. The biomass in the Bay peaks in summer and fall, and then winter biomass in the Bay tends to be correlated with water temperature.

For juvenile spot and croaker, they are tolerant of a wide range of conditions, more so than the adult fish. The last topic is shoreline hardening impacts and studies have found either that there is no effect on shoreline hardening on menhaden abundance when compared to the natural sites, or there is actually a higher abundance at these hardened sites.

The effects of shoreline hardening are variable across species and estuaries, so they can range from negative affects to no effects to positive effects on the overall species diversity and individual species abundance at these hardened sites when compared to the natural sites.

For the TC discussion overall from this literature review, we found that many factors within a species physical environment would influence the abundance distribution, and timing of population events such as spawning and migration. If the Board would like more quantitative information the TC requests

guidance on the parameters and the relationships that would be of the greatest interest to the Board. We did want to note that even with more focused tasking that comes from the Board, the interesting datasets they might not be able to spatially and temporally sufficiently address the Board's questions in a quantitative way. That is, it, and with that I can take any questions.

CHAIR CIMINO: Thanks, Caitlin. I just want to remind folks that this report started out as a task from the Board, so I am going to keep questions and comments just around the table. Questions on the report. Emerson.

MR. HASBROUCK: Thank you, Caitlin for your presentation, very informative. But this Board also tasked the Technical Committee to consider the role of water temperature dissolved oxygen and other environmental factors relative to menhaden abundance off of Long Island, and particularly the Bays of Eastern Long Island. The report doesn't mention this additional tasking going to Long Island, so I am just wondering what the status is of the TC addressing that additional tasking.

MS. CRAIG: Yes, you're right. We didn't include specifically the Eastern Long Island information into the report, but I guess in general from the literature search, the studies from Eastern Long Island specifically to Long Island are pretty limited.

We weren't necessarily excluding our initial search, we weren't excluding that area we're limiting to the Chesapeake Bay, but it wasn't necessarily enough to make it into this specific memo, or really to differentiate it from what is kind of happening, just in general in the Mid-Atlantic, or the rest of the Atlantic Coast as what we noted in the report.

CHAIR CIMINO: Follow up, Emerson.

MR. HASBROUCK: I would request that either this TC memo be revised to include the explanation that you just gave, or if there is going to be a future memo based on any other feedback on some of the bullets you had up there, that it explicitly consider the issues for Eastern Long Island.

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CHAIR CIMINO: Any other questions? John Clark.

MR. CLARK: Thank you for the work that the TC did, Caitlin, that was really impressive. I was just curious. In the materials we received an analysis done by Dr. Vale Levinson of Florida that I found it very interesting, although I didn't really understand parts of it with the wave with coherence.

But the upshot seems to be that they were looking at a hypothesis to actually leading to higher menhaden catches in Maryland pound nets because of the way it would concentrate them. Just curious if the TC would be having a chance to, I don't mean to be putting more tasks on the TC, but I would just like to see if they can take a look at that, the TC, and maybe comment on it for the next meeting.

MS. CRAIG: Yes, the TC has not received that material, but if the Board would like to task us with reviewing and commenting on it, we can add it to the list of things to do.

I'll look around the table. Any objection to that? Not seeing any, so John, we'll add that. Are there questions or comments on the TC Report? Great, we can move on. Thank you so much, Caitlin, job well done.

REVIEW COMMITTEE ON ECONOMICS AND SOCIAL SCIENCES REPORT ON BOARD TASK

CHAIR CIMINO: I believe we have Dr. Scheld on for the Review of the Committee on Economics and Social Sciences. Andrew, are you there?

MR. ANDREW SCHELD: Yes. Should I share, oh you've got my slides, cool. My name is Andrew Scheld, I'm a Resource Economist at the Virginia Institute of Marine Science, and representing the Committee on Economics Social Sciences of the ASMFC, who was asked to investigate how some of the proposed measures in Addendum II could impact jobs in the fishery, and specifically the reduction fishery.

ECONOMICS IMPACTS FROM CHANGES IN TOTAL ALLOWABLE CATCH

MR. SCHELD: I know that topic has come up in some of the discussion about jobs in other sectors of the fishery. To my knowledge there is not studies or data that have kind of been used to analyze that previously. Our approach was to review existing literature and draft the memo that was distributed to you all interpreting our research.

We were relatively lucky with this species. We often don't have as much socioeconomic data in studies as we might wish we did. But there were two relevant reports that had been published previously, one of which was funded by the ASMFC, the 2017 Report. The Kirkley Report was done, I believe preceding the introduction of the Chesapeake Bay quota cap initially, and so it was structured to sort of inform that initial discussion, so quite relevant to yours.

The key findings that are kind of relevant for discussion here, Kirkley 2011 Report explored regional economic impacts of the menhaden industry, including the effects of the reductions in the Chesapeake Bay quota cap. They noticed that the reduction sector supports about 519 full and parttime jobs, including 347 in Northumberland County specifically.

Their model estimated the output of their model indicated that reduction to the Chesapeake Bay quota cap corresponded to job losses of about 3.7 total jobs per thousand metric ton reduction, which would be 2.1 jobs in the reduction sector directly and then the 1.6 jobs in kind of supporting industries in the regional economy.

Whitehead and Harrison used a very similar approach and really kind of leveraged a lot of the data initially collected in Kirkley. It's hard to sort of interpret the results differently, because there is really a lot of overlap in the data that was informing their estimates. They didn't specifically explore impacts of reductions in the Chesapeake Bay quota cap.

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They were looking more at the coastwide fishery. They estimated employment changes in Northumberland County at approximately 1 job per \$45,000.00 dockside with adjusting for inflation that is about \$60,000.00 in today's dollars. Limitations, every study has its limitations and caveats, of course. Neither study looked at kind of seasonal impact, if there were restrictions put on seasonal harvest.

They can't really inform that. We might expect though, I think it's reasonable to expect that if seasonal restrictions constrain periods of high catch efficiency or location of where that catch is occurring, it could limit the ability to maintain processing throughput and have some cost side and potentially employee side effects, but the studies didn't really provide any information there. The main limitation which we highlighted in the memo, and I'll note here, is that both studies used a pretty standard approach, Leontief Input-Output Models. Basically, they look at cost structures in an industry and in relation to the amount of outputs being produced, and then assumed that if output were to go up or down that the cost structure wouldn't change, essentially.

Employment would kind of scale up or down linearly with change in output. That little kind of graphic on the top right is showing that assumption. The solid line would show kind of that linear scaling between sector employment and fishery landings. Whether that is reasonable or not is difficult to discern with the reports that are available and the data that is available.

You know one might expect different types of responses like that dash line where you kind of have pretty stable employment until some point where it starts to rapidly decline, or that dotted line where employment impacts are also maybe not so substantial at initial reduction levels, and then there is some point at which the operation becomes non-viable in employment the sector collapses.

We don't really have any information to inform for where those threshold trigger points might be. But I don't think it is unreasonable to expect that they could exist and that we wouldn't just have sort of this consistent linear response. That is the main limitation, though again the approach they used is pretty standard for looking at these types of questions.

We did pass the memo on to industry, the reduction industry for reviewing and any comments and I noted that one of the scenarios Kirkley looked at in that 2011 Report was if there was no allowable harvest in the Chesapeake Bay, and the industry response was that that kind of is unrealistic to expect that that the industry would be at all operational in that scenario.

Again, I think the results from Kirkley that illustrates that is due to kind of that linear response in employment to reductions in quota. The next thing I'll note is that both of these reports highlighted that the reduction industry is a critical economic driver in this area., and that job losses could create structural unemployment. It's the industry that sort of ties everything together in this area.

It has obviously high levels of direct employment, but also strong levels of some indirect employment in insularly industries. Job losses could create, could kind of reverberate throughout sectors in that economy. Broadly we have recommendations for where additional research would be useful.

Getting at these drivers of employment and what responses of employment are to changes in quota or changes in landings would be quite useful. Again, the major limitation or major assumption of those prior models to that linear response. Cost and production structures for both reduction and bait.

There really hasn't been much done to our knowledge on the bait sector. Also, maybe updating data from these reports. You know Kirkley is getting, 2011 it's starting to be a bit in the distance. Then looking at demand drivers for the bait sector, that is also I think an important, or we think, an important area that has not been really

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explored too much. That's it. I'll take any questions or comments, thanks.

CHAIR CIMINO: Great, thank you, Andrew. I am going to stick with the Board questions on the report. Doug Haymans.

MR. DOUG HAYMANS: Thank you for the report. I'm fascinated as we get age on some of these predictive models. When we can look back and see whether they are actually right or not. Did the committee at all look at the fact that we've had 15 years and reduction of 34,000 pounds in the cap. Did we lose 125 jobs in the industry or not? That is the 3.7 jobs per thousand ton. Did anyone look at that instance?

MR. SCHELD: We haven't had the data to look at that. I agree, doing some retrospective analysis probably would be useful to inform this conversation. I will note that the other report, the Whitehead Report looked at changes in sector level employment in response to landings changes, if there was just any correlation there throughout.

This again was not focused on reduction, was coastwide, would primarily be picking up signals from the Bay sector, and they did not find strong correlation there. But again, bait sector could be quite different, in terms of employment dynamics. Yes, I agree. I don't know, the CESS didn't have sort of the data available to investigate that, but certainly something worth looking into.

CHAIR CIMINO: Allison.

DR. COLDEN: Well, Doug kind of hit my question right on the head. We've had observations since the Kirkley Paper was published and actually since that publication have reduced the Bay Cap by 50,000 metric tons, and so yes. I would be curious as well to see if those predictions have actually come to fruition.

I think the one thing that struck me, and one of the most important caveats of these models, which I am not super familiar with, is the assumption that there is no adaptive behavior in the fishery. I am wondering if Andrew or anyone else has some thoughts on, if we haven't seen a dramatic reduction in employment in the fishery why that might be. Are there changes in the way that it is operating that are offsetting those potential losses?

MR. SCHELD: Yes, so like a general comment. I think the linear assumption is very strong, that is kind of getting at what you're noting, not having sort of adaptation or input substitution, right. It's often found most difficult to, or companies often are cutting employment. Cutting jobs is one of the last sorts of measures that companies often do.

They will kind of reorganize production structures. This again is not menhaden specific, but I think generally true. Companies will kind of reorganize production inputs to kind of minimize cost without necessarily cutting employment. That is one of the last sorts of cost cutting measures that companies often take. That said, there is a lot of potential. I think businesses often have a lot of potential to kind of adaptively respond to changes in prices and cost. Building a model that would incorporate that would introduce a lot of realism in how the sector operates. It doesn't exist here, doesn't mean it couldn't in the future, but it doesn't exist right now. There certainly are like existing economic models and frameworks that accommodate that sort of thing, it just isn't used here. I don't know if that totally answers your question.

CHAIR CIMINO: Yes, we get the thumbs up. I'll look around the table. I do want to note that both of these presentations from the Technical Committee and economics are in the meeting materials. In the interest of time, for members of the public that would like to comment on these, I would ask that they do that through written comment provided to James. James will ensure that that gets out to the Board. I think that is going to be the easiest way for all of us to digest your comments while we're waiting to digest our lunch. John Clark, you had your hand up?

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MR. CLARK: Thank you for the excellent report there, Andrew. I just would really like to see for the recommended additional research go forward, especially on the cost and production structures reduction in bait. Just curious, I mean the result of this Addendum could be that it would be transferring harvest from reduction to bait, and how does that affect employment in both sectors, how does that affect the revenue, and that would just be something really interesting to see.

MR. SCHELD: I don't know if we would amend the memo or how we would address that, but we will take that into consideration and I'll bring that back to the full CESS the next time we meet. I just want to follow up with one final thing on my previous response about the sort of adaptive behavior response.

I think it is important to kind of recognize, and maybe I'm repeating myself, so sorry if that is the case. When firms have this kind of adaptive response and employment is maybe one of the last cost-cutting measures that a business would take, that is what sets up that potential for a big trigger event, for a threshold past which a business either can't operate at all or has to make very substantial employment cuts.

I think that is a concern. We don't really know, certainly reductions in Chesapeake Bay quota should be expected to impose cost on the reduction sector. How they manage those costs is not totally clear given the analyses and data we have presently. But I would expect, you know if they are adapting, there probably is some threshold past which you might see employment kind of reduced dramatically. I don't know if that clears it up or makes the water muddier, but I felt I should get that out there.

CHAIR CIMINO: Are you good, John? Appreciate that. Any other questions or comments from the Board? Not seeing any, Andrew, thank you again and thanks to the TC and the CESS for all the work to date. I think

we'll always have some more questions for you guys.

UPDATE ON CHESAPEAKE BAY RESEARCH REQUEST FOR PROPOSALS

CHAIR CIMINO: With that we can move on to the next agenda item and I'll go to Bob.

EXECUTIVE DIRECTOR BEAL: Just really quickly. I think as most folks around the table know, Congress appropriated 2.5 million dollars to do menhaden research within the Chesapeake Bay and that money will be moving through ASMFC. We don't have access to that money yet, and that is not critical of our partners at NOAA Fisheries. I think they got their final portion on; I don't know three weeks ago. That money will be moving to the Commission. The idea is that those funds will be spent on and only can be spent on research within the Chesapeake Bay. The roadmap for essentially menhaden research in the Bay that was formed at the Virginia Institute of Marine Science in October of 2023 will be the starting point for all this work.

For folks who don't recall, that roadmap was developed by folks from VIMS, other Virginia universities, University of Maryland, Center for Environmental Sciences or Studies. There were industry representatives there, recreational representatives, VMRC reps, Maryland reps. There was a broad group of folks that got together and developed this road map. It has essentially three parts, ecology, fishery impacts and economic importance of the fishery.

Those will be the primary focus areas for the funding. We don't know exactly how much ASMFC will receive. We don't know if money will be taken off the top at NOAA Fisheries before it moves to us. We're at the staff level right now developing an RFP, and we're kind of contemplating as, should it be multiple RFPs for each of these categories or one combined RFP? We're leaning toward one combined RFP with different focus areas that folks can submit proposals.

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

We're also working on the establishment of a review panel that will obviously look over these proposals that we receive and make the selection. That's where we are. We're waiting on the funding from NOAA, but we are initiating the RFP development. We're kind of ready to hit the ground running, once we have access to those funds and happy to answer any questions.

CHAIR CIMINO: Questions for Bob, Rob.

MR. LaFRANCE: Bob, I'm very happy that you were able to finally get that money. It's great that it happened that way. I guess my question is the study report that you mentioned. Sir, can you get that to James, so we can maybe other folks, I think there is a lot of information in it. I would love to be able to review that. I am always happy to talk more about that particular study, because I think it is critically important.

EXECUTIVE DIRECTOR BEAL: Yes, we can send that around to the Board. James already has it, because he sent it to me, so yes, we're in good shape.

CHAIR CIMINO: Any other questions on this? Emerson.

MR. HASBROUCK: Thank you, Bob, for your review and thanks to everybody whoever it was that helped to get that funding through Congress. What I'm wondering, is that 2.5 million dollars sufficient to fund those three components, and was that the total ask, or was there the anticipation that other funds might be needed as well?

EXECUTIVE DIRECTOR BEAL: That was the total ask and that was the price that was attached to this work in 2023. It may not be enough to cover real in-depth work for all these three different categories. We'll just have to see what we get as far as proposals. This is just one year funding from Congress; it's not a recurring 2.5 million. There was contemplation for money to come out of the Commonwealth of

Virginia. I'm not sure the status of that, but as far as I know it has not been approved. I think we've got 2.5 million to work with right now.

CHAIR CIMINO: I don't see any other hands, Bob, so I think we're all set there. We do have one more action item, which is election of a Vice-Chair. Doug Haymans.

ELECT VICE CHAIR

MR. HAYMANS: Though I don't know why anybody would want to sit in that seat, it is my honor to recommend to make a **motion for the new Vice-Chair to be Ms. Nicole Lengyel Costa from the great state of Rhode Island**, my new best friend.

CHAIR CIMINO: Do I see a second for that? I'll go with Eric and thank you, Nicole for being willing to. Is there **any objection to the motion? Not seeing any**, Nicole. I know of a work group that you might be interested in too.

OTHER BUSINESS

CHAIR CIMINO: With that we do have one item under Other Business that I think we can knock out quickly.

ADVISORY PANEL NOMINATION

CHAIR CIMINO: We do have an AP nomination that came in, so I'll turn to Tina.

MS. TINA L. BERGER: In your final supplemental materials you have a nomination for Eric Lorentzen to join the Panel. He will replace Bob Hannah. He is both a seine net fisherman and an active lobsterman.

CHAIR CIMINO: Thank you, will of the Board. Nichola.

MS. NICHOLA MESERVE: It would please me to approve the nomination of Eric Lorentzen from Massachusetts to the Menhaden Advisory Panel.

CHAIR CIMINO: Do I see a second? Matt. Any discussion on the motion, **any objection? Not**

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

seeing any, so that passes. We have a new AP member, thank you.

ADJOURNMENT

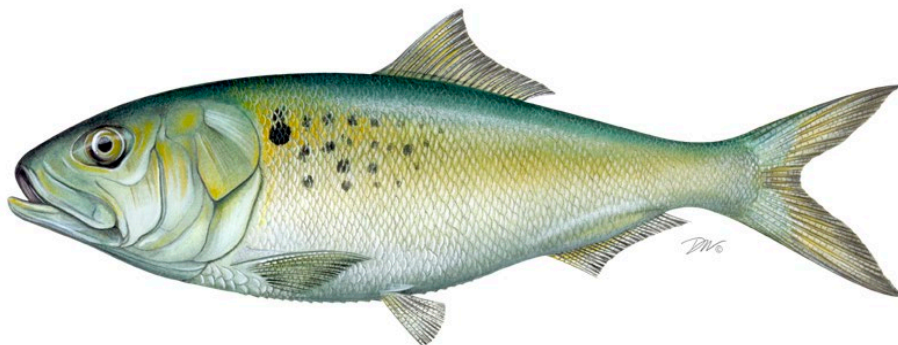
Any other business to come before us? Not too bad, not too bad. Motion to adjourn. Malcolm second, Joe Grist, all right, well thank you, everyone.

(Whereupon the meeting adjourned at 11:30 a.m. on Tuesday, May 5, 2026)

Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM II TO AMENDMENT 3 OF THE ATLANTIC MENHADEN INTERSTATE FISHERY MANAGEMENT PLAN FOR PUBLIC COMMENT

Chesapeake Bay Reduction Fishery



This draft document was developed for Board review and discussion at the August 2026 meeting week. 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.



Sustainable and Cooperative Management of Atlantic Coastal Fisheries

August 2026

**Document revised on July 23, 2026
with addition of socioeconomic section**

Draft Document for Board Review. Not for Public Comment

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

The public is encouraged to submit comments regarding this document during the public comment period. Comments will be accepted until 5:00 p.m. EST on **DAY, MONTH 2026**. Regardless of when they were sent, comments received after that time will not be included in the official record.

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

1. Attend public hearings pertinent to your state or jurisdiction.
2. Refer comments to your state's members on the [Atlantic Menhaden Board](#) or [Atlantic Menhaden Advisory Panel](#), if applicable.
3. Mail, fax, or email written comments to the following address:

James Boyle
Fishery Management Plan Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, Virginia 22201
Fax: (703) 842-0741
comments@asmfc.org (subject line: Atlantic Menhaden Draft Addendum II to Amendment 3)

If you have any questions please contact James Boyle at jboyle@asmfc.org or 703.842.0740.

Commission's Process and Timeline

Date	Action
October 2025	Atlantic Menhaden Board Initiates Draft Addendum II
November 2025 – July 2026	Plan Development Team Develops Draft Addendum II for Board Review
August 2026	Atlantic Menhaden Board Reviews Draft Addendum II and Considers Its Approval for Public Comment
August– October 2026	Public Comment Period, including Public Hearings
November 2026	Board Reviews Public Comment, Selects Management Options and Considers Final Approval of Addendum II
TBD	Provisions of Addendum II are Implemented

1. INTRODUCTION

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

At its October 2025 meeting, the ASMFC’s Atlantic Menhaden Management Board (Board) approved the following motion:

Move to initiate Addendum II to the Atlantic Menhaden FMP to address Chesapeake Bay management concerns. The addendum shall develop periods for the Chesapeake Bay Cap that distributes fishing effort more evenly throughout the season and a range of options to reduce the Bay Cap from status quo up to 50%.

Since then, the Board has provided additional guidance on the purpose and range of options for inclusion in this draft addendum.

2. OVERVIEW

2.1 Statement of the Problem

The availability of menhaden in Chesapeake Bay may be affected by changes in total abundance, size distribution of the population, and timing of spatial distribution in the Bay, which can be caused by fishing pressure, environmental conditions, habitat suitability, and/or changing predation pressures on a limited spatial and temporal scale. Such changes in menhaden availability may affect the species’ ability to fulfill its ecological and/or economic functions. Recent observations of below average commercial fisheries landings and concerning population trends in several species that use menhaden as prey within Chesapeake Bay suggest that availability of menhaden in Chesapeake Bay may be changing due to one or more of the above drivers. Of the predator species included in the ecological reference point (ERP) assessment, which accounts for menhaden’s role as a forage fish, the latest coastwide assessments indicate striped bass is overfished, bluefish are presently rebuilding, weakfish are depleted due to high levels of natural mortality, and spiny dogfish reproductive output is declining but stabilizing (ASMFC, 2024).

Although there are currently not sufficient scientific data available to comprehensively characterize the abundance and distribution of menhaden throughout Chesapeake Bay and the influence of fishing pressure on menhaden, the Commission has been using proactive measures to manage this species in the face of uncertainty and to support both ecological and fishery objectives. Specifically, since 2006, the Chesapeake Bay Reduction Fishery Cap (Bay Cap) has limited harvest of menhaden by the reduction fishery (henceforth, “reduction harvest”) within

Chesapeake Bay. This draft addendum responds to concerns that the Bay Cap does not control how harvest is distributed throughout the fishing season and that the amount of the Bay Cap does not reflect changes to the coastwide total allowable catch (TAC).

Chesapeake Bay Reduction Fishery Cap

The first issue addressed in the draft addendum is that the Bay Cap is not linked to the overall TAC. Large changes to the TAC without a corresponding change to the Bay Cap significantly alter the percent of the reduction landings (and total landings) that can be taken from Chesapeake Bay, a critical nursery area for menhaden. For example, because Virginia is currently allocated 75.21% of the coastwide TAC, and Virginia allocates 90.04% of their quota to the reduction sector, the current Bay Cap (51,000 mt) paired with a 100,000 mt TAC would allow 75% of the reduction fishery quota to be taken in Chesapeake Bay, but with a 300,000 mt TAC would allow 25% of the reduction fishery quota to be taken in Chesapeake Bay. Such variable outcomes may be inconsistent with the intent of the Bay Cap. The 20% reduction applied to the TAC in 2026, without a corresponding change to the Bay Cap, increased the percentage of possible reduction fishery quota taken in the Chesapeake Bay from 32% to 40%, a larger percentage than has been possible since 2017. The Board is concerned that without a change to the Bay Cap, future changes to the TAC could further shift that percentage. Additionally, changes to the Bay Cap can only be made through an amendment or addendum, meaning the Management Board is often unable to align the timeline for changes to the Bay Cap, if desired, with changes to the TAC. Therefore, this draft addendum considers a one-time reduction in the Bay Cap in consideration of recent or upcoming changes to the TAC and setting the Bay Cap as a proportion of the TAC so that it changes automatically with future changes to the TAC.

Timing of Menhaden Harvest

The second issue this draft addendum aims to address is that the Bay Cap is an annual measure without any associated controls on how reduction harvest is distributed throughout the fishing season. This leaves the potential for a concentration of reduction fishery landings in a short time period, as seen in 2023 and 2024, when over 50% of the Bay reduction fishery landings were taken in a 6-week period in mid-summer. When this occurs, it is possible that these higher-than-normal catch rates could affect availability of menhaden to other fisheries or predators, which is what the Bay Cap was intended to prevent. Consequently, this draft addendum considers establishing quota periods for the Bay Cap to redistribute reduction fishery landings across the reduction fishery season, rather than concentrating them in the beginning and middle of the season.

Revisiting the Bay Cap

Lastly, given the breadth of changes proposed to the Bay Cap in this draft addendum, the uncertainties about whether recent trends in Chesapeake Bay menhaden landings and availability will continue, plus planned research intended to help design a scientifically-based Bay Cap setting process, this draft addendum includes an option that would require a revisit of the Bay Cap provisions every three years at a minimum. Currently, there is no set timeframe for revisiting the Bay Cap.

2.2 Background

2.2.1 The Reduction Fishery

The commercial menhaden fishery is divided into the reduction fishery, in which menhaden are reduced into fish meal and fish oil, and the bait fishery, in which menhaden are harvested as a bait source for other commercial and recreational fisheries. Harvesting of menhaden for reduction purposes dates back to the early 1800s (fish oil) and the early 1900s (fish meal). The reduction fishery uses purse seine gear exclusively (also the dominant gear in the bait fishery). Reduction landings peaked in the mid-20th century (712,100 mt in 1956) and averaged approximately 129,000 mt from 2020-2024 (Figure 1). Participation in the Atlantic coast reduction fishery has declined to include roughly 10 vessels and one processing plant located in Virginia; as many as 147 vessels and 25 processing plants operated along the Atlantic coast from Maine to Florida historically.

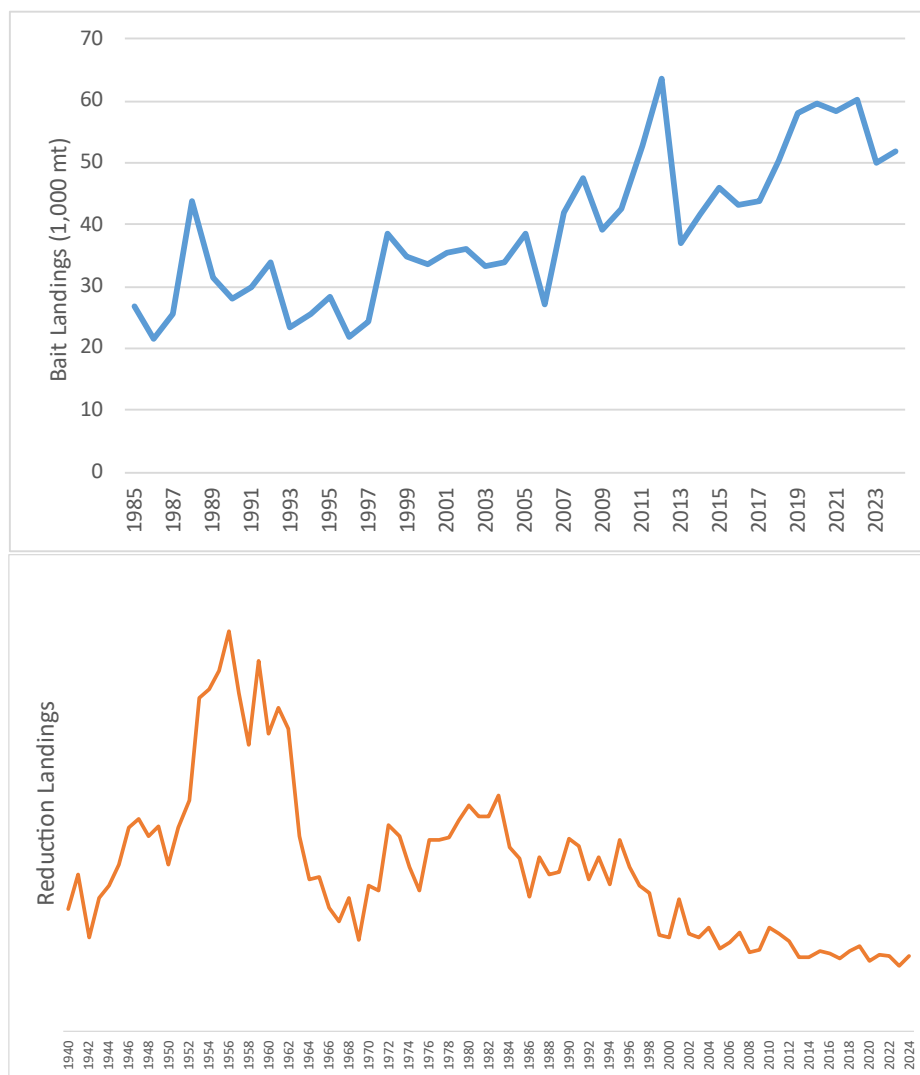


Figure 1. Coastwide reduction fishery landings (1940-2024) and coastwide bait fishery landings (1985-2024) for Atlantic menhaden (Note reduction landings values removed for confidentiality but are approximately an order of magnitude greater than bait landings).

Since 2013, total reduction fishery landings have been determined by the annual coastwide Total Allowable Catch (TAC) specified by the Management Board, the percent of the TAC allocated to Virginia by the Interstate FMP, Virginia's internal allocation of its quota among its fishery sectors, and the Virginia reduction fishery's performance with regards to its quota. Currently, Virginia's allocation of the TAC is 75.21%¹ based on landings from 2018, 2019, and 2021, and the purse seine reduction fishery's allocation of the Virginia quota is 90.04% based on 2002-2011 average landings. Accordingly, the Virginia reduction fishery has the potential to harvest 67.04% of the TAC.

Reduction fishery vessel effort occurs both inside Chesapeake Bay and outside in the Atlantic Ocean. In the last five years (2021-2025), about 50% of all reduction fishery effort (i.e., purse seine net sets) has occurred within Chesapeake Bay, down from about 75% in 2005, the year preceding the setting of the first Chesapeake Bay Reduction Fishery Cap (Figure 2). The Bay Cap prohibits additional reduction harvest within the Chesapeake Bay when 100% of the Bay Cap is harvested from Chesapeake Bay, which is defined as areas shoreward of the Chesapeake Bay Bridge Tunnel.

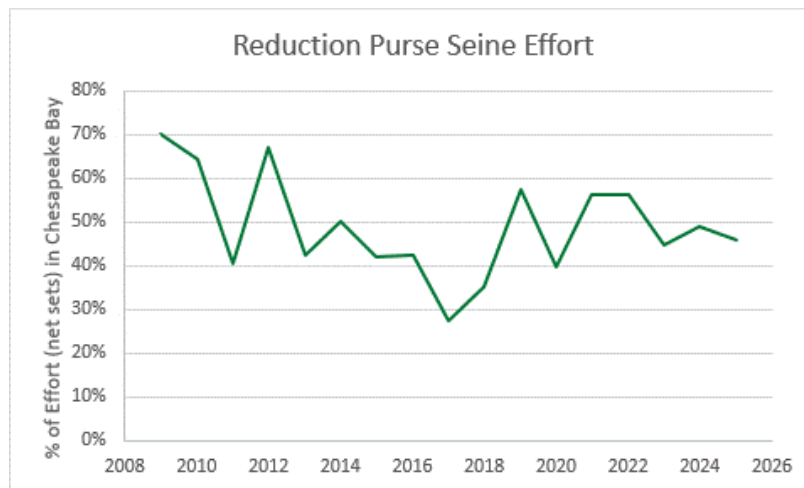


Figure 2. Proportion of Virginia purse seine reduction effort in Chesapeake Bay.

2.2.2 Bay Cap History

The Chesapeake Bay Reduction Fishery Cap was first established in 2006 as a precautionary measure in response to an increasing proportion of the total reduction fishery landings being harvested from Chesapeake Bay and concerns about the possibility of localized depletion. Through Addendum III to Amendment 1, the Bay Cap was set at the average landings from 2001-2005 (109,020 mt) to prevent the expansion of the reduction fishery in Chesapeake Bay while the necessary scientific studies were conducted to explore the potential for localized depletion and set a more scientifically quantified harvest threshold if needed. Additional Bay Cap management measures included mandatory payback of any overage in the subsequent

¹ The state-by-state allocations exclude 1% of the TAC that is reserved for the Episodic Event Set-aside.

year and an allowance to rollover unused quota to the following year up to a specified maximum. Notably, the adoption of the Bay Cap preceded the adoption of a coastwide TAC for menhaden, which did not occur until 2013 through Amendment 2.

Amendment 2 reduced the Bay Cap by 20% to 87,216 mt beginning in 2013. This 20% reduction mirrored the 20% reduction applied to the average coastwide catch from 2009-2011 that was used to set the first-ever TAC. (This was an ad hoc approach to set the TAC based on recent landings due to uncertainty in the 2012 stock assessment's projections; all subsequent TACs have been set using a stock assessment-based projection methodology). Amendment 2 also reduced the Bay Cap underage rollover maximum by 20%.

The next change to the Bay Cap occurred in 2018, when it was reduced to 51,000 mt in Amendment 3. Similar to how the Bay Cap was initially set, this amount represented an approximation of the average Bay reduction fishery landings from 2012-2016. This action again capped landings at recent levels as a precautionary management approach. Unlike the change to the Bay Cap in Amendment 2, this ~41.5% reduction in the Bay Cap did not correspond to the change made to the TAC in the same year (8% increase). Amendment 3 also removed the allowance for any rollover of unused Bay Cap (as well as any unused TAC) and established that unused quota from a region or state cannot be transferred to the Bay Cap to reduce an overage.

The Bay Cap has remained at 51,000 mt since 2018 (except in 2020 when it was reduced to account for an overage in 2019; reduction fishery landings from the Chesapeake Bay have always otherwise been below the Bay Cap). Since that time, the TAC has been adjusted three times, including a 10% reduction in 2021, a 20.1% increase in 2023, and a 20% reduction in 2026, all without any change to the Bay Cap (Table 1).

The history, intent, and setting process for the Bay Cap and TAC differ in notable ways. First, the Management Board sets the TAC through Board action based on coastwide stock assessment projections in comparison to target and threshold reference points. Since 2021, ecosystem-based stock assessments and reference points have been used, meaning the TAC is set to account for menhaden's role as a critical forage species on a coastwide basis. No similar approach exists to set the Bay Cap at a level scientifically determined to support forage needs in Chesapeake Bay; rather, recent landing levels have typically been used to set the Bay Cap, thereby preventing further expansion. Second, the TAC limits the total removals of menhaden coastwide by all fishery participants, in contrast to the Bay Cap, which limits only reduction fishery landings in Chesapeake Bay. Additional reduction harvest can take place outside of Chesapeake Bay, and additional bait harvest can take place inside of Chesapeake Bay. Third, the Bay Cap management measures can only be revised through an addendum or amendment to the FMP, whereas the TAC can be set by the Board through specifications (i.e., a Board vote) on an annual or multi-year basis. The result is that the TAC has changed with greater frequency, and changes to TAC and Bay Cap that do co-occur have not always been in the same direction.

Consequently, the amount of the Bay Cap as a proportion of the total TAC is variable over time (Table 1).

Table 1. History of coastwide TACs and Bay Caps.

Year	TAC (mt)	Bay Cap (mt)	Bay Cap as Percent of TAC
2006	-	109,020	-
2007	-	109,020	-
2008	-	109,020	-
2009	-	109,020	-
2010	-	109,020	-
2011	-	109,020	-
2012	-	109,020	-
2013	170,800	87,216	51.06%
2014	170,800	87,216	51.06%
2015	187,880	87,216	46.42%
2016	187,880	87,216	46.42%
2017	200,000	87,216	43.61%
2018	216,000	51,000	23.61%
2019	216,000	51,000	23.61%
2020	216,000	51,000*	23.61%
2021	194,400	51,000	26.23%
2022	194,400	51,000	26.23%
2023	233,550	51,000	21.84%
2024	233,550	51,000	21.84%
2025	233,550	51,000	21.84%
2026	186,840	51,000	27.30%

*2020 Bay Cap was reduced from 51,000 mt due to 2019 overage.

2.2.3 Seasonality of Chesapeake Bay Reduction Fishery

By Virginia law, the Chesapeake Bay purse seine reduction fishery is permitted to begin on the first Monday in May and ends on the third Friday in November. However, realized effort is based on resource availability as informed by the use of spotter aircraft to locate schools of menhaden. Consequently, the onset and magnitude of effort by week of the year is variable across years (Figure 3) as is the trend in cumulative percent of annual landings (Figure 4). For example, 2018 saw heavier effort and a steeper rate of landings earlier in the season than the years following; whereas 2023 and 2024 experienced delayed season starts but higher mid-season rates of landing compared to the years prior.

Chesapeake Bay Menhaden Reduction Fishery

Weekly Effort (percent of annual net sets)

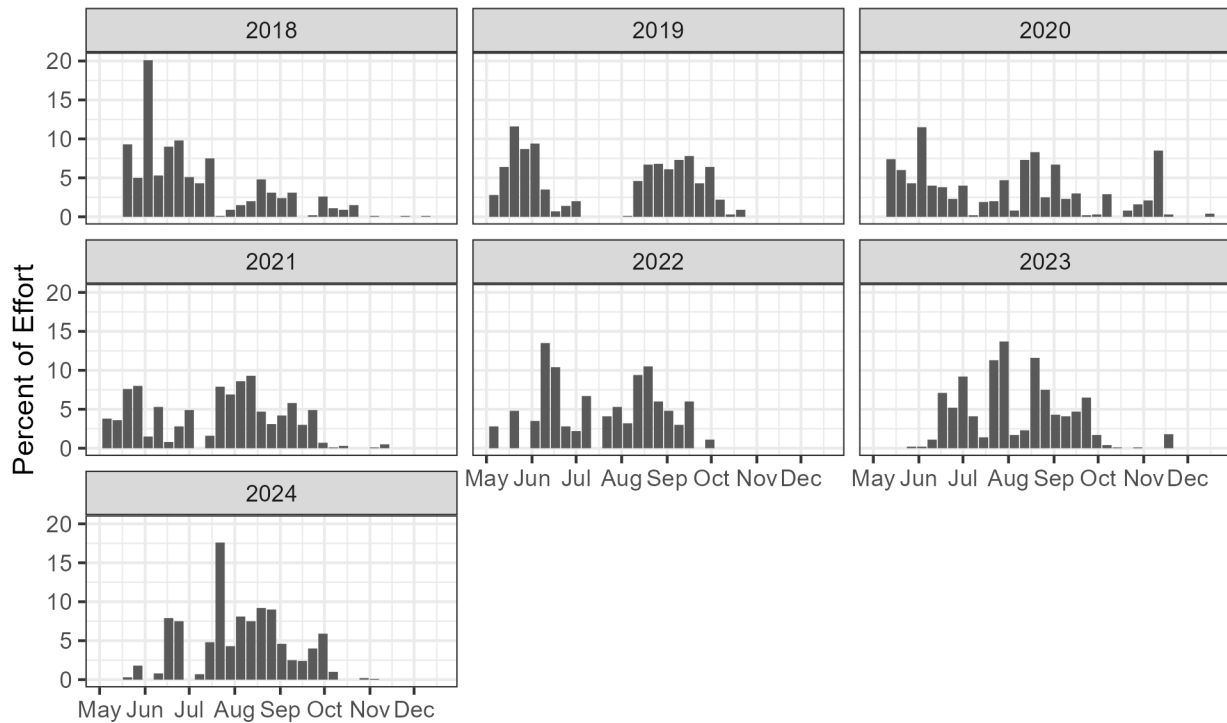


Figure 3. Percent of annual effort (number of net sets) by week for the menhaden purse seine reduction fishery in the Chesapeake Bay 2018-2024.

Chesapeake Bay Menhaden Reduction Fishery

Daily Cumulative Landings

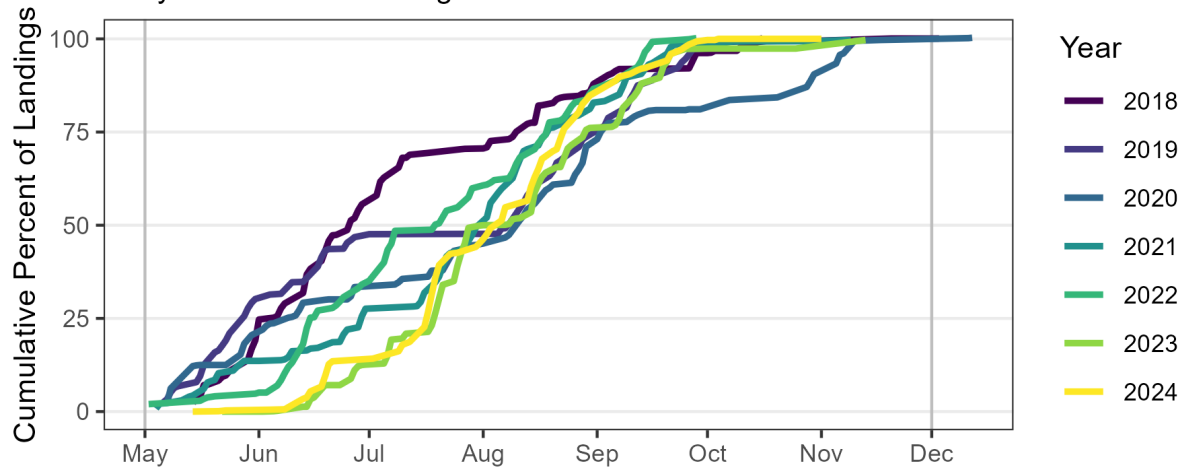


Figure 4. Cumulative percent of annual landings in the Chesapeake Bay menhaden reduction fishery 2018-2024.

2.2.4 Chesapeake Bay Pound Net Catch

The shift in Chesapeake Bay reduction fishery harvest later in the season in 2023 and 2024 corresponded with declines in Chesapeake Bay pound net fishery harvest (Figure 5), which typically peak during the summer months. For example, the Maryland Chesapeake Bay pound net harvest declined by 60% in 2024 from the 2018-2022 average. This co-occurrence raised concerns among Chesapeake Bay pound net harvesters, about a potential user group conflict with the reduction fishery and about an overall trend towards reduced menhaden presence, spatial distribution, and abundance within the Bay.

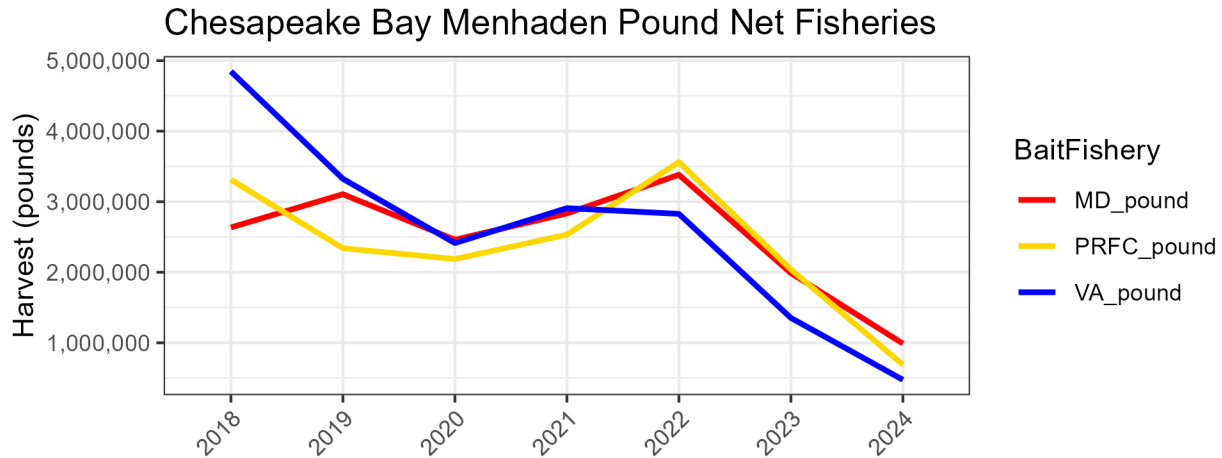


Figure 5. Total menhaden harvest in Maryland, PRFC, and Virginia pound net fisheries, 2018-2024.

The Plan Development Team (PDT) and Technical Committee (TC) investigated variability in fishery effort and/or menhaden availability as potential causes for the decline in pound net harvest. While true abundance (or availability) is not known, catch per unit effort (CPUE) can be used as a proxy if it is assumed there are no major changes to how the fishery operated between years.

Overall, the TC found notable declines in CPUE in the pound net fisheries of Maryland, Virginia, and PRFC in 2024 (Figure 6). As harvest declined, PRFC found a slight increasing trend in the time it takes to reach 50% of the annual cumulative harvest where 2024 was approximately 7 weeks later than the 2018-2023 average. PRFC and Maryland also discovered that the number of trips that caught 5,000 pounds or more of menhaden have declined to their lowest levels since 2018.

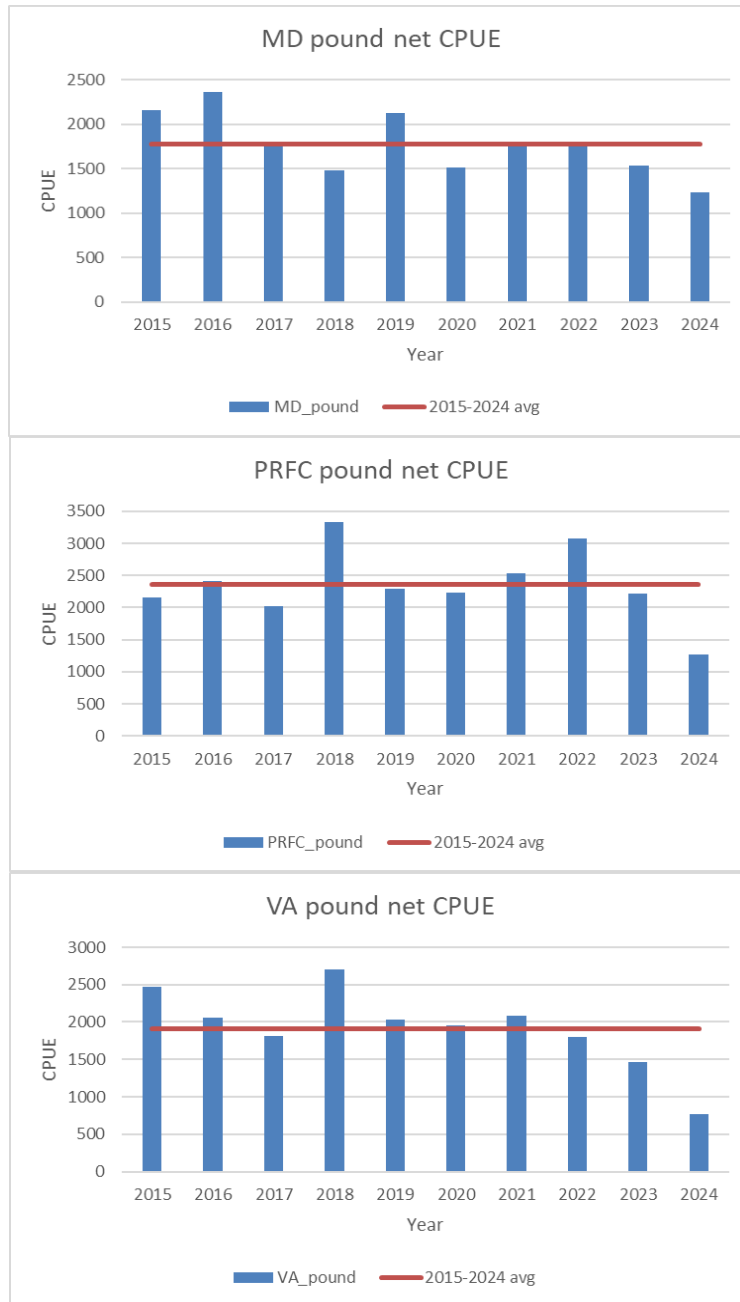


Figure 6. Annual menhaden Pound Net CPUE from Maryland, Potomac River, and Virginia. CPUE is in pounds per net day. Sources: Maryland DNR, PRFC, and VMRC.

Looking more closely at Maryland, during the second half of the year (weeks 27+), weekly CPUE in 2023 is generally equal to or greater than the 2018-2022 average (Figure 7), suggesting little influence of the reduction fishery on pound net catches. However, weekly pound net CPUE in 2024 shows a different pattern. Beginning in week 31 and continuing through the end of the year, CPUE in 2024 is generally below the 2018-2022 average (Figure 7). Just prior to this time period, the reduction fishery was experiencing higher than normal catch rates (Figure 8). The reduction fishery began in week 23, approximately five weeks later than 2018-2022, but by

week 33 had caught approximately 60% of the annual catch, which is in line with earlier years. It is possible that these higher than normal catch rates may have affected availability of fish in the upper bay, thereby affecting pound net catches. Although catch rates were higher than normal, total catch was equivalent among years. Any link between reduction harvest and availability in the upper bay would be a joint function of fishery dynamics and migratory patterns (*e.g.* timing and location) at a finer scale than could be considered in the PDT analysis.

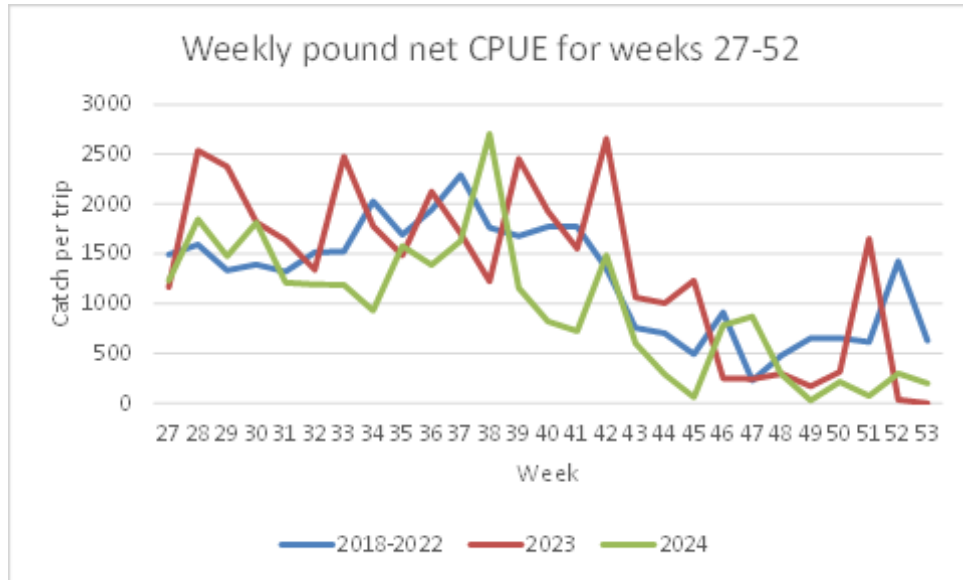


Figure 7. Weekly CPUE in MD pound net fishery for weeks 27-52.

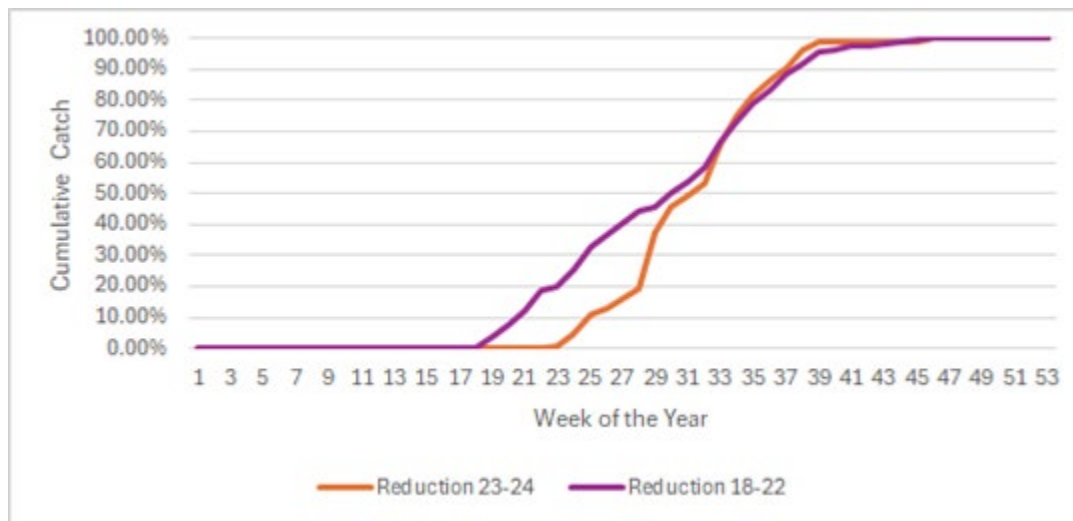


Figure 8. Timing of the Chesapeake Bay reduction fishery showing a delayed start with higher than average catch rates in weeks 23-33 in 2023-2024.

The PDT notes that the effort values used to calculate CPUE for all three pound net jurisdictions only includes nets catching menhaden. Menhaden account for a high proportion of some pound net harvesters' catch, which could lead to reduced effort if menhaden availability dropped to a

point where fishing was no longer profitable. Nets that remain profitable catching other species, but that no longer are catching menhaden would also not be included in the effort used in these calculations. These two factors could lead to more stability in the pound net CPUE as menhaden abundance declines, since only nets set in the best location to catch menhaden would be included in the effort used to calculate CPUE during a reduction in menhaden availability.

2.2.5 Chesapeake Bay Adult Fishery Independent Indices

The TC also looked at recent fishery independent indices included in the 2025 stock assessment for a trend in relative abundance, although noted that 2023 was the most recent year available in the assessment and that temporal and spatial differences between the surveys and fisheries make it difficult to compare the different trends.

For more recent data, the PDT reviewed the adult index from the fishery independent survey conducted in the Choptank River in Maryland (Figure 9). The survey has been conducted by Maryland DNR using gillnet gear during June-August since 2013. Between 2018 and 2023, the abundance appears to have been relatively stable with moderate interannual variability. In 2024, abundance dropped dramatically and remained low in 2025. While limited to a single tidal river system, the index does indicate lower relative abundance of adult Atlantic menhaden in 2024, as also indicated by the fishery dependent Pound Net CPUEs.

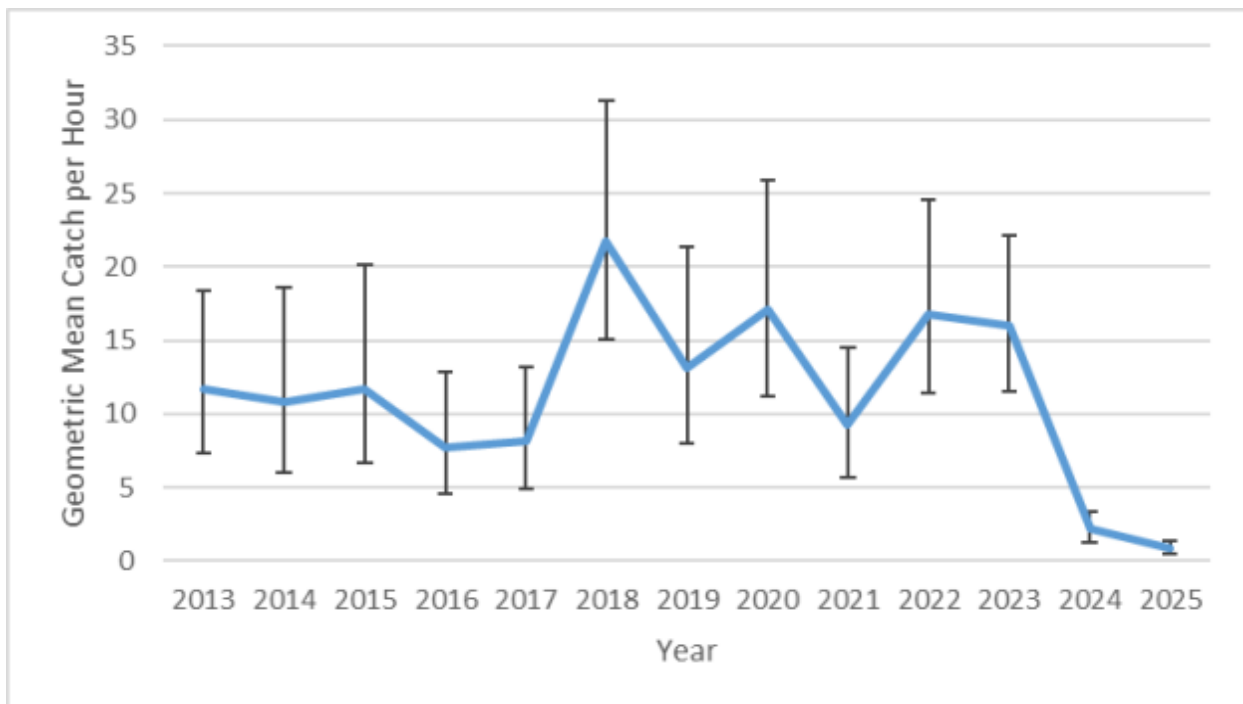


Figure 9. Maryland DNR Choptank River Gillnet Survey geometric mean catch per gill net hour and 95% confidence limits, 2013-2025.

2.3 Social and Economic Impacts

This Addendum includes measures that could influence the size of the Chesapeake Bay Reduction Fishery Cap and introduce quota periods to distribute removals more evenly over the course of the year. These measures may produce socioeconomic impacts to the commercial reduction fishery and dependent communities as they could limit harvest within the Chesapeake Bay and affect seasonal operations. Additionally, the measures are intended to provide increased ecosystem benefits through enhanced forage opportunities, which could impact individuals who derive value from species that prey upon menhaden.

Two prior socioeconomic studies on the commercial menhaden fisheries provide important context: Kirkely et al. (2011), who assess the economic importance of the reduction sector under alternative harvest scenarios in the Chesapeake Bay, and Whitehead and Harrison (2017), who conducted a socioeconomic study of the commercial bait and reduction fisheries to inform development of Amendment 3. Kirkley et al. (2011) estimated that the reduction sector supported approximately 519 full- and part-time jobs in Maryland and Virginia, including 347 in Northumberland County, Virginia, associated with total landings of about 141,000 metric tons, of which roughly 85,000 metric tons were harvested from the Chesapeake Bay. Under an extreme scenario in which no harvest was allowed in the Bay and effort could not be shifted to coastal waters, employment losses in Northumberland County were estimated at up to 176 jobs, including 98 direct losses in the reduction sector. The analysis also indicated that a reduction of 1,000 metric tons in Chesapeake Bay quota corresponded to an estimated loss of approximately \$630,000 in regional economic output (~\$940,000 in 2025) and 3.7 total jobs, including 2.1 direct jobs in the reduction sector. Whitehead and Harrison (2017) applied a similar modeling framework to evaluate economic impacts associated with coastwide quota changes and found a 6.45% increase in total quota (~12,100 metric tons) would result in combined impacts from the bait and reduction sectors of approximately \$6.3 million in economic output and 99 jobs, corresponding to about \$520,000 in regional economic output (~\$680,000 in 2025) and 8.2 jobs per 1,000 metric tons. Both studies use Leontief input-output models, which do not account for market adjustments or adaptive industry behavior and may overstate long-term employment effects of quota changes.

While neither Kirkley et al. (2011) nor Whitehead and Harrison (2017) explicitly evaluate seasonal harvest restrictions within Chesapeake Bay, both studies suggest that economic impacts are driven primarily by total landings rather than the timing of harvest. Evidence that effort and harvest respond flexibly to economic and regulatory conditions implies that seasonal limits may reallocate fishing activity across the season with limited overall economic impact, provided that total allowable harvest is not substantially reduced. However, impacts may arise if seasonal restrictions constrain periods of high catch efficiency or limit the ability of the reduction sector to maintain consistent processing throughput.

3. PROPOSED MANAGEMENT PROGRAM

This draft addendum considers modifying the Chesapeake Bay Reduction Fishery Cap component of the management program. The intent of the Bay Cap is to limit the amount of reduction fishery harvest that occurs in Chesapeake Bay, a critical nursery area for Atlantic menhaden. Harvest for reduction purposes shall be prohibited within Chesapeake Bay when 100% of the Bay Cap is harvested from Chesapeake Bay, which is defined as areas shoreward of the Chesapeake Bay Bridge Tunnel. Harvest above the Bay Cap in any given year will be deducted from the next year's Bay Cap. Furthermore, unused quota from a region or state cannot be transferred to the Bay Cap to reduce an overage. If the Bay Cap is underharvested, the un-landed fish under the Bay Cap cannot be rolled over into the subsequent year.

An objective is listed for each component to guide evaluation of proposed options in addressing the issues identified for each component in the statement of the problem. **When the Board takes final action on the addendum, there will be the opportunity to select any measure within the range of options that went out for public comment, including combining options across issues, unless otherwise specified.**

3.1 Chesapeake Bay Reduction Fishery Cap Amount

These options consider reducing the amount of the Chesapeake Bay Reduction Fishery Cap as a precautionary measure in response to concerns about reduced menhaden availability in Chesapeake Bay and consider changes to the manner in which the Bay Cap is set to be more responsive to changes in the TAC. Only one option among Option A, B, and C can be selected. In Options B and C, the Board may select any measure within the range of options. In Option C, a sub-option must be selected from both C1 and C2. Additionally, changes to the Bay Cap do not affect state allocations. Landings that apply to the Bay Cap also apply to Virginia's state allocation.

Option A. Status Quo. The Chesapeake Bay Reduction Fishery Cap is maintained at 51,000 mt. This value represents an approximation of the five-year average of reduction harvest from Chesapeake Bay between 2012 and 2016. An approximate value is used because reduction landings in Chesapeake Bay are confidential. Future changes to the Bay Cap may only be made through adaptive management (i.e., an amendment or addendum).

Option B. One-time Reduction in the Bay Cap. The Chesapeake Bay Reduction Fishery Cap is reduced by a percentage. The Board may select to phase-in the reduction over multiple years. Future changes to the Bay Cap may only be made through adaptive management (i.e., an amendment or addendum).

Sub Option B1: 10% reduction, resulting in a Bay Cap of 45,900 mt

Sub Option B2: 20% reduction, resulting in a Bay Cap of 40,800 mt

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Sub Option B3: 30% reduction, resulting in a Bay Cap of 35,700 mt

Sub Option B4: 50% reduction, resulting in a Bay Cap of 25,500 mt

Option B2 applies the same percent reduction to the Bay Cap as was adopted by the Atlantic Menhaden Board for the 2026 TAC. Option B1 applies a smaller percent reduction to the Bay Cap than adopted for the 2026 TAC while Options B3 and B4 apply greater percent reductions; this range accounts for uncertainty in how the abundance in the Chesapeake Bay correlates to abundance of the coastwide stock. The range of options also provides flexibility for the Board to adjust the Bay Cap in response to how it sets the TAC for the next two to three years, as is scheduled to occur at the November 2026 ASMFC Meeting before taking final action on this addendum.

Option C. Linking the Bay Cap to Coastwide TAC

The Chesapeake Bay Reduction Fishery Cap would be set as a proportion of the TAC. In addition, an upper and lower limit would control how low and high the Bay Cap could shift with changing TACs. Setting the Bay Cap as a proportion of the TAC means that any future change to the TAC is also applied to the Bay Cap as the same percent reduction or increase (unless restricted by an upper or lower limit), thus establishing a direct link between the Bay Cap and the TAC. Adaptive management would be required to modify or depart from the automatic Bay Cap setting process selected under this option.

The option considers a range of Bay Cap:TAC proportions, from the current (2026) proportion to the proportions that would result if the Bay Cap were reduced by 10 to 50% relative to the 2026 TAC (Table 2). This range effectively allows the Board to apply a reduction to the Bay Cap similar to that in Option B before locking in the proportion that would maintain the relationship between the Bay Cap and TAC moving forward. Table 2 provides the Bay Cap that would result in 2027 under a status quo TAC scenario; if the TAC were adjusted for 2027, the Bay Cap would change by the same percent (as the TAC from 2026) from the amount shown. For example, the proportion in Option C1c is the same as if the Bay Cap had been reduced by 20% with the 2026 TAC. For a full history of Bay Caps and TACs see Table 1 in Section 2.2.2. Option C also considers upper and lower limits for the Bay Cap (Table 3). The upper limit options range from the highest to the lowest Bay Cap implemented by management. The lower limits range from none to the lower 95% confidence interval of the mean harvest from 2012-2016. This time period is the one used to calculate the current Bay Cap and incorporates the variability around the harvest when the Bay Cap was set at a higher level than the current Bay Cap.

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Table 2. Sub-Options C1a-e for setting the Bay Cap as a Proportion of the TAC. Note: Proportions shown here are rounded for clarity; the Bay Cap would be based on unrounded values.

Option	Proportion	Basis	Cap in 2027 under status quo TAC (186,840 mt)
C1a	27.3%	2026 Bay Cap : 2026 TAC	51,000 mt
C1b	24.6%	10% reduction to 2026 Bay Cap : 2026 TAC	45,900 mt
C1c	21.8%	20% reduction to 2026 Bay Cap : 2026 TAC	40,800 mt
C1d	19.1%	30% reduction to 2026 Bay Cap : 2026 TAC	35,700 mt
C1e	13.6%	50% reduction to 2026 Bay Cap : 2026 TAC	25,500 mt

Table 3. Sub-Options C2a-e for setting an Upper and Lower limit for the Bay Cap.

Option	Upper Limit	Lower Limit	Basis
C2a.	51,000 mt	None	Upper: Current Bay Cap Lower: n/a
C2b	51,000 mt	25,500 mt	Upper: Current Bay Cap Lower: Maximum Reduction Under Consideration
C2c.	87,216 mt	None	Upper: Highest Cap since management with TAC Lower: n/a
C2d.	87,216 mt	25,500 mt	Upper: Highest Cap since management with TAC Lower: Maximum Reduction Under Consideration
C2e.	75,000 mt	29,000 mt	Upper/Lower: Approximate 95% confidence intervals around the approximate 2012-2016 mean Chesapeake Bay reduction harvest. Note: if Sub-Option C1e is selected, the lower limit for this option will be 25,500 mt.

3.2 Chesapeake Bay Cap Distribution

3.2.1. Quota Periods

These options consider dividing the Bay Cap into quota periods to moderate reduction fishery landings in the beginning and middle of the reduction fishery season as a precautionary measure to support the availability of menhaden to other fisheries and predators.

Option A. Status Quo

The Bay Cap remains an annual measure only with no division into quota periods.

Option B. Three Quota Periods

The Bay Cap would be divided into three quota periods defined by one of the sub-options in Table 4.

Table 4. Options to divide the Bay Cap into three quota periods. Note: Because the reduction fishery begins the first Monday in May and ends on the third Friday in November, depending on the year, the length of the fishing season is either 28 weeks and 5 days or 27 weeks and 5 days. The table outlines the length of each quota period for a season of 28 weeks and 5 days. For years with 27 weeks and 5 days, one week is removed from the final quota period. Example dates are given for 2027.

Option	Description	Length of Quota Periods	2027 Time of Year Example*	Percent of total Bay Cap
B1	Even Length & Even Harvest	9 weeks	May 3–Jul 4	33%
		10 weeks	Jul 5–Sep 12	33%
		9 weeks and 5 days	Sep 13–Nov 19	34%
B2	Even Length & Uneven Harvest	9 weeks	May 3–Jul 4	25%
		10 weeks	Jul 5–Sep 12	25%
		9 weeks and 5 days	Sep 13–Nov 19	50%
B3	Uneven Length & Even Harvest	11 weeks	May 3–Jul 18	33%
		6 weeks	Jul 19–Aug 29	33%
		11 weeks and 5 days	Aug 30–Nov 19	34%

Options B1 and B2 contain three quota periods of roughly equal length, with Option B1 intended to provide an equal distribution of harvest whereas Option B2 gives greater emphasis on delaying harvest until later in the season. Option B3 presents three periods of unequal length, with the extended first period intended to delay some reduction harvest until later in the year compared to recent performance and the short middle period intended to allow the fishery to continue to operate as it has been during what has been the peak period in recent years.

To help understand how Options B1-B3 may alter the reduction fishery's operation, Table 5 provides the 2018–2024 average percent of reduction fishery effort and landings that occurred

in the proposed quota periods. Furthermore, Figure 10 contrasts the options' projected reduction fishery cumulative harvest by week with the 2018–2024 average cumulative harvest by week for the reduction fishery and the Maryland, Virginia, and PRFC pound net fisheries.

Table 5. Approximate average percent purse seine reduction landings and effort in the Chesapeake Bay 2018-2024 corresponding to the quota periods as presented in Options B1-B3.

Option	Length of Quota Period	2027 Dates	Average % Landings (2018-2024)	Average % Effort (2018-2024)
B1/B2	9 weeks	May 3 - July 4	30%	39%
	10 weeks	July 5 - Sept 12	54%	48%
	9 weeks + 5 days	Sept 13 - Nov 19	16%	13%
B3	11 weeks	May 3 - July 18	38%	44%
	6 weeks	July 19 - Aug 29	36%	34%
	11 weeks + 5 days	Aug 30 - Nov 19	26%	22%

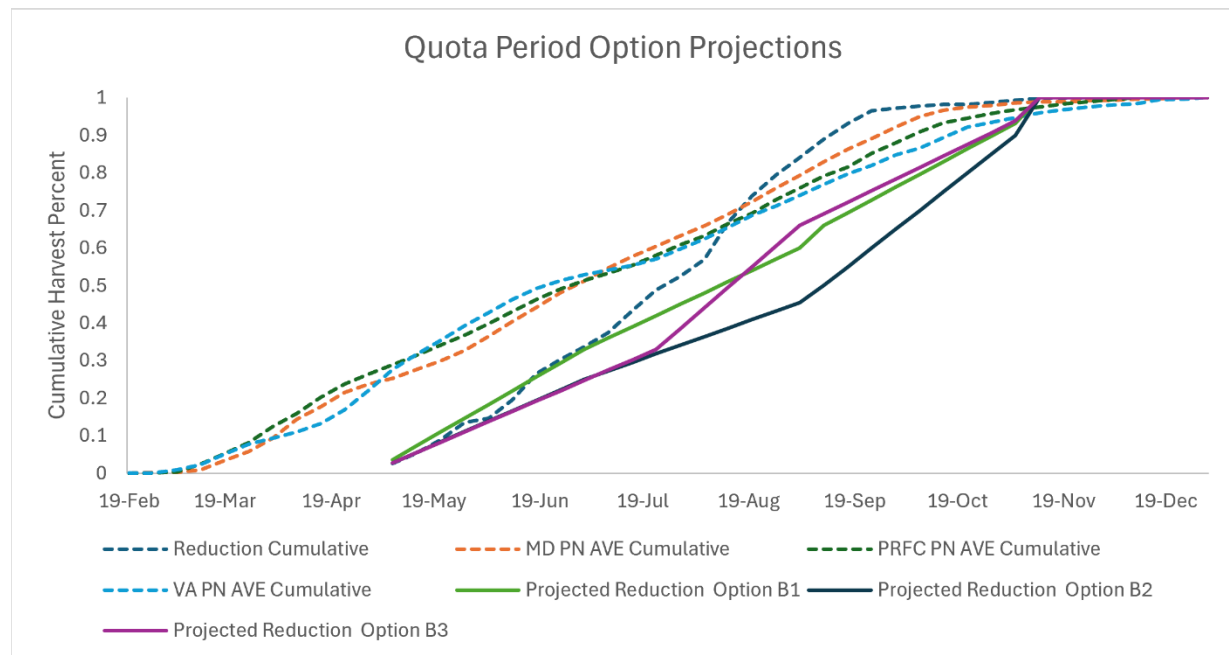


Figure 10. Historical average cumulative harvest by week (2018 - 2024) for the reduction fishery and the Maryland, Virginia, and PRFC pounds net, and a projection of the reduction fishery cumulative harvest under Options B1-B3.

3.2.2 Quota Period Overages and Underages

Note: This section is only required if Option B is selected above in section 3.2.1 to implement quota periods.

The following options outline how overages and underages within quota periods would be addressed. Without any overage payback provision, there would be little incentive for industry to abide by the in-year quota periods. Without any underage rollover provision, the quota periods may inhibit industry's ability to harvest the Bay Cap.

Option A. No payback for quota period overages with rollover of unused quota within a fishing year.

There would be no payback for exceeding the allocation of a quota period unless it causes the Bay Cap to be exceeded. An overage of the total Bay Cap would be deducted from the following year's total Bay Cap before it is allocated into the quota periods. Any underage of Quota Period 1 or 2 can be used in any subsequent quota period within the year.

Example: A three-quota period split was selected with allocations of 25%/25%/50%. The total Bay Cap is set at a fixed 20,000 pounds, resulting in period allocations of 5,000/5,000/10,000 pounds.

- If the fishery catches 7,000/3,000/10,000 pounds (i.e., a Period 1 overage with no Bay Cap overage), then the following year allocations will remain 5,000/5,000/10,000 pounds.
- If the fishery catches 7,000/5,000/10,000 pounds (i.e., a Period 1 overage and Bay Cap overage of 2,000 pounds), then the following year the Bay Cap would be reduced by 2,000 pounds and then allocated to the periods as 4,500/4,500/9,000 pounds.
- If the fishery catches 5,000/3,000/12,000 pounds (i.e., a Period 2 underage rolled into and harvested in Period 3 without exceeding the total Bay Cap), then the following year allocations will remain the same. A Period 2 underage could only be harvested in Period 3 whereas a Period 1 underage could be harvested in Period 2 and/or 3.

Option B. Quota period overage payback with rollover of unused quota within a fishing year.

Any underage of Quota Periods 1 or 2 would be rolled into Period 3 of the same fishing year. Any underage in Quota Period 3 would not be reallocated.

Quota Period 1 or 2 overages would be deducted from the same quota period in the following year and that poundage would be redistributed to Quota Period 3. If a Quota Period 1 or 2 overage also results in a Bay Cap overage, the Bay Cap overage would be accounted for prior to the Quota Period overage. A Quota Period 3 overage would always also result in a Bay Cap overage (due to the underage rollover provision); when this occurs, the Bay Cap overage would be deducted from the Bay Cap in the following year.

If an overage in Quota Period 1 or 2 cannot be paid back in full by the subsequent year's Quota Period allocation, the remainder of the overage will be subtracted from the next earliest quota period (if available). If that quota period allocation is insufficient, the remaining balance would be deducted from the subsequent quota period. Quota period overages that cannot be paid back in full by one quota period will be accounted for last should there be overages of multiple quota periods.

Underage Sub Option 1. Rather than an underage in Quota Period 1 being rolled over entirely to Quota Period 3, an underage in Quota Period 1 would be rolled over in equal halves to Quota Periods 2 and 3. (An underage in Quota Period 2 would still be rolled over entirely to Quota Period 3.)

Example: A three-quota period split was selected with allocations of 25%/25%/50%. The total Bay Cap is set at a fixed 20,000 pounds, resulting in period allocations of 5,000/5,000/10,000 pounds.

- If the fishery catches 7,000/3,000/10,000 pounds (i.e., a Period 1 overage with no Bay Cap overage), then the following year, Period 1 would be reduced by 2,000 pounds and Period 3 would be increased by 2,000 pounds, resulting in allocations of 3,000/5,000/12,000 pounds.
- If the fishery catches 5,000/3,000/12,000 pounds (i.e., a Period 3 overage with no Bay Cap overage), then the allocations remain unchanged the following year at 5,000/5,000/10,000 pounds.
- If the fishery catches 7,000/5,000/10,000 pounds (i.e., a Period 1 overage and Bay Cap overage of 2,000 pounds), then the following year the Bay Cap would be reduced by 2,000 pounds resulting in baseline period allocations of 4,500/4,500/9,000 pounds. Then, the Period 1 overage would be deducted from Period 1 and redistributed to Period 3, resulting in final period allocations of 2,500/4,500/11,000 pounds.
- If the fishery catches 5,000/5,000/12,000 pounds (i.e., a Period 3 overage and Bay Cap overage), then the following year the Bay Cap would be reduced by 2,000 pounds resulting in baseline and final period allocations of 4,500/4,500/9,000 pounds.
- If the fishery catches 1,000/12,000/7,000 pounds (i.e., a Period 2 overage of 7,000 pounds that cannot be paid back in full by Period 2 the following year and no Bay Cap overage), then the following year Period 2 would be set at zero, 2,000 pounds would be deducted from Period 1, and 7,000 pounds would be redistributed to Period 3, resulting in period allocations of 3,000/0/17,000 pounds.
- If the fishery catches 3,000 pounds in Period 1, the 2,000-pound underage is applied entirely to Period 3 that year resulting in Period 2 and 3 allocations of 5,000 and 12,000 pounds, unless Underage Sub-option 1 is selected in which case the 2,000-pound Period 1 underage is applied in equal amounts to Periods 2 and 3 that year resulting in Period 2 and 3 allocations of 6,000 and 11,000 pounds.
- If the fishery catches 6,000/12,000/2,000 pounds (i.e. a Period 1 overage of 1,000 pounds and a Period 2 overage of 7,000 pounds that cannot be paid back in full by

Period 2 the following year and no Bay Cap overage), then the following year Period 1 would first be reduced to 4,000 pounds, then the Period 2 overage would be applied to set Period 2 to zero, the remaining 2,000 pounds would be deducted from Period 1, and 8,000 pounds would be redistributed to Period 3, resulting in allocations of 2,000/0/18,000 pounds.

3.3 Chesapeake Bay Reduction Fishery Cap Revisit Provision

These options consider setting a timeframe for the Board to revisit the Chesapeake Bay Reduction Fishery Cap periodically due to the uncertainty of menhaden's status in the Bay and ongoing work to develop a scientifically-based Bay Cap. Revisiting the Bay Cap does not require the Board to initiate an action to consider changes to the Bay Cap. In either option, the Bay Cap can be reconsidered at any time through the adaptive management process (i.e., an addendum or amendment). A similar revisit provision exists for the quota allocations (every three years).

Option A. Status Quo. There is no set timeframe for the Board to revisit the Bay Cap.

Option B. Revisit Provision. The Chesapeake Bay Cap will be revisited every three years following implementation of this draft addendum.

4. COMPLIANCE SCHEDULE

The Atlantic Menhaden Management Board would need to determine a compliance schedule when considering approval of the draft Addendum.



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Atlantic Menhaden Management Board
FROM: Committee on Economics and Social Sciences
DATE: July 13, 2026
SUBJECT: Updated: Evaluation of potential employment and economic impacts resulting from a TAC reduction

Executive Summary

In the fall 2025 and spring of 2026, the Committee on Economics and Social Sciences (CESS) was tasked with looking into how changes in menhaden management could impact jobs within the commercial reduction and bait sectors of the menhaden fishery. This memorandum provides a summary of available information, including model-based approaches used to estimate the economic impacts of changes in Atlantic menhaden landings. Key findings from these prior studies are highlighted, along with study limitations, data gaps, and considerations for future work.

Leontief input–output models are commonly used to evaluate how changes in production by one sector or industry affect regional economies. These models apply fixed production relationships to estimate how output changes in one industry translate into direct, indirect, and induced effects on output, employment, and income across all sectors. While these models can be useful for understanding inter-industry responses and evaluating short-run economic impacts of marginal output changes, the approach assumes constant input proportions in industry production functions, no price adjustments, and no behavioral responses or business adaptation. As a result, firms are assumed to not substitute inputs, shift sourcing, or modify production processes in response to changing constraints (e.g., input prices, output constraints, etc.). Thus, use of this modeling approach to evaluate large-scale or long-term policy changes may overstate impacts.

There were two studies identified that address employment impacts associated with landings changes in the Atlantic menhaden fishery: Kirkley et al. 2011 and Whitehead and Harrison 2017.

Kirkley et al. (2011) assessed the economic importance of the reduction sector under alternative harvest scenarios in the Chesapeake Bay, including an approach that allowed for increasing costs associated with shifting harvest to coastal waters in response to reductions in the Chesapeake Bay quota. The study estimated that the reduction sector supported approximately 519 full- and part-time jobs in Maryland and Virginia, including 347 in Northumberland County, Virginia, associated with total landings of about 141,000 metric tons, of which roughly 85,000 metric tons were harvested from the Chesapeake Bay. Under an

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extreme scenario in which no harvest was allowed in the Bay and effort could not be shifted to coastal waters, employment losses in Northumberland County were estimated at up to 176 jobs, including 98 direct losses in the reduction sector. The analysis also indicated that a reduction of 1,000 metric tons in the Chesapeake Bay quota corresponded to an estimated loss of approximately 3.7 total jobs, including 2.1 direct jobs in the reduction sector. Whitehead and Harrison (2017) applied a similar modeling framework and produced employment impact estimates consistent with Kirkley et al. (2011). In addition, this study estimated that employment changes in Northumberland County scale with output at approximately one job per \$45,000 in landings (roughly \$60,000 in 2026 USD).

Whitehead and Harrison (2017) characterize the bait sector as a geographically diffuse, relatively low-volume and higher-unit-price fishery, as compared to the reduction sector, with landings spread across 41–55 Atlantic coast counties and individual harvesters generally maintaining diversified catch portfolios. Economic modeling estimated that the 6.45% increase in the 2017 TAC (12,120 mt) supported approximately \$1.5 million in direct and indirect output, \$431,000 in earnings, and 18 jobs in the coastwide bait sector, with impacts concentrated primarily in New Jersey and Virginia. This equates to ~\$124k in output, ~\$36k in earnings, and ~1.5 jobs per 1,000 metric ton increase in coastwide TAC. However, county-level regression analysis found no significant relationship between bait landings and employment and only a very small negative relationship with income, suggesting limited detectable effects on broader county economies.

These estimates should be interpreted cautiously in a management context. Because Leontief input–output models do not account for market adjustments or adaptive behavior, they likely overstate long-term employment effects. It is likely that economic impacts and employment effects associated with output reductions in the reduction sector would respond non-linearly and be characterized by threshold triggers due to high fixed costs in the industry. This would suggest that there are critical output levels, past which employment could change dramatically. Conversely, the bait sector is more diversified and regression analysis did not detect substantial county-level employment or income changes associated with changes in the TAC. Importantly, these studies note that the reduction industry is a critical and central sector for the local economy around Reedville, Virginia. Job losses in this sector could, potentially lead to structural unemployment rather than frictional transition, as we might expect in larger or more diversified economies.

The CESS recommends additional socioeconomic research to support menhaden management decisions. In particular, studies that evaluate industry employment over time and in relation to changes in quota, landings, or other exogenous factors, assess costs and estimate production functions for the reduction sector, or expand consideration of the bait sector, including its costs, demand drivers, and economic contributions, would be strongly supported.

I. Introduction

The Atlantic menhaden (*Brevoortia tyrannus*) serves as an important resource for communities throughout the Atlantic Coast. The fishery is characterized by a geographically concentrated reduction sector based in Reedville, Virginia, and a more geographically diverse bait sector that supports various other fisheries. While the Atlantic menhaden stock is not overfished, there has been a downward trend in TAC to help maintain ecosystem function and predator-prey balance. Management actions are driven by updated stock assessments that have indicated higher than estimated fishing mortality and the full implementation of Ecological Reference Points (ERPs).

This literature review was conducted to support the Board's evaluation of potential employment and economic impacts resulting from the reduction in the TAC for the 2026 fishing year, as well as proposed changes to the Chesapeake Bay harvest cap under Addendum II. The review synthesizes the key findings from two documents: Kirkley et al. (2011) and Whitehead & Harrison (2017).

II. Review of Economic Assessments

A. Establishing the Baseline: Kirkley et al. (2011)

The study serves as the foundational text for understanding the localized economic dependency of the Chesapeake Bay region on the menhaden reduction fishery. It should be noted that the study characterizes the fishery using data from the United States Bureau of Census for the years 2000 and 2008 cost and earnings data from Omega Protein. These data represent conditions prior to recent management shifts (such as Ecological Reference Points ERPs) or any changes in the industry that may have occurred over the last two decades.

Key findings:

- The study highlights the extreme concentration of economic activity in Northumberland County, Virginia (Reedville).
- The study demonstrates that unlike many other fisheries where infrastructure is diffuse, the reduction fishery acts as a "monopsony-like" anchor for the local economy.
- The study notes the closure of other processing plants along the coast left Reedville as the sole processor for reduction landings, creating a high degree of vulnerability to regulatory changes.
- The study estimates the ripple effects of the various quota reduction scenarios on employment using an Input-Output model and generating estimates using the software platform IMPLAN.
- The study estimates that the reduction sector supported approximately 519 full- and part-time jobs in Maryland and Virginia, including 347 in Northumberland County, Virginia, associated with total landings of about 141,000 metric tons, of which roughly 85,000 metric tons were harvested from the Chesapeake Bay.
- The study suggests robust multipliers for the reduction sector, indicating that for every job directly in harvesting or processing, a significant number of support jobs (mechanics, logistics, local services) were sustained in the rural Virginia economy.

- The study underscores that alternative employment opportunities in the immediate vicinity of the reduction plant were limited, suggesting that job losses in this sector could lead to structural unemployment rather than frictional transition.
- Under an extreme scenario in which no harvest was allowed in the Bay and effort could not be shifted to coastal waters, employment losses in Northumberland County were estimated at up to 176 jobs, including 98 direct losses in the reduction sector.
- The analysis also indicates that a reduction of 1,000 metric tons in the Chesapeake Bay quota corresponded to an estimated loss of approximately 3.7 total jobs, including 2.1 direct jobs in the reduction sector.

B. Analysis and Valuation of Sectors: Whitehead and Harrison (2017)

The study was commissioned to update the economic understanding of the fishery and provide a more detailed analysis between the reduction and bait sectors. Whitehead and Harrison constitute the "best available economic science" currently on record for the Commission.

Key findings:

- The study characterizes the reduction sector as high-volume, low-unit-price, and high-fixed infrastructure cost, while the bait sector had a lower volume, higher unit price, and lower infrastructure costs, which were more diffuse across the Atlantic Coast. The study found that bait landings ranged from 41 to 55 counties along the coast during the period of 2000 to 2015.
- The study revealed that individual bait fishermen maintain highly diversified catch portfolios. Survey data indicated that for a majority (54 percent) of participating harvesters, menhaden constitutes less than 10 percent of their total annual earnings. This suggests that individuals in the bait sector may be able to shift effort to other species if faced with quota reductions or adverse fishing conditions.
- Similar to Kirkley et al. (2011), the study utilizes IMPAN software to generate economic impact estimates and provides estimates on the total economic contribution (i.e., direct, indirect, and induced effects) across the coastal states.
- The authors estimate that a baseline increase in the 2017 TAC of 6.45% from the 2016 quota (12,120 metric tons) generated approximately \$1.5 million in direct and indirect output, with \$431,000 in earnings, and created 18 jobs across the coastwide bait sector (~\$124k direct and indirect output, ~\$36k in earnings, and ~1.5 jobs per 1,000 metric ton increase in quota). However, a regression analysis assessing county-level employment and income changes associated with changes in bait landings from 2005–2013 found no statistically significant relationship with employment and only a very small negative relationship with income, which the authors did not consider economically significant.
- While the bait sector operates across multiple states, the study highlighted that its economic benefits are not evenly distributed. The majority of the bait sector's economic impacts are heavily concentrated in New Jersey and Virginia.
- In addition, this study estimates that employment changes in Northumberland County, Virginia scale with output at approximately one job per \$45,000 in landings for the reduction sector.

- The assessment suggests that as volume decreases, profitability and employment stability may decline non-linearly.

III. Studies Relevance to 2026 TAC Reductions

Kirkley's work provides the historical baseline for the "Reedville dependency" argument. However, the data reflects the economic landscape prior to 2010. The cost structures, fuel prices, and labor markets have evolved, meaning the raw dollar values from this report must be inflation-adjusted and contextually updated.

Whitehead and Harrison constitute the "best available economic science" currently on record for the Commission. However, the ASFMC Menhaden Board should note that the reduction sector's economic footprint is highly sensitive to economies of scale. The study suggests that as volume decreases (e.g., via the 2026 TAC cut), the profitability and thus employment stability of the capital-intensive reduction plant may decline non-linearly.

IV. Methodological Limitations

Leontief input–output models are commonly used to evaluate how changes in production by one sector or industry affect regional economies. These models apply fixed production relationships to estimate how output changes in one industry translate into direct, indirect, and induced effects on output, employment, and income across all sectors.

While these models can be useful for understanding inter-industry responses and evaluating short-run economic impacts of marginal output changes, the approach assumes constant input proportions in industry production functions, no price adjustments, and no behavioral responses or business adaptation. As a result, firms are assumed to not substitute inputs, shift sourcing, or modify production processes in response to changing constraints (e.g., input prices, output constraints, etc.). Using this type of modeling approach to evaluate large-scale or long-term policy changes may overstate impacts.

Both Kirkely et al. (2011) and Whithead and Harrison (2017) utilize Input-Output models, which, as noted above, assume a linear relationship between input (fish landings) and output (revenue or employment). In reality, a processing plant would require a minimum volume of fish to cover its fixed costs of operation (e.g., maintaining shore-side facilities, maintaining its fleet, insurance). If the TAC reduction pushes landings below this break-even threshold, the result is not a partial layoff but potentially a 100% shutdown of the facility. Under this linear relationship, the employment impact for the reduction sector would likely be scaled incorrectly due to its high fixed cost.

Employment estimates from these studies should be interpreted cautiously in a management context. Because Leontief input–output models do not account for market adjustments or adaptive behavior, they likely overstate long-term employment effects. Results are also sensitive to parameterizations of costs and industry production functions, including assumptions regarding the ability of the reduction sector to shift harvest outside the Chesapeake Bay.

V. Conclusions and Recommendations

Based on Kirkley et al. (2011), the economic hardship of a TAC reduction will be acutely felt in Northumberland County (Reedville), Virginia. However, Whitehead and Harrison (2017) suggest that the bait sector, while economically valuable, has more elasticity and geographic diversity to absorb shocks and adapt to changing management. The CESS recommends the following considerations when assessing the forthcoming TAC reductions:

Whitehead and Harrison (2017) should be a directional guide, acknowledging that the employment figures are likely overestimates for marginal TAC changes.

While Kirkley et al. 2011 is more dated, it is more contextually relevant to Chesapeake Bay-related decisions as it specifically explores reductions in the Chesapeake Bay quota cap.

For comparison purposes, it's important to note that the inflation-adjusted estimates and caveats reflect change in current market conditions.

VI. Future Research Needs

The CESS recommends additional socioeconomic research to support menhaden management decisions. We strongly support additional studies that focus on the following core areas: 1) analysis of employment changes over time in relation to quota and landings changes, controlling for other factors and moving beyond simple correlative analyses in Whitehead and Harrison (2017); 2) updating information on the reduction fishery (vessel and plant cost structures), refining economic impact models and estimates, and considering output thresholds; 3) expansion of socioeconomic data collection in the bait fishery, specifically pound nets and including infrastructure and production costs, and considering bait demand drivers, harvester diversification and output substitution, and economic contributions of the sector.

VII. References

Kirkley, J.E., Hartman, T., McDaniel, T., McConnell, K. and Whitehead, J., 2011. An assessment of the social and economic importance of menhaden (*Brevoortia tyrannus*)(Latrobe, 1802) in Chesapeake Bay region. Virginia Institute of Marine Science, College of William and Mary, School of Marine Science, Department of Fisheries

Whitehead, J.C. and Harrison, J., 2017. Socioeconomic Analysis of the Atlantic Menhaden Commercial Bait and Reduction Fishery: A Report to the Atlantic States Marine Fisheries Commission. Arlington, VA: Atlantic States Marine Fisheries Commission, 180.

Atlantic States Marine Fisheries Commission

Atlantic Striped Bass Management Board

August 6, 2026

8:30 – 9:30 a.m.

Draft Agenda

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

1. Welcome/Call to Order (<i>C. Batsavage</i>)	8:30 a.m.
2. Board Consent	8:30 a.m.
• Approval of Agenda	
• Approval of Proceedings from May 2026	
3. Public Comment	8:35 a.m.
4. Consider Comments to NOAA Fisheries on its Document: <i>Charting a Course for Striped Bass: Science and Regulatory Innovation for Offshore Aquaculture</i> (<i>E. Franke</i>) Action	8:45 a.m.
5. Consider Approval of FMP Review and State Compliance for the 2025 Fishing Year (<i>E. Franke</i>) Action	9:10 a.m.
6. Update on 2027 Benchmark Stock Assessment (<i>K. Drew</i>)	9:20 a.m.
7. Review and Populate Advisory Panel Membership (<i>T. Berger</i>) Action	9:25 a.m.
8. Other Business/Adjourn	9:30 a.m.

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details.

MEETING OVERVIEW

Atlantic Striped Bass Management Board

May 4, 2026

1:15 p.m. – 3:30 p.m.

Chair: Chris Batsavage (NC) Assumed Chairmanship: 2/26	Technical Committee Chair: Tyler Grabowski (PA)	Law Enforcement Committee Rep: Sgt. Jeff Mercer (RI)
Vice Chair: Nichola Meserve (MA)	Advisory Panel Chair: Eleanor Bochenek (NJ)	Previous Board Meeting: May 4, 2026
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, DC, PRFC, VA, NC, NMFS, USFWS (16 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from May 2026

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. Comments to NOAA Fisheries on Offshore Striped Bass Aquaculture (8:45-9:10 a.m.) Action

Background

- In January 2024, NOAA Fisheries Office of Aquaculture provided a presentation to the ISFMP Policy Board on aquaculture in the EEZ, specifically of Atlantic striped bass.
- The Policy Board requested NOAA Fisheries provide further information on several issues including environmental concerns, economic concerns, and enforcement/legal concerns.
- NOAA Fisheries developed a draft technical memorandum on both the science and environmental issues as well as legal and policy issues regarding striped bass aquaculture and presented the report to the Board in February 2026 (**Meeting Materials**).
- NOAA Fisheries is seeking feedback from the Commission on the technical memorandum.
- Board members provided comments to Commission staff via email to inform a draft letter to NOAA Fisheries for Board consideration (**Meeting Materials**).

Presentations

- Overview of Board comments by E. Franke

Board action for consideration at this meeting

- Approve for ISFMP Policy Board consideration a draft letter to NOAA Fisheries with feedback on the NOAA technical memorandum regarding offshore striped bass aquaculture

5. Fishery Management Plan Review (9:10-9:20 a.m.) Action**Background**

- State Compliance Reports were due on June 15, 2026.
- The Plan Review Team reviewed each state report and compiled the annual FMP Review **(Supplemental Materials)**.
- There are no *de minimis* requests.

Presentations

- Overview of the FMP Review Report by E. Franke

Board action for consideration at this meeting

- Accept 2026 FMP Review and State Compliance Reports for the 2025 fishing year

6. Update on the 2027 Benchmark Stock Assessment (9:20-9:25 a.m.)**Background**

- The 2027 Benchmark Stock Assessment is underway.
- The Assessment Workshop is scheduled for August 24-28, 2026 in Arlington, VA.
- The NRCC peer review is being scheduled for late May/early June 2027 to allow sufficient time to incorporate the revised MRIP time series into the assessment.

Presentations

- Update on the Benchmark Assessment by K. Drew

7. Advisory Panel Membership (9:25-9:30 a.m.) Action**Background**

- Mike Waine, with the American Sportfishing Association, has been nominated to the Atlantic Striped Bass Advisory Panel as a North Carolina representative.

Presentations

- Nomination by T. Berger

Board actions for consideration at this meeting

- Approve Advisory Panel nomination

8. Other Business/Adjourn (9:30 a.m.)

DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
ATLANTIC STRIPED BASS MANAGEMENT BOARD

The Westin Crystal City
Arlington, Virginia
Hybrid Meeting

May 4, 2026

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

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Discuss Timeline and Process to Provide Feedback on the NOAA Fisheries Striped Bass Aquaculture	27
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Adjournment	30

INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of February 2026** by consent (Page 1).
3. **Move to use a steering committee process** (Page24). Motion by Shanna Madsen; second by Dave Sikorski. Motion passes by unanimous consent (Page 26).
4. **Move to elect Nichola Meserve as the Vice-Chair of the Atlantic Striped Bass Management Board** (Page 29). Motion by Megan Ware; seconded by John Clark. Motion passes by unanimous consent (Page 29).
5. **Move to adjourn** by consent (Page 30).

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The Board will review the minutes during its next meeting.

ATTENDANCE

Board Members

Megan Ware, ME, proxy for C. Wilson (AA)	Loren Lustig, PA (GA)
Steve Train, ME (GA)	Joe Cimino, NJ (AA)
Kevin Sullivan, NH, proxy for Renee Zobel (AA)	John Clark, DE (AA)
Doug Grout, NH (GA)	Roy Miller, DE (GA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)	Michael Luisi, MD, proxy for K. Charbonneau (AA)
Nichola Meserve, MA, proxy for D. McKiernan (AA)	Robert T. Brown, MD, proxy for R. Dize (GA)
Ray Kane, MA (GA)	David Sikorski, MD, proxy for Del. Stein (LA)
Rep. Sarah Peake, MA, proxy for Rep. Armini (LA)	Joe Grist, VA (Acting AA)
Jason McNamee, RI (AA)	JJ Minor, VA (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
David Borden, RI (GA)	Malcolm Rhodes, SC (GA)
Shanna Madsen, CT (AA)	Erika Burgess, FL, proxy for J. McCawley (AA)
Bill Hyatt, CT (GA)	Daniel Ryan, DC
Robert LaFrance, CT, proxy for Rep. Gresko (LA)	Ron Owens, PRFC
Marty Gary, NY (AA)	Max Appleman, NMFS
Emerson Hasbrouck, NY (GA)	Lowell Whitney, US FWS
Kris Kuhn, PA, proxy for T. Schaeffer (AA)	

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

Ex-Officio Members

Jeff Mercer, Law Enforcement Committee Rep.

Staff

Bob Beal	Caitlin Starks	Katie Drew
Toni Kerns	Tracey Bauer	Jeff Kipp
Tina Berger	James Boyle	Samara Nehemiah
Madeline Musante	Chelsea Tuohy	Jainita Patel

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The Atlantic Striped Bass Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Monday, May 4, 2026, and was called to order at 1:15 p.m. by Chair Chris Batsavage.

CALL TO ORDER

CHAIR CHRIS BATSAVAGE: Good afternoon, everyone. I would like to call the Striped Bass Management Board meeting to order. My name is Chris Batsavage; I'm the Administrative Proxy from North Carolina and I'll be serving as Chair. Before I go to board consent on the agenda, I will check with Toni Kerns and see which Commissioner's Board members are online.

MS. TONI KERNS: I believe it is just Monica Martinez from New York.

CHAIR BATSAVAGE: Thanks, Toni. Start off with.

MR. JOSEPH GRIST: James Minor is also on.

APPROVAL OF AGENDA

CHAIR BATSAVAGE: Thanks, Joe. All right, start off with approval of the agenda. Are there any modifications to the agenda that anyone would like to make. Seeing none then that is approved.

APPROVAL OF PROCEEDINGS

CHAIR BATSAVAGE: Next is approval of the proceedings from the February, 2026 Board Meeting. Are there any modifications to the proceedings that anyone would like to offer? Seeing none; those are approved.

PUBLIC COMMENT

CHAIR BATSAVAGE: Next up is Public Comment. This is an opportunity for members of the public to provide comment on items not on the agenda. If there is time later on, I will try to

offer a little bit of time for the public to provide comments on those particular items, but just checking for anything not on the agenda if you have any comments. None in the room and none online.

DISCUSS 2027 BENCHMARK STOCK ASSESSMENT

CHAIR BATSAVAGE: Next up is our first main item on the agenda, which is the 2027 Benchmark Stock Assessment Biological Reference Points and Spatial Management. Katie Drew will be doing a presentation on that, so Katie, whenever you're ready.

DR. KATIE DREW: Basically, today I'm just going to give you a quick, one-slide background on our current BRPs and then go to the topics that we're looking for Board input on, most notably sort of the question of balancing SSB and F, as well as sort of spatial management and what the Board's objectives and desires are on that. Then just a quick timeline of next steps. As a reminder, I think there have been some questions about, can we achieve the current target and threshold. We can say that striped bass were near or above the SSB target and the F threshold for about 2000 to 2010, which is this period highlighted in the box on the graph of recruitment. What we're pointing out with this graph is that that period of high SSB and high F was supported by a series of very strong year classes from 1993 to 2003, which are highlighted with those yellow bars.

You can see that recruitment has dropped off since then. While the SSB target is still attainable, the F rate required to do so under our current low or very low recruitment levels, may not be acceptable or palatable managers and stakeholders' level with the current recruitment. I think we came to the Board and said, interested in maybe some potential alternatives to this.

We will be exploring other reference point definitions to address TOR Number 6 as part of this assessment. We will be looking at model-based reference points like SPR or MSY proxies where we can.

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**PROVIDE GUIDANCE TO STOCK ASSESSMENT
SUBCOMMITTEE ON BIOLOGICAL REFERENCE
POINTS AND SPATIAL MANAGEMENT**

DR. DREW: But we are also interested in hearing some guidance from the Board about how did the Board want to balance preserving SSB and allowing fishing, and what did the Board want from a spatial management framework as we go forward with this assessment?

At this point we don't need Board consensus on these issues and we don't need a specific BRP definition. We are just looking for some input to help the SAS develop some options going forward, so a range of opinions and kind of like what are the factors that you're thinking about and that you consider most important for managing the species.

As we work through the science, we can be keeping your objectives in mind and developing something that is scientifically appropriate, but also meets your management objectives as we go through this. In terms of the question of sort of balancing SSB and F. There is a tradeoff between preserving SSB and allowing F.

A higher fishing mortality is going to lead you to a lower SSB, whereas a higher SSB will require a lower F to maintain that SSB level. Lowering the SSB reference points would allow for a higher F target and a higher F threshold, but will not necessarily increase catch. This is because SSB is really a proxy for larger fish in the ocean region. Lower SSB means lower abundance of 28 inch plus fish in general.

Therefore, lower catch rates and encounter rates in the ocean fishery. It would be helpful to receive input on a number of things. We showed this last time around. I'm just going to highlight a couple of the ones in bold here, which are maybe more graspable in our time here today, which is for example, a preferred historical time period for F reference points and/or for SSB reference points when you are

satisfied with fishery performance, either as a target to shoot for or a level that you do not want to go below.

In terms of the lower limit on acceptable SSBs relative to 1995 levels, or based on a historical time period. We can also think about or talk about the relative importance of maximizing yield versus maximizing catch rates or the availability of trophy sized fish, or acceptable levels of risk or other metrics, in terms of stock health, like not just SSB but abundance of specific age or size classes and things like that. This is sort of the question on balancing SSB and F, and this is really relevant to kind of our more empirically derived reference points. Obviously, like I said, we'll be trying for model-based reference points. They have not always worked out for this model in the past, which is why we have continued to move forward with the empirical reference points. But the empirical reference points require more management guidance, in terms of setting targets and thresholds.

The other side of this that we are also working towards a spatial model for this benchmark, which presents sort of additional questions or additional challenges for management. If this model does not pass peer review again, then this part is somewhat moot. But I think we are striving for a more spatially informed model.

Currently we have a single set of coastwide reference points for this coastwide sort of meta complex of striped bass, with separate regional management regimes. We do not have separate reference points for our different producer areas and the ocean, but we still have the flexibility of allowing different management measures and different management objectives in those regions to account for differences in the availability of fish, and the differences in those fisheries at that level.

This is something that we can maintain going forward. A spatial model we can still maintain a single overall reference point if we so desire, and then have spatial management regimes. But we are interested in knowing if the Board is truly interested in spatial reference points, that is having specific

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targets and thresholds by region to evaluate stock status against, or again would you prefer to keep out current approach and just use a more spatially informed model.

I think one of the things to think about as you are sort of debating this is, you know what happens when one region exceeds the F threshold and another region does not, or in the case of sort of multi-stock reference points. What happens when one stock is overfished or experiencing overfishing and the other stocks are not? How is that managed in our mixed stock fisheries?

The other question is kind of what to do with Delaware Bay in particular. We are exploring the option of trying to model Delaware Bay separately, but the data for that stuff is more limited than for the other two regions, and as a result you know we may not be able to actually model Delaware Bay separately. In that case what happens to Delaware Bay is it lumped in with the Chesapeake Bay, is it lumped in with the Ocean region?

That is something that we can, there are different implications for that within the model, neither one is more right or more wrong, it just depends on kind of what do you want to do with Delaware Bay and Chesapeake Bay and the Ocean as separate regimes or separate regions that reflect differences in fishing mortality, fishing effort within the model.

Combining Chesapeake Bay and Delaware Bay is sort of more in line with recent research on the genetic similarity of these fish, and the frequent movement of fish between the Bays via the C and D canal. We can model it both ways, and like I said, they would be sort of equally accurate or equally inaccurate, different assumptions and different implications for the model.

Then a third question of, is the Board interested in developing BRPs for the Hudson River specifically if the data supported that, as

opposed to kind of this combined ocean region. In terms of next steps, ideally the Board will provide some guidance or some thoughts, some feelings to the SAS that we can consider as we go forward. Obviously, we are going to focus on sort of what is the best use of the data, the best scientific and biological approach to these models from our technical perspective.

But there are aspects of this that rely on management objectives. The right reference point will depend in part on how well you meet your management objectives, and that is what we're hoping to get from the Board today, so that we can provide you with something that is both technically and scientifically accurate and defensible, but also addresses your objectives.

Over the summer we'll work on incorporating your feedback into our BRP options as we continue with the assessment. We will have our assessment workshop the week of August 24, and then sometime in March we will have the review workshop that is going to be the spring research track. I do not believe we have specific dates for that yet.

At that point the Peer Review Panel will provide some feedback on the reference points, either the specific reference points that are chosen or maybe the methods to develop those reference points. That when you come back to, at the spring or the summer meeting, you will receive this assessment as well as BRP options for consideration. With that I am happy to take questions, or ideally, some guidance from the Board.

CHAIR BATSAVAGE: Thanks, Katie. We'll start with any questions Board members have on what Katie just presented. Once we kind of get past that question today I'll be looking for any input that Katie has requested. A show of hands here, start down the left side of the table, my left at least, Jason McNamee followed up by Bill Hyatt.

DR. JASON McNAMEE: Thank you, Katie. This is a question to start matters. With the empirical reference point, I remember there was like an

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evolution there, so they had set that SSB reference points in 1995. But then I remember early on in my tenure on this Board there was like this disconnect between the F metric in that point and time. Can you remind me? Like I know we connected them at one point, but I can't remember exactly what it was that we did to make them kind of congruent.

DR. DREW: Right, so for a while the SSB reference point was that 1995 value and then the F reference point was FMSY. But we found out during, I think it was the 2013 assessment, that basically if you project the population forward at FMSY you don't get back to the 1995 value. You actually get back to a lower SSB level.

We have concerns about the reliability of the stock recruit relationship that was needed to calculate FMSY and we had concerns about how well that would fit and how accurate that was. Given that the Board had sort of expressed a preference for, within the document the management itself.

The objective was really focused on expanding that age structure, things like that, so we kept the 1995 SSB value and then calculated the F value that you would need to get there under recent recruitment. Basically, from about the time, slightly before the stock was rebuilt to the most recent terminal year, drawing from that recruitment. The other option would be to pick a fishing mortality rate that the Board was satisfied with or that they wanted to aim towards, and then accept the SSB that you end up with as your target and threshold. I think that is kind of, if the Board has preferences on that and would like to see that explored, I think we could definitely do that.

CHAIR BATSAVAGE: Next up I have Bill Hyatt.

MR. WILLIAM HYATT: This is a question that I'm hoping leads to a suggestion. It has to do with the balance between yield and catch rate. I think that is going to be important in the

discussions as we go forward. The question is, do you feel that for striped bass, for the striped bass recreational fishery that there is enough economic data on that fishery available to provide some insights that would guide us trying to make that balance?

I'm asking it from the context, you know a lot of the fisheries that we discuss around this table everybody brings up economic data, and it is sort of like there is a vacuum there. There just isn't enough data to have a meaningful discussion. On the other hand, I'm very well aware that for many recreational fisheries, marine and inland, there is sufficient data to kind of guide those tradeoffs and sort of quantify what those tradeoffs actually mean to the communities involved.

Question, is your knowledge of the economic data associated with the coastal striped bass recreational fishery. Do you believe that there is sufficient data, and then if so a suggestion that that should be a significant part of what we look at going forward.

DR. DREW: I would say probably the economic data for striped bass are better than some of our other species. I think that whether we could, how robust and quantitative we could be, in terms of developing options that maximize economic value, as opposed to maximizing yield. I don't know if we're there yet.

There is a Recreational Demand Model being built for striped bass to kind of help answer some of these questions and help get input from anglers on sort of preferred feedback, or preferred tradeoffs or preferred management measures, in terms of some of these questions. I don't know that we will have enough economic data to build something truly robust and quantitative in that sense.

But if the Board would like to consider. I mean there are things we can provide sort of on the modeling side, in terms of things like what does this reference point translate into, not into total SSB, but into maybe your abundance or your perceived catch rates or is it more important to you to be able to go out and catch a lot of fish, even if you can't

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keep all of them, or is more important for you to go out and catch a keeper?

Is it more important to you to go out and catch and keep something, even if it is small. These are the kinds of questions we will possibly be able to get at through some of the current research. But we can at least present strategies to maximize each of those outcomes, if you will. But the circumstance, all we're controlling is sort of turning that dial on fishing mortality. What matters to the stock is how hard you're fishing. The economics, I think come into play, in terms of the preferred management options to control and keep you at that F. But the F that you need is more about what is your goal for the fishery for the stock. I don't know if that is helpful or not.

CHAIR BATSAVAGE: Do you have a follow up?

MR. HYATT: No, it is. Just a quick follow up. What I was hoping is that there would be enough information there to at least translate a tradeoff between yield and catch rate into how it would influence trips, trips associated with certain expenditures, et cetera. I suspect that there is enough to tease some of that out at least, maybe not at the 5,000-foot level, but the 10,000- or 20,000-foot level. That is what I would be looking for.

MS. KERNS: I don't know if there is, Bill. I think it depends on when the last time MRIP asked some economic questions of the striped bass surveys, and they do some economic add-on questions, and I just don't know when that last was. I'll doublecheck with the folks that are working on the Recreational Demand Model, to see if we had any tradeoff questions in that avenue. But that model is not going to be done in time for August.

CHAIR BATSAVAGE: Show of hands again. I had Shanna and Mike. I have a few on my list here so I'll start with Shanna Madsen.

MS. SHANNA MADSEN: My question is probably for Toni and Katie. I'm trying to kind of think through the timelines associated with, also what we're going to be speaking about next, our work group. What I'm trying to think about is, if we give you some level of guidance, some BRPs we might like to see today. Those will go through the assessment; we'll get those back out on the other end in 2027. If we decide at that point that we would like to see some other level of BRPs did those need to also be peer reviewed, in order for them to be applied?

DR. DREW: Yes. I think we do need our reference points to be peer reviewed. Now, I think we can provide. What we've done with ERPs, as you know, is we've provided a method that got peer reviewed. Then the Board was allowed to sort of use that tool to come up with a reference point that met their objective.

Depending on the feedback that we get from the group today, try to come up with something that, and make it clear to the Peer Review as we go through that this is a tool to help the Board meet its management objectives. Depending on sort of what those objectives are, there may be room to change the final value, or to change sort of that balance, as long as the Peer Review Panel signs off on that.

The Peer Review Panel may come back and be like, no this is a terrible idea, you are going to pick F40% and you are going to like it. But we will try to come up with something, especially like I said, if we don't have like a real strong vision from the Board at this moment. Try to come up with something that can allow a little bit of flexibility down the road once the Board has dived into some of these questions a little more.

CHAIR BATSAVAGE: Follow up.

MS. MADSEN: Thank you, Katie, I think that helps a ton to clarify kind of exactly what I am thinking, as far as like timelines integrating this into this work group that we will be discussing. To follow up to my question. I guess I would go ahead and just give you a suggestion since I'm here and I'm on it.

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My suggestion would be to do something just like that, keeping the tool itself flexible such that whatever comes out on the other end, like we did for ERPs kind of gives us a chance to maybe reevaluate some of our management objectives, such that those ERPs might vary. But we're using the same tool that has gone through peer review to get there. That is my thought process.

CHAIR BATSAVAGE: Mike Luisi.

MR. MICHAEL LUISI: Dr. Drew, a couple slides back there was some reference to the spatial management part that you're looking for some advice on. I'm trying to understand so that I can communicate this effectively with my stakeholders in Maryland. In Maryland there is constant ask. There is an ask all the time as to when is Maryland/Virginia going to be able to manage the Chesapeake Bay with that Chesapeake Bay reference point?

This is not a new conversation; this is something that has been around for a decade plus. At the last benchmark assessment there was some exploration through that process that did not lead to a peer reviewed approval. In your slide you spoke about. The question is, on your slide that spoke about having one reference point for the coast and then having spatial regimes. Is that what wasn't approved the last time, or was it specific Bay reference points for the different areas that would be deemed as, I guess the nursery areas?

DR. DREW: What was not approved last time was the spatial model. The spatial model had stock-specific reference points as well as sort of the fishing mortality that the Chesapeake Bay stock was experiencing in the Bay and in the ocean. There was a combination of sort of stock and spatial dynamics.

We developed reference points that would, there was a spatial component to the reference points. The Peer Review Panel did not love some of the choices that we made on that

front, and I think gave us some feedback about how to go forward with kind of the idea of a spatial approach or a stock-specific approach, those kinds of questions.

I would say it's not that those specific definitions failed last time, it was more like the larger model wasn't ready to provide that information yet. We're going to try again this time. I think one of the things that we are interested in knowing is like if you guys, if that continues to be a priority for you to have spatial specific reference points, and if so at what kind of spatial level?

I think there is definitely sort of nuances to that at thinking things through like, what happens if one region exceeds their target and the other does not, but the stock overall is healthy, those kinds of questions, which is more of a management question. But yes, I don't know if that answers your question or not.

CHAIR BATSAVAGE: Follow up, Mike?

MR. LUISI: Just to kind of tie a bow on this. My advice would be, and it sounds like you are already moving in that direction to continue to explore the modeling approaches that would be used to establish spatial reference points. I'm not going to go on the record today and say that if that were to be the case that we would implement.

You know I would like to learn from it and understand the interplay between the different components of the stock, and to understand how managing one independently of the other could result in benefits to the entire stock. I don't know enough, I haven't seen enough.

Obviously, it wasn't supported by the Peer Review last time to really get into it. But I like the idea. I hope that we'll continue to move in that direction, and then have the opportunity to review, evaluate and understand the results, so that we can make decisions down the road.

CHAIR BATSAVAGE: John Clark.

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MR. JOHN CLARK: Thank you for the update, Katie. I had a question. The graph you shared, I've been one of the people that brought up the reference points, especially for the SSB, that the target has seemed very high, and especially when you look at the SSB during the 2000s, when we were at historically high population of striped bass.

The graph you showed there, you said it was exceeding the target during the entire 2000s, right, during the aughts. Whereas, the one on the website shows it just barely, I mean it passes the target maybe four years out of the aughts, and the previous assessment. I remember it may have surpassed the target, so maybe just two years, and yet the F we're working with is based on the target, correct? Like we're trying to achieve that.

DR. DREW: Right, the size specifically says near or above the SSB target, so it included basically the confidence intervals included to the target for these years. It was similar to the target, and it's true, it only exceeded the target for a few years out of there, but it was close to there.

MR. CLARK: Right, and that's with the most recent assessment. But in previous assessments, I remember the one previous to this. I think it only surpassed the target once or twice during that time. Once again, I'm just kind of curious, because this makes it look like setting F to the target is not setting a really high reference point for SSB. Whereas, I think overall the target is a very high SSB, because when I see that and I recall what the striped bass population was in Delaware Bay during the aughts, it was really huge compared to where it is now.

DR. DREW: Right, and I think, so the point of this slide was, you know we've had questions of can you reach the target, and the answer is yes. We can and we have in the past. However, where we are now in terms of recruit. During that time, we were also overfishing, basically that entire time.

The fishery seemed great, in terms of a ton of fish out there, we had a ton of catch et cetera. But it was also supported by a lot of these really strong year classes that were coming in and sort of replacing that essentially overfished, overfishing levels. Again, it's biologically attainable, yes. Is it attainable from a management/stakeholder perspective now?

CHAIR BATSAVAGE: Emerson Hasbrouck.

MR. EMERSON HASBROUCK: Thank you, Dr. Drew for your presentation. Dr. Drew, one of the slides that you had up there, I don't remember which one it was. One of the bullets was maximizing yield versus maximizing catch rate. For that bullet are you defining yield as SSB?

DR. DREW: I think in that case we would be defining yield as the traditional sense of harvest.

MR. HASBROUCK: Okay.

DR. DREW: That can be in terms of a small number of very large heavy fish or a large number of very small fish.

MR. HASBROUCK: That's not really exclusive then of maximizing catch rates, right, because catch rates are going to include harvest.

DR. DREW: Right, do you want to maximize the number of fish out there that you can encounter, or how often you can catch them, or do you want to maximize sort of how many of them you can land? To get high catch you've got to have a higher abundance out there. But you can get high yield by applying a heavy F to a small population, or you can get that same yield by applying a very low F to a large population.

Those will have different implications, depending on are you landing all those fish and taking them back, and it takes you a while to do that, or are you going out and catching and releasing a lot, but there is a lot of them out there to be available to you. The restrictions on them are just very tight. That is kind of where you can get to the same yield, but can you

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get to the same fishery experience in those different scenarios.

MR. HASBROUCK: The second part of my question goes to using stock recruitment relationship. I think you mentioned that it was a question about using that stock recruitment relationship to calculate MSY. We kind of abandoned that stock recruitment relationship, so is that where we are right now that there is no stock recruitment relationship with striped bass?

DR. DREW: There is clearly some kind of stock recruit relationship, right. If you don't have spawning stock biomass you won't get any recruitment. You have some spawning stock biomass you are going to get some recruitment. But for striped bass I think there were two factors that we were concerned about, which is number one, the strong environmental influence on the actual recruitment that you see.

There is a lot of variability of right now we're sort of at a level of SSB that we were at in the early '90s, and yet the recruitment levels that we have seen are nowhere near that. Then the issue with that is that then the reference points are very sensitive to what you're assuming about or what you're estimating that steepness as in that relationship, and small changes in adding years of data, even though the sort of scatter plot doesn't look that different, it can affect the fit and can change the reference point from year to year if there is a lot of uncertainty or a lot of noise in that relationship.

MR. HASBROUCK: That was a good answer and we rushed right into the next part of the same question. Is there a minimum SSB that needs to be maintained, because as you just inferred, the environmental conditions kind of outweigh what is going on with SSB, in terms of recruitment. We can't control those environmental conditions, but we can try to control SSB.

But if there is no stock recruit relationship there, has anybody looked at, do we need to maintain a minimum SSB, you know to generate a good year class when we've got good environmental conditions. I mean there has to be some spawning adults in the population, but is there a minimum number?

DR. DREW: We have not looked at that. That is something we could potentially look at a little more. You know I think we do have a fairly decent history of extremely low SSB and extremely low recruitment. Can we parse that apart from the environmental effect that we're seeing? I don't know, but that is something we can look into a little more with this assessment.

CHAIR BATSAVAGE: Roy Miller.

MR. ROY W. MILLER: I wanted to just perhaps move off of that topic and focus a little bit on the question that you asked earlier with regard to spatial management, specifically the Delaware Bay stock. If you were to ask me, I kind of have mixed feelings about whether the Delaware Bay stock should be managed separately, or that it should be lumped in with the Chesapeake, or whether it should be managed as at present as part of the coastal stock.

I recall that we explored Delaware Bay separate management back in, I guess it was the late 1990s, and using tag-based estimates of that. The results were a little scary in that we decided that perhaps it wouldn't be a good idea to manage the Delaware Bay separately, based on those tag-based estimates.

I'm not sure which is the best way to go, but certainly, Katie, you hit upon the logic of the situation of the passage to and from the C & D Canal, both in terms of spawning adults moving and fry moving towards the Delaware Estuary. As I recall the net hydrological models showed that there was a tendency for the larvae to be carried into the Delaware system, more so than into the Chesapeake system from spawning in the canal.

I'm not entirely sure where we should go with this. But I think if you ask me for my opinion, I think it's logical to lump the Chesapeake and Delaware. Now, Maryland may not welcome us, I don't know. Virginia might not either, but anyway. I just thought I would lay that out there. Thank you.

CHAIR BATSAVAGE: I have a few more hands in the queue with questions, and I think from there we will probably transition over to providing some guidance to the SAS on Biological Reference Points and spatial management. Next up I have Doug Grout. Doug.

MR. DOUGLAS E. GROUT: I was going to ask you, are you ready for suggestions, because obviously there have been a couple commenters that have had valid good questions that they provided. I can put it off, but I have a couple of suggestions that I would like to bring forward. If you would rather me wait, I will be glad to until all the questions are through.

CHAIR BATSAVAGE: I think now is fine, even if there may be some general questions after that, while you have the mic, yes, please.

MR. GROUT: When Roy Miller and I were on the Technical Committee back in the '80s and '90s, and we were trying to figure out what a number of very intelligent scientists, one we were going to figure out how we were going to figure out we were covered, because we had the '82 year class, which you look at it now and it's nothing, and even an '89 year class is modest at best.

But then we got the 2023-year class and we knew we were on the right road at that point. But we were looking back at what occurred when we believed that the stock was healthy, which was back in the '60s. The thing that I remember noticing was you had strong year classes every 3 to 5 years that would show up very regularly. That is what we were kind of shooting for.

Once we saw periodic year strong year classes or dominant year classes every 3 to 5 years, it seemed like the stock would be healthy at that point. If that turned out that the Boards, and we said, well, 1995, we're here, this is a good level to shoot for. It seemed like a good level to shoot for, particularly with the kind of recruitment we were getting.

We were getting dominant year classes every 3 or 4 years. Fast forward to today, and we have had one strong year class in a decade, past decade. Clearly something has changed. I don't think we've really figured out what that is, whether it be temperature or flows, is there more predation going on than on some of the larval striped bass in the past.

But for whatever reason we are not getting nearly the year classes from the SSB we have right now that used to produce strong year classes. One of the things that I would like to suggest to the Technical Committee and SAS is to recognize this lack of productivity in developing the new threshold reference points.

I always look at targets as more of a management and threshold is something we don't want to go below, because we're afraid the stock is going to go down and eventually collapse because of that. That is one of the main things that I wanted to bring forward. I also kind of looked at this four years' worth of data that we had from the last stock assessment, and I noticed that we had some dominant year classes that were produced with SSB that was actually less than what our current target is.

For example, that very strong 1993-year class was produced with a female SSB of 73,000 metric tons. The most recent strong year class that we had or dominant year class was the 2015 one, and that was produced with an SSB of 67,000 metric tons. Maybe looking at that, it's not an exact stock recruitment relationship. But looking at what are the lower levels of SSB that have, when the conditions are right, the ability to produce a dominant year class or a strong year class, and that could be our threshold. Then the management could figure out what the target is.

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CHAIR BATSAVAGE: A couple other hands, and for those folks if you have some input as well, you can give that too. But I have Marty Gary followed up by Nichola Meserve.

MR. MARTIN GARY: Sounds like you are transitioning into comments, so I do have a lingering question, so I'll use my turn to couple a question for Katie and a comment. The question, I know you touched on it a few times in the conversation already, Katie.

But I was hoping for a very distilled version of, so how do we manage these spatial BRPs when they aren't being fished independently, when there is a coastal take of mixed stock. I guess that could apply to the Hudson, Chesapeake and Delaware, so that is the question. Then I've got a quick comment after, Mr. Chair.

DR. DREW: There are two ways to do it, one of which is through a stock-specific reference point where you evaluate the fishing mortality that that stock is experiencing throughout its life. Again, in each region, and then decide. I think that would be maybe a question for the Board is, do you want to manage to the most sensitive stock in that complex?

If one stock is experiencing overfishing or is overfished under our current management regime, would you then take action on the fisheries that are exploiting that stock, so the mixed stock fishery and potentially the producer area fishery that it is coming from? That would mean that even if part of that stock complex is not overfished or experiencing overfishing, you would still need to be restrictive in that sense.

The other option would be to have sort of a fishing mortality rate apply to the regions, and say if fishing mortality overall in this region is too high, then we will bring it down and sort of not link it to specific necessarily stocks, but more about what is happening to either the stock's complex as a unit or each individual stock within that, you know if we exceed that

reference point for the stock in that region then we would reduce fishing mortality in that region.

I think there is still the question of, what do you do if one region is exceeding the threshold, but the overall stock is not. But those are things I think we can sort out, maybe at the Board level of, in terms of thinking about it as allocating fishing effort or allocating fishing mortality instead of allocating yield.

MR. GARY: Quick comment, Mr. Chair. Thanks, Katie. You know having experienced that would put it in the camp back in the day when Louis Rugolo et al and the Harvest Control Model in Maryland, and the desire for the two-fleet paradigm was in place. Being at that meeting in Connecticut in 2014, when we tried desperately to hold onto that two-fleet system, and we acquiesced, obviously.

We changed to a coastal unit of management. I just feel like the uncertainty of what we're dealing with and listening to Doug Grout's comments, and looking at what has been happening these last few years. If you haven't paid attention to what has happened this spring, your flows in the Chesapeake are at like record levels. The Potomac is at 131-year low level. It's like no snow packs and what not. Things are so fundamentally different from the time that Doug explained or described. I'm not adverse to exploring the spatial nuances, but given the uncertainty of this stock and the complexity that this presents, I'm just very reticent to pursue it, thanks.

CHAIR BATSAVAGE: Next up is Nichola.

MS. NICHOLA MESERVE: I just wanted to reflect on some of the original rationale for the 1995 SSB as a reference point, and that having to do with the expanding age structure. That is something I would like to continue to see reference points focus on, is that wide age structure both from a stock resiliency perspective, as well as the fishery experience that results from it.

I would be surprised if MSY type reference points would lead us in that direction. One concern that I

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have with the current or with SSB reference points in general, whether it is 1995 or some other is that based on our current situation it can be masking other signs in the fishery. Right now, we have the assessment projecting that SSB may rebuild in a short number of years while abundance is below 1995 levels.

I am concerned that if we continue to just focus on SSB that it would be kind of a short-lived management response and ignoring what is coming down the road. If the SAS could give some thought to maybe a secondary reference point or somehow incorporating total abundance as well into the reference points that might be something worth consideration.

CHAIR BATSAVAGE: Jay McNamee:

DR. JASON McNAMEE: These are like ideas, direct guidance I guess I'll call it. I'll start with this first one, you know thinking about, I know we've had this discussion probably annually about MSY reference points and this like many stocks that we manage at the ASMFC the stock recruit relationship is not there.

Therefore, you cannot calculate the MSY reference point. But I am having some optimism that maybe the spatial model does a little magic and we're able to sort of understand. I'm not sure how it's going to treat recruitment. But all that being said, I think it is a big enough change that it is worth exploring, calculating an actual MSY reference point again. I think it is a worthwhile exercise.

Then I started thinking about, again my preference is always the happiest things, at least like connected within the machinery and so SPR is another version of that if we can't quite figure out the exact stock recruit relationship then we can base it around some other metrics, SPR being one of them.

I probably read a little too much into the memo, but I was thinking SPR 40% is sort of like a common one we use. It is considered to be

conservative for the most part. I was thinking maybe the hesitancy there is that it kind of slides that reference point way too far down the curb. We've seen that tautog is an example of that, where you can kind of get that reference point to be way off that peak of abundance. That concern I think is fair. Then I started looking for other examples that are kind of like striped bass that use different SPR calculations, and the answer is there are not very many. The only versions that I saw where there was SPR 45% and SPR 50% was like reef fish that are hermaphrodite, with these atypical like traits. But all that being said, I think that would be worthwhile to do like a higher SPR, something that is even more conservative than F40%, so we can kind of take a look at that and it's connected to the model.

I think that would be a good way to go. I threw a lot of numbers out there at you, so maybe pick two of them, like a standard 40% and then add a 50% and just stick with those two. In the back of my mind, I'm wondering if there was actually some technical reason why we weren't using SPR reference points already, but maybe Kate, you can comment on that.

But let me get these last couple of things out and then I'll stop talking. Okay so there is some guidance. Then the empirical reference point, I think the nice thing about it is it's tractable, it's easy to sort of talk about and we all kind of understand it. I apologize if I'm just repeating what Doug has already said. If it is, then I support what Doug said.

I was wondering if, so right now the way the reference point is set up is it's the threshold that is set at that 1995 level, and then we bump the target up by 25% from that. I wondered if maybe we want to just set the target at that 1995 level, so we've seen it, right. That could be a spot that the stock could get to.

Then just flip the threshold to be 25% less than that. Just for context, another empirical reference point and then quickly, you said a couple comments about spatial management. Just from experience with other species. There has been concern by peer

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review panels about like calling it F, I guess I'll say it that way.

I think what you said before, Katie, to Marty's comment is in reference to that. I guess the comment I was going to make on this topic is, instead of trying to make like F reference points, spatially explicit, we could use other metrics like exploitation or something like that. Then we would have to sort of define the biomass level in these areas.

But we could use the different surveys in the areas that kind of guide us on that. Something like an exploitation rate that has some spatial X+ that is spatially explicit would be worthwhile. But I just worry a little bit about kind of defining different Fs for what is a single stock of fish in the end. I'll pause it there, and Katie if you have a comment to that, like technical issue with SPR I would be interested to hear that.

DR. DREW: We did look at SPR during the last benchmark assessment, and we found for the single stock non spatial model, like the F40% was very similar to either the F target or the F threshold that we were getting, but the projected SSB was much higher than the reference points. And since at that point the Board had already been making noises about those reference points are too high, we are like there is some kind of disconnect there that we are not capturing.

We did not have that same problem with the spatial model, which was also sex specific, so there may be some kind of sex and the differences in migration and the different rates that would do with this, the population is exposed to the different fisheries and the sexual dimorphism and growth may not be captured as well by the SPR reference point and the single-stock model that we were using at the time. That is kind of why we stayed with the current empirical reference points. I think we'll definitely take a look at it again for this benchmark. We can look at those numbers for sure and see if they are performing better or

more intuitively with this either spatial model or the WAM model.

CHAIR BATSAVAGE: Craig Pugh.

MR. CRAIG PUGH: Thank you, Dr. Drew, is there a time constraint that is aligned with your spatial reference points?

DR. DREW: You mean time constraint in the sense of like over a specific set of years?

MR. PUGH: No, collection period. As you collect that spatial period, how does it focus on that time period of when you collected? As a fisherman that's our ultimate information. We base everything on that space at that time. If you are one day off, but you think because it is the fourth of May this year, it's not the same space as the fourth of May next year.

Being within that realm you can be very accurate, but I know from watching this for over 40 years, if I take that May 4 date and go back to that same spot, my data is going to be totally erratic and there is no congruency there whatsoever to give you good, solid information. That's what I'm getting at, how do we get to a better place and more accurate place?

I know that can be achieved, we've done it, we're doing that already in the fishery. That is what I am kind of asking. Is there that time constraint now, if not how do you apply that? I think your information will probably show you a lot more success instead of the line being jagged and up and down, up and down, it should level, what you do, so you are better upgrade or downgrade by collecting information that way. Thank you.

DR. DREW: Currently the model only uses like the full year, so it's just what happened in that year. The F over that whole year essentially averaged, well the model averages over the whole year. The spatial model is using sort of a two-season time step, so it's like the first half of the year which includes the spawning and the time in the producer areas.

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Then the second half of the year, which is where the adult spawners have moved back out into the ocean., and so we're sort of looking at what happened from January to June and then what happened from July to August, as two separate time steps and two blocks of data within the model for every year.

CHAIR BATSAVAGE: Any other guidance from Board members? John Clark.

MR. CLARK: Yes, just so it is on the record as guidance recommendation. I would very much like to see a spatial analysis where the Delaware is combined with the Chesapeake. I think both the genetic and especially the telemetry data that Delaware has accumulated over the years makes it very clear that this is one population now, I mean you know one super producer. As you know, we've been asking for producer status for the Delaware again for years. This would allow us to look at that in conjunction with the Chesapeake. Of course, I assume by asking for anything like this that an analysis done the previous way with just the Chesapeake separately would be done.

We can look at the results of the two different analyses. I know that is more work, sorry about that. But it would be very interesting, I think to see how that comes out, and then further guidance, I agree with Jay that looking at the 1995 reference points with the current threshold being used as a target would be good to pursue also.

CHAIR BATSAVAGE: Just one last call, Megan Ware.

MS. MEGAN WARE: Yes, it's been interesting hearing everyone. I'll kind of just comment. I think one of my concerns, and this would be a sign of a reference point that is not working is, in terms of availability or abundance. I think if we have a contraction of that we usually feel it first at the ends of the stock, i.e. in Maine.

I think the concern of Maine anglers is going to be maintaining some level of availability or abundance if there is still access to resource at the edges of the stock. I think a reference point that doesn't achieve that is not a successful reference point from my point. That is really more in the like feeling side of it. I don't have a mathematical number for what that is, Katie. I'm just trying to think of science of things that wouldn't be palatable in Maine.

DR. DREW: Yes, we can probably do something similar to the sort of analysis that I think Emerson and Doug had proposed on the recruitment side of like what level of SSB gives you, still produces strong year classes. We can look at sort of what level of SSB or abundance or age structure produces a strong availability at the end of the range versus not.

Can we finagle a reference point out of that? No, but maybe we can help evaluate some of the other reference points using that. I think back to the Delaware Bay question. I don't want to trivialize the amount of work it takes to do it both ways, so I don't actually know if we could do it both ways.

In terms of like the model structure and how we calculate the data, and also like the way the model works is it relies on understanding the movement rates in and out of that Bay area, so like the rate of fish moving out of Chesapeake Bay into the ocean and from the ocean into the Bay, during the year to parameterize that.

It's not just a matter of like letting the data out, putting it with one versus the other. There are other changes that have to be made. I don't want to like say that, oh yes, we can do it both ways and then look at it. I would like us to pick a base case, if possible, at this point, so that we have guidance and can stay focused on that model development going forward.

CHAIR BATSAVAGE: Follow up, John?

MR. CLARK: Well, it's kind of like the chicken and the egg, right? I mean we don't really know how it would work until we see it, but if we see it, we may

want the standard model that you've been using. Yes, sorry, it's kind of a conundrum here, because it would be very interesting to see the Delaware combined with the Chesapeake.

Of course, if it is for the detriment of the Chesapeake states, we certainly wouldn't want to pursue that. But the question is, is there any way we could know? Is there like a preliminary work that could be done, to at least give us some sort of idea of where this would end up?

DR. DREW: I would be concerned about that with the timeline that we are on for completion of the model. Essentially, I do not want to develop two models at the same time and two data streams at the same time, when we are trying to make the March deadline. I will say, the Delaware Bay landings are small compared to both the Chesapeake Bay and the Ocean.

I don't think it would have a significant impact on the overall results from both regions, whether we put you with Chesapeake Bay or whether we put you with the Ocean. I think they are just sort of like maybe more management or implications for this of understanding this F rate, what does it represent?

Therefore, how should you respond to it? What is the most efficient or concise way of responding to this fishing mortality rate in this region versus this other region. Whereas, right now you are allowed, you have a separate management regime, even though you are part of the Ocean, you have a separate management regime to account for the differences in availability of fish to that fishery.

That is maybe more aligned with what is happening in the Chesapeake Bay than what is happening in the Ocean. Does it make sense or like is there a management benefit to pooling these two regions together? Even if there is not a benefit, does it make people deeply uncomfortable one way or the other?

I don't think where we put Delaware is going to make or break a specific region or specific assessment. Delaware Bay. But I guess I also don't want us to put, it's not trivial to develop these models at these different sections.

MR. CLARK: I understand, thanks, Katie. I mean that is the crux of the issue though is what it would do to management. I think as you know, we've had a separate recreational slot fishery in Delaware Bay for the past 10 years. But you know, we could see some advantages if we were able to manage more like the Chesapeake does recreationally, because of course that smaller size is available pretty much year-round in Delaware.

We do have to take resident population of striped bass. For the commercial side, of course as we've been saying for years, you know '72 to '79 landings were not favorable to Delaware. We would like to see something that might fix that. But again, you know I understand it is really a difficult to say do it one way and the other way so we can see them both, but that would probably be the ideal.

MS. KERNS: John, I think she's saying we can't do it both ways, so we need the Board to tell us one way or the other.

MR. CLARK: Yes, I'm guessing at that. I would, and I'm sure that we'll be in the minority, but I would like to see it that way then, the combined.

CHAIR BATSAVAGE: Is there any opposition to that being combined?

MS. KERNS: The spatial scale would be Delaware Bay with the Chesapeake Bay. Just making it very clear to everybody.

CHAIR BATSAVAGE: Seeing no opposition, I think that is the one we will choose. Katie, is there any more input you need from the Board on this task, this agenda item?

DR. DREW: No, I think that kind of spatial section was probably just the biggest. I guess we'll work on how you implement spatial reference points, and

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that would probably be something that would need to go through the Peer Review Panel, in terms of our method of how do we allocate F.

How do we specify spatial reference points that are scientifically valid and supportive of the stock, but also meets management objectives. It sounds like there is still interest in that in developing specific regional reference points, and so we will go forward with that and work it out with the Peer Review Panel.

CHAIR BATSAVAGE: This is in the interest of time, even though we're a little ahead of schedule, it usually doesn't end that way with striped bass.

DISCUSS WORK GROUP ON FUTURE STRIPED BASS MANAGEMENT

CHAIR BATSAVAGE: We'll move on to the next item, which is the Work Group on Future Striped Bass Management. Toni will be going over that.

MS. KERNS: In October of 2025, the Board took action to guide the development of a work group, after recognizing that the existing fishery management plan would need updating to address some long-term projection challenges, based on the continued low recruitment success for striped bass.

Declining recruitment in the Chesapeake Bay as well as the Hudson is the central concern driving this effort, in terms of what we want future management to look like in this fishery. The Work Group has been tasked with developing a white paper, to serve as the foundation for this future of striped bass management.

The Board has provided six core tasks for the Work Group. Several of these tasks are assessment related and a couple are not. A quick reminder, biological reference points and considering recruitment sensitive model-based approaches. Evaluating hatchery stocking as a

research and management tool with cost analysis.

Exploring whether other river systems beyond the Chesapeake Bay can contribute to the coastal stock in a significant way. Assessing drivers of recruitment success and failure across the Chesapeake Bay, Delaware and Hudson. Examining the reproductive contribution of large versus small female fish, and size-based management implications, and then developing methods to address the discard mortality in catch and release fisheries. The Board motion indicated participation by all sectors, scientists and managers, but it did not provide specifics of exactly how to put together that Work Group composition.

We had several different ideas that came about at the February meeting, and the Board acknowledged the challenge of keeping this Work Group at a manageable size by still having adequate representation from each sector and region, and noting the variety of viewpoints that come from those, and an adequate size thinking of at maximum 15 members, somewhere between 12 and 15.

There were suggestions for expanding the Work Group beyond the traditional sort of Board Work Group process where you just have Board members and then could pull some expertise from outside, but those individuals would just come in for specific meetings, and still the core group would be Board members.

We developed some options in the memo that was provided in meeting materials of how to expand that Work Group. Then in addition, some Board members suggested that we pull together a traditional core Work Group and then that input from Sub Groups on some of the specific tasks, and you can break up a task into different sections.

Then there was also a suggestion to start the Work Group process for some of the tasks and delay for some of the other ones until the assessment has been completed. In terms of options for the Work Group composition, and these are just some ideas, it doesn't represent all of the ideas that were put forward, as I said before just the core workgroup of

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a Board Work Group, it only has Board members on that process.

A second option is to have sort of a mixture of work group, which would be Board members, Advisory Panel members, maybe up to 3, one per region and a couple of Technical Committee representatives. Then the last option was looking at either version of Option 1 or 2, but pulling in members of the public who are not a part of our committee process for this.

Then some of the questions that we need to think through today and provide guidance on is, will the Work Group seats be allocated by category to ensure diversity of the sector and the regional representation. Will they be structured nomination process for each of the state nominees to set a number of candidates, and how will the final participants be selected amongst the nominees.

Is it something that staff would work with the Chair on or is it something that the Board wants to vote on in the end. Then which option of composition that was in the previous slide you would want to do. Then thinking about how stakeholder engagement occurs with these work groups. If the Board did establish this core group and then have subgroups that are task specific.

We could bring in technical experts for some of those tasks, like thinking through the hatchery stocking task, you could bring in individuals that are doing more work on hatcheries that are outside of our normal Technical Committee or Advisory Panel process. There was an idea at the last meeting to bring forward facilitated workshops. These would be in depth sessions that focused on individual topics. This would require dedicated funding since it would require a facilitator, and there was a suggestion at the last meeting that they be regionally based. That would indicate more than one facilitated workshop.

Another way to bring in stakeholder engagement would be to do public surveys or webinars.

The surveys and webinars could be topic specific as well, or we could just do one and they could be either sent out the same to everybody or adjust the surveys or webinars slightly for regional based differences. It is possible that if we were to take some of these issues out and we were doing public hearings or webinars, that it could be duplicative with scoping if some of these issues came forward, so there is that consideration.

Then we also could just have dedicated public input time during each of the workgroup sessions or subgroup sessions. We generally do that when we can. Sometimes with work groups the time gets short pretty easily, and sometimes we do run out of time. But if it is something that the Board wants to dedicate every time then we could more structurally build that into the agendas for those meetings.

In terms of timelines and the specific tasks, as Katie mentioned before, the stock assessment Peer Review is scheduled for March. We hope that that Peer Review will get presented at the May meeting, but it is also based on the timeline of when we get the assessment report back that it might not be until the August meeting.

Several of the Work Group tasks are very much related to outcomes of the assessment, and it is staff's recommendation that those tasks not be addressed until the completion of the assessment. We do think that the non-assessment tasks that release mortality and the hatchery stock being tasked could be addressed sooner.

I think hatchery could be addressed at any point in time, and staff suggests that we wait until the completion of Massachusetts's project on release mortality is completed, which I think will be later this year, maybe sometime in the summer or early fall. For today we are seeking some prioritization of these task lists, so we can have clear deadlines and milestones for how we move forward.

PROVIDE GUIDANCE ON WORK GROUP COMPOSITION, TASK DETAILS, AND TIMELINE

Just sort of as a summary of what we're trying to do today is get direction on the Work Group composition. Do you want a core group, and then have subgroups, or how do you want that core group to look? Is it Option 1, 2 or 3 or some other way? Then how does that nomination process work and selection process?

Are there going to be specific seats to each different sector types or not? What is the best way to get in stakeholder engagement and then to just prioritize or get a timeline for the tasks. Is the Board in agreement with staff on waiting for the assessment tasks and starting these other two earlier, or do you just want to wait until everything is done and go forward? It's that kind of choice.

CHAIR BATSAVAGE: I'll look to see if there are any questions before we kind of jump into feedback on these three tasks. When we get to that point maybe try to take them one at a time. But I'll first look for questions. See any questions? No, okay. I guess we'll try this, and if we have to skip around, so be it. We're looking for Board input on kind of the task prioritization and the timeline. Toni pointed out there are a couple items that could be addressed sooner rather than later, because they are not dependent on the stock assessment results.

We have a general idea when the assessment will be presented to the Board. The question for the Board is, when generally would you like the Work Group to get started? I'll look for input from any Board members. I have Shanna Madsen.

MS. MADSEN: I am going to, I know you said like maybe let's take this one at a time. I'm kind of thinking about this whole thing very holistically, and I want to give a big shout out to my other New England states for listening to my

ramblings and trying to collect my ideas, and kind of move us forward here.

Today as we kind of talked through the MSE for lobster, I think that kind of helped maybe clarify maybe a path forward here, because as I was reading this document and looking at the timelines, it seemed like it is getting very confusing as to how the assessment and some of these things were going to be done concurrently.

Essentially my suggestion is that we put together like we are doing for lobster a Steering Committee, and that committee should be small. That Steering Committee would then help us to decide what we would like to prioritize, as far as some of these assessment questions are concerned.

Obviously, I agree with the statement that everything that we have in here that is an assessment question should not be answered until after the assessment. But then having the release mortality, maybe a workgroup or a hatchery stocking workgroup. I think a Steering Committee could help us make decisions about these kinds of subgroups that might be useful.

On a whole I would like to see after the assessment, and this kind of ties into my questions and comments to Katie and Toni before. I would like to see us have essentially a Management Objectives Workshop for striped bass. For me, I'm kind of listening. I've been listening to folks around the table for a long time, and it seems like there are a lot of competing objectives here. We need to understand the balance between those and what those tradeoffs might be.

If we move through the assessment process like Katie is suggesting, we have the tools a.k.a. the models that kind of tell us what to do. Then from there we're developing BRPs based off of hopefully what comes out of a Management Objectives Workshop with facilitated workshops that kind of go through, same thing that we did for menhaden, same thing that we did for horseshoe crab. But we would not do that until 2027, when we've gathered all of the data from the assessment.

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We have everything peer reviewed and we can kind of start moving forward from there. But in the meantime, I think that a Steering Committee could help us kind of further define who could be on some of these littler workgroups that work could get done on right now, meaning again the hatchery stocking and the release mortality. I think that that would be kind of a clear path forward, and maybe these timelines kind of converge a little bit better than they did before. That is my thought process.

MS. KERNS: Follow up question. How would you compose that Steering Committee? What is your idea for membership and how many?

MS. MADSEN: For me a Steering Committee, super small. I would say, I don't know 6 Board members. I wouldn't go any further beyond that, because I feel as though, well, maybe we could have a TC Chair or SAS Chair. But a Steering Committee is really just helping to determine the steps in the process, and then maybe help to further define who might be a part of each one of these processes as they develop.

I would kind of keep that one tight. Then when we're starting to think about this management strategy evaluation, that is where we're going to want to make sure that we're getting a wide swath of stakeholders, management, scientists, et cetera, so that we are kind of getting all of those management objectives out at once.

CHAIR BATSAVAGE: Next up is Doug Grout.

MR. GROUT: I was originally just going to talk about task prioritization, start with that, then I'll give you my thoughts on the Working Group composition. I agree, as far as biological reference points instead of recruitment sensitive model-based approach, I agree that some stock assessments to work on and provide to us, that is something that we can put off until after the assessment to have.

Formerly review hatchery stocking. Yes, you could come up with a group that would look into that. But as I remember back when we were stocking heavily back in the '80s and '90s based on the tag returns. The stocked fish amounted to about 5% of the total biomass, or at least the total catch. I forget whether it was catch or total biomass.

Given the amount that had been put into how much stocking was going on back then, I'm not sure this is going to be something we might want to take up as a management document. But it might be good just to review the studies that were done, to find out, just to confirm these things. That to me could be a very simple thing that could be worked on almost immediately.

Evaluate potential for other river systems to contribute to the coastal stock. Outside of these three areas that are listed on here, Chesapeake Bay, Delaware Bay and Hudson River. The only other ones we were aware of in the past has been the Kennebec, and when was the last time, have you had any recruitment in the Kennebec, do you know? Below the average. Maybe something has happened since then. Is there any in the Merrimac?

I'm not sure we're going to get much out of that. We could address it but not much meat on the bone. As far as drivers of recruitment, a success or failure. Again, that is a stock assessment task so that will be after the stock assessment and exploring reproductive contributions to large and small female fish. It says in here that the TC and SAS could provide input after the assessment. That again, those are the three long term, and then of course the other thing we could be addressing in the near future could be the discard mortality and catch release in the fishery once the Mass DMF study is completed. The three that I think we could work on right now is discard mortality, potentially other rivers contributing to the stock in coastal systems, if we still think that is necessary, and then the review of the stocking data.

All the other things will be afterwards. Then my suggestion is for the work group composition. I believe having a combination of Board, AP, and

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Technical Committee and staff on that working committee that working group, with the ability of that group to have public comment at some of these meetings, at the appropriate meetings.

If they find that something really needs to be dug into a little bit more, at that point see if the Steering Committee or the Working Group could have the ability to appoint small workgroups to work on it. But don't start off that we're going to have work groups working on this. Let's make sure we have the need for additional workgroups on it.

CHAIR BATSAVAGE: Yes, thanks, Doug. Toni has some follow ups on some of the comments so far.

MS. KERNS: I'll start with Doug's since that is fresh in my mind. For evaluating the potential for other river systems to contribute to the stock. One of things that I'm remembering because of my handy notes, is that the benchmark is going to include a review of recent genetic studies on spawning originations of striped bass so that could inform that. That won't be finished until the assessment, so that would make that harder to start now.

MR. GROUT: Yes, I agree with you. If that is part of the assessment then clearly that would have to wait until after the assessment.

DR. DREW: Let me read that.

MS. KERNS: I'll let Katie read that and we can come back to consider.

DR. DREW: I think it's not necessarily something we're doing specifically for the assessment, but there is work ongoing, genetic work. We're getting sort of a preprint of that to include in the assessment of evaluating the contributions of different genetic stocks, including the Kennebec/Merrimac and the Canadian stocks to catches in, I think it was about 2015 to 2016.

I don't think we have anything more recent. We do have obviously the recruitment indices from Maine that we could look into and compare that. I think it will be maybe we will just have some fresher information that won't be immediately available to the Work Group, but should be in publication soon. It's not necessarily specifically something that the assessment will do ourselves.

MR. GROUT: Okay, but it still would probably have to wait until after the assessment, because you're busy working on the assessment. Is that what you're saying?

DR. DREW: We're busy working on the assessment, and the team that is working on the specific paper. If that paper comes out before the assessment, we can share it with you guys, as well as, I think presumably, we could share the Maine Juvenile Index and see how it compares to other trends with you guys, if you wanted to look into that before the assessment.

MR. GROUT: If it's available, we can do it, but if not, again I think these are going to be minor things. Other questions?

MS. KERNS: Well, to you, Doug. Then I'm going to engage Bob for a second, and make sure he's listening to me. Back to Shanna. With a Management Objective Workshop that will require resources. We also have, it seems like we're moving down a pathway for management strategy evaluation for lobster, which also requires resources.

Two of which are resources of bundles of money that we typically do not just have laying around in the budget. I am just trying to make sure that if this is the path that the Board is going down that we can navigate that type of funding.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Yes, I think for both of these that 2027 would be the earliest that we can pull these off, and we haven't set our 2027 budget. But I think a Management Objectives Workshop for striped bass is much less expensive, I

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think, than a full MSE. If we go down the full MSE pathway that is a pretty heavy lift financially.

I think if this Board wants to go down the path of a workshop for management objectives, we can most likely, I don't want to over promise, but most likely find some funds for that in 2027. As with all budget issues, all the competing different budget things that have come across the Commission as we map out 2027 activities of the Commission, we'll have to decide what are the priorities.

CHAIR BATSAVAGE: Follow up, Shanna?

MS. MADSEN: Yes, I just wanted to clarify. My intention definitely was just a Management Objectives Workshop similar to what we did the EMO Workshop for menhaden, what we just did for horseshoe crab, not full MSE. I just wanted to, I guess, make clear with my comment that I definitely think that a work group in order to discuss management objectives is absolutely necessary for striped bass.

Again, hearing around the table a bunch of competing objectives et cetera. This is our flagship species, I really think that we should give it the time that it needs to have a good understanding, specifically of what our management objectives are now currently. That would happen again in 2027, after we've collected all of the data from the stock assessment, and kind of cleared out.

CHAIR BATSAVAGE: Any other input from the Board on any of these items up here, as far as direction for this Work Group? Marty.

MR. MARTIN GARY: Not really anything to add to what has already been stated, but I just wanted to express my gratitude to Toni, Katie, all the staff at ASMFC and you as a Board Chair. In that moment back in October, we were faced with a somewhat cathartic moment, choice between a 12% reduction and status quo. Our delegation just didn't feel like either of those

choices were the right one. This is really difficult to get your arms around, as we've found out, and certainly wasn't our intention to have this keyed up in such complexity.

But I was confident that you know the principal reason for the Work Group is to move the needle of conversation to what do we want this fishery to look like when we hit 2034, 5, 6; when this poor recruitment manifests itself at its apex. It's going to be a really difficult time and I can tell you from living through the '80s like a bunch of others this table had been through.

Don't recommend previous methodology of handling that, even though people celebrated. I think the engagement with this resource; it is so special and important to people. It's really something we need to strive for and provide a lot of thought to. I think the Board is doing it today. I just really wanted to express my thanks to everybody.

The collective wisdom around this table and our community is extraordinary. I do have one thought for you all to think about, and I shared it with Chris and a couple others is. I think whoever is going to Chair this endeavor, it's really important to pick the right person, and fortunately we're blessed with a lot of experienced and knowledgeable people. I don't know whether it should be a sitting Board member. We have some other folks.

That is something we can settle at another time. But you know I just really appreciate the thought, because I feel comfortable now going from that moment in October when it was so uncertain to now. I feel like we're really moving this conversation in a way we can address what we're having with our assessment next year. I am thankful and I appreciate it.

CHAIR BATSAVAGE: Mike next. So far, we've heard some thoughts on kind of what we talked about in the past is the general makeup of the Work Group, a subset of Board members, AP members, TC, SAS representatives and possibly what Marty suggested for a Chair.

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Looking to see if people generally like that concept or have some other ideas as far as the makeup of this. Also heard the idea of providing the public opportunities for giving their input during those meetings. There are some other options that were in the presentation. Just kind of look and see if we can get some concurrence on that, and with that I have Mike Luisi.

MR. LUISI: I just wanted to for the record state to you specifically, Chris, because you and I had a conversation a few days ago about this. At the time I was thinking that a subset of Advisory Panel members was going to be a really challenging thing to try to figure out who that subset of members was going to be.

But I also, in the discussion with you, I had thought that maybe this working group would evolve maybe to having more management type conversations about what are we going to do with the charterboat fisheries in the future or how are we going to better manage the commercial fisheries in the future? If that were the intent, I would say that we would be probably better off sticking with Work Group members that are Board members and then having interactions with the different groups like the AP, like the Technical Committee. But I wanted to clarify for the record, Chris and for you. That given the list of things that this working group is planning to have conversations about to start. I would say that I think it was Option 2 up there, which was a combination of all of the different, the Technical, the AP and the Board membership would be appropriate. I just wanted to clear that up for you.

CHAIR BATSAVAGE: Other hands. Joe Cimino then John Clark.

MR. JOE CIMINO: I think Action 2 was the combination, Mike, is that what you were saying? I think yes, I think I can support that. I think one thing I would like to see is to ensure that the AP membership is kind of updated or refreshed for some states I think we need to

look at that. There was a slide that had the numbers, I think on that.

It seemed very TC light. Those numbers were suggesting that there would only be like 2 TC members, but a total of like 12. I think it would be important to have some good TC representation is all I was saying there, Chris. I think one other thing I may have seen in a slide was a suggestion of a survey.

I think that is actually a really great way to get some public comment. You know I hate to see us going out to the public, having these huge meetings where people get 2 to 3 minutes to put all their thoughts together on this journey that Marty started us all on.

Some of that philosophical stuff, as far as what Marty was saying, like where do you want to see this go, I think can be done for the survey. It gives people some time to really consider it and put in what they are thinking. I would also encourage that maybe that is something that could be even developed through the working group.

CHAIR BATSAVAGE: John Clark.

MR. CLARK: I was fortunate enough to attend all the Menhaden Work Group meetings for the Chesapeake Plan and then also went through the Horseshoe Crab Stakeholder Process. I think keeping it simple helps. I would prefer to see the core working group of Board members and then have public comment at the end of every session.

I thought that helped streamline things. I think when these things get kind of big and unwieldy and they just keep going on and on and on, that you know people just get kind of frustrated with the whole process and that they would also, what I've seen in both cases too is that minds don't really get changed by these processes of the public.

Just a good way to almost the public relations standpoint of this is also very important, just to let them know that we are listening. I think that doing something that is streamlined and fast would be the

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best way to make people realize that we are taking this seriously. The Menhaden Work Group was Chairably by Marty Gary, so there is one more suggestion that he would be a great choice for that.

CHAIR BATSAVAGE: Thanks, John, I was wondering when that was going to come up. I'm going to turn to Toni. We have a few similar but different options going on here, as far as the composition and timing. I just want to check with Toni, she's feverishly taking notes, I'm making sure I'm not missing hands. Just kind of see where we are here and what we need to do to give staff good guidance they need.

MS. KERNS: I've been trying to put up on the slide so that everybody sees in front of them the different ideas that are being brought forward. At this point now we have three separate ideas. The first was the one brought forward by Shanna, which I am going to simplify and say, to have a Steering Committee.

That Steering Committee makes a decision of when to prioritize the task, and it also includes a Management Objectives Workshop for 2027 after the assessment comes out, and that Steering Committee would be 6 Board members and maybe a TC or SAS type person, tight and small.

The second option, which I heard came from Marty, is to utilize a version of Option 2, which was spelled out in the document, which is I think probably somewhere up to 15 Board members with 3 AP members and 2 Technical Committee members. There was a possibility of adding maybe another Technical Committee member from Joe.

It is possible that that could utilize some subgroups to address some of the tasks if necessary, utilizing potentially surveys to get broader input. I don't know if Marty said that, but I think someone else did, so I don't know if that comes into play there or not. Then the

third option that I heard was just now from John Clark, and that was going with the simple method of just using Option 1, which is our traditional workgroup path.

This is a core work group of Board members and we do public comment, I think for both Option 2 and 1 would utilize a structured public comment at the end of each meeting, but making sure that that time is always there and not if we have time. I think we need some, sort of narrow this down.

CHAIR BATSAVAGE: Pretty easy. Yes, thoughts on those three options. Shanna.

MS. MADSEN: I think the first option, and Marty's option are basically the same, at least the way that I was kind of suggesting it. The Steering Committee only exists so that they can kind of put together these subgroups that can address these tasks. Mainly the hatchery and release mortality, so the Steering Committee only exists to kind of put those groups together.

Then Marty saying like the larger Work Group, you know we can get some surveys, get some broader stakeholder input. I think that is totally perfect for a Management Objectives Workshop also. We could do that preliminarily, get some stakeholder input. But I also want to make sure that stakeholders are part of that Management Objective Workshop more broadly.

I love the idea of using surveys to kind of get more public input, but utilizing obviously this workgroup method, have a more refined group of stakeholders that can give us some input on management objectives.

CHAIR BATSAVAGE: Other thoughts. Dennis Abbott.

MR. DENNIS ABBOTT: Yes, regarding surveys. My thought is that you would have to compose a survey. How many people are going to be involved in the survey? When are you going to do the survey? I think at the point we're at I think we shouldn't be looking at surveys very hard as we go

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along with what Shanna recommended. I'm just not comfortable getting into surveys right at this point in time.

CHAIR BATSAVAGE: Yes, Toni, to that point.

MS. KERNS: I do think that we have some CESS members that are happy to help out with some of our striped bass work, and there is some expertise in developing surveys. I think if there are some specific concepts that the Board is trying to gather from your broader public, a survey can get you there outside of our traditional process.

Where you may not see such a wide variety of individuals showing up to public hearings, but you may get more well-rounded input that you may not get otherwise. That we can utilize some experts in developing those surveys if we need to. They have reached out to say that they are willing to help out. It doesn't have to be for everything, but maybe a couple things.

CHAIR BATSAVAGE: Mike.

MR. LUISI: If it helps, sitting here thinking about it more. I like the idea that is put before us here at the top of this page we're all looking at. I would be inclined to withdraw the Option 2 if it just helps simplify things. I think as it has been discussed the Steering Committee idea.

Tackling some issues one at a time until we get to the point where we have a new assessment and we really need to put our where the rubber hits the road and we get down into management and other things like that. If it helps with this, Toni, if it helps just eliminate Option 2 as I suggested, you can just get rid of that idea.

CHAIR BATSAVAGE: Okay, I look for other input on that. Nichola.

MS. NICHOLA MESERVE: The thing I was going to raise with Option 2 as it is labeled up there is the difficulty of maybe just picking 3 Advisory

Panel members. Unless they let the AP members choose those 3 themselves then I think we might struggle on that. Thinking about it more as like a Steering Committee that is going to define which process we're using for each task and the timeline for those.

I think a little bit smaller is probably better. I think you want to make sure that you do have some Technical Committee or SAS input to that discussion of a timeline to make sure we're getting it right still. Dr. Drew I'm sure can help keep us on the right track, I think the TC and SAS are I know a part of it as well. Just in terms of the priority of things here.

I do think that there are biological reference points and the management objectives are kind of the number one priority on this list for me, and making sure that that is a process that has good public input is important. One thing that is nice about surveys is that you can get a lot broader input than you can from just a workshop, Management Objectives Workshop. We would be inviting a smaller number of people to that, so maybe that is just a discussion that the Steering Group can continue to have about what is the best approach to get at public input at the management objectives to move forward. If it is a workshop, I am a little hesitant about a regional workshop. I think there is benefits to having the management unit in the room to view each other and how those objectives may differ by region.

CHAIR BATSAVAGE: Is there any objection to removing Option 2 from the composition of the Work Group? Seeing none; we're definitely narrowing down the composition, which is great. Any other thoughts, and Toni, I'll turn to you. Any other input we need to kind of firm up the guidance that staff needs to move this along?

MS. KERNS: We do still have John's Option 1 of a simplified work group, kind of the way we've worked on things in the past over this perception, and I apologize, John, that I don't have more words here. It's Toni at the end. We do have two paths here, so we need to decide which path we want to go down, and then once we decide which path we

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want to go down, I just need to determine how we are going to nominate and put people on either the Steering Committee or the Core Work Group.

CHAIR BATSAVAGE: Thoughts on that, John.

MR. CLARK: Just briefly. I mean I just want to keep things simple, just because we're the managers, ultimately, it's going to come to the Board to decide. I think as Board members we already hear from the public all the time. I think as I said, that Menhaden Work Group was very effective by having a public comment period at the end of each meeting.

But we're not doing a focus group for a new protein bar here, this is management that everybody knows what they think about striped bass already. The point is to just kind of focus where we're going forward with this. That is why once again, I think keeping it simple is the way to go.

CHAIR BATSAVAGE: I saw Doug's hand. Doug.

MR. GROUT: My suggestion, because both of these deal with essentially 6 Board members or just a core working group, that maybe we look at what was the selected, the recommendation in Item 2, Option 2, for the 6 Board members, and that is the Board Chair plus one from Chesapeake Bay, state, their jurisdiction, Delaware Bay jurisdiction, Hudson River jurisdiction, Southern New England and Northern New England. That would make up the 6 Core Working Group or Steering Committee, whatever is the pleasure of this Board.

CHAIR BATSAVAGE: I think that is what we need to hone in on is I guess the Steering Committee or the Core Work Group. I'm looking at Toni, just to kind of make sure I'm getting this right, as far as what the Board needs to kind of fix so we don't have competing things. There are a lot of similarities but just

make sure we're not having competing ideas here.

MS. KERNS: We definitely have two competing ideas, so if we can't agree then we can just get a motion on the table.

CHAIR BATSAVAGE: Shanna.

MS. MADSEN: I just want to say what Doug is proposing is perfect for either Option 1 just Core Work Group or Steering Committee. The only thing I'm also thinking about when I'm thinking about my Steering Committee idea is I think I would like one member.

Probably the AP Chair, because again, that Steering Committee is going to help dictate who is going to be on the larger Management Objectives Workshops. I would like to see that person be a part of this process as we kind of build it out as well. Just one more in there, sorry. I know I was keeping it tight, but just that extra.

CHAIR BATSAVAGE: Toni, I guess we're kind of at a point where we need to make a decision here.

MS. KERNS: Are you going to need a motion or someone needs to.

CHAIR BATSAVAGE: Shanna.

MS. MADSEN: I'm essentially going to read what I've got up there. Move to use a Steering Committee to task out to several groups the various issues that we have within this document, followed up by the stock assessment, followed up by a Management Objectives Workshop for striped bass in 2027. The Steering Committee would help to dictate that process the whole time. Does that make sense?

MS. KERNS: That makes sense, Shanna, but can you just say Move to use the Steering Committee process and we'll make sure that all of those other pieces are included.

MS. MADSEN: Sounds great. **Move to use a Steering Committee process.**

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CHAIR BATSAVAGE: Concise motion by Shana Madsen, looking for a second, Dave Sikorski. Further discussion on the motion. Shanna, I guess you gave some context, do you have any other thoughts on that?

MS. MADSEN: Just really quick. I guess I would say the reason why I'm looking for this a bit more complicated process is because I think it's a really complicated topic. When I went through the Management Objectives Workshop for menhaden, I think that the tradeoffs between all of the various management objectives need to be on the table and discussed in that room, in order to be able to understand specifically what we are and aren't giving up here.

I just think with our flagship species, again, it just really deserves the same time that we've given other species. I guess I would say ERPs are the result of that EMO Workshop. I think we should attempt this for striped bass as well.

CHAIR BATSAVAGE: As the seconder, Dave, no comment? Okay, further discussion on the motion? Yes, Rob LaFrance.

MR. ROB LaFRANCE: Having worked on a couple of these working groups, I really like folks' ideas of regional appointments. I don't know whether we just have to leave it at that, but I just want to go on record as saying I think that was a good idea that we should consider. I don't know if it needs to be part of the motion, I wanted to make that comment.

CHAIR BATSAVAGE: Yes, that is great even if it doesn't get part of the motion. Any other thoughts on this before I call the question? I was going to see if there was any objection, but I'll just quickly check. Does anybody need time to caucus first? Question, David Borden.

MR. DAVID V.D. BORDEN: I'll make this brief. If we're going to do a Steering Committee, shouldn't we have some discussion about how we're going to pick those individuals? I don't

think the staff wants to be put in the role of picking the individuals. I have a suggestion if Toni doesn't have a suggestion.

CHAIR BATSAVAGE: Yes, I mean we could talk about that quickly now or vote on this motion and touch on that detail, because yes, that is an important one. Are you okay on calling the question then discussing that?

MR. BORDEN: Yes, we can talk about it next.

CHAIR BATSAVAGE: Is there any objection to the motion up on the board? Seeing none, got a question, Roy Miller.

MR. MILLER: Excuse me, Mr. Chair. I just want to make sure I understand. We've discussed this back and forth and I no longer am certain I know who would be on the Steering Committee. Was it the suggestion of one from each producer area and one from New England, that suggestion? I think it was Doug that brought it up. Is that what we're following?

MS. KERNS: The suggestion was, and I haven't heard opposition yet, but I was going to just confirm that is that we go with that. That would be six Board members, so the Chair plus a person from the Chesapeake, the Delaware, the Hudson, Southern New England and Northern New England. There would be a TC/SAS representative that could be the Chair or could be somebody else, and the AP Chair. Those would be the Steering Committee.

MR. MILLER: Thank you.

CHAIR BATSAVAGE: Shanna.

MS. MADSEN: Just wondering if we should put that in the motion at this point. It seems like people are kind of confused.

MS. KERNS: We'll do that, it just will take us time. The Board can nod if you need it up on the motion, or if it is reflected in the record and everybody understands then we do not need to write it up there. The Board can nod if you need it up on the

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motion, or if it's reflected in the record and everybody understands, then we do not need to write it up there.

CHAIR BATSAVAGE: Does the Board understand the makeup? Okay, so we'll keep the motion the way it is. Just to double check, **is there any objection to the motion? Okay, seeing none;** back to David Borden's question about who is on the hook to pick the Steering Committee. David, I don't know if you had anything else to add.

MR. BORDEN: The list that Toni just read is where in the document, Toni?

MS. KERNS: It is listed under Number 2 of the Work Group composition; it's on Page 2. It is Board Chair plus one from each spawning region, Chesapeake Bay, Delaware Bay, Hudson River, Southern New England and Northern New England. In the past when we have put together work groups, we have solicited nominations from the Board.

We could do that by region, I guess, or anybody could nominate someone for these areas, and then we would have the Chair finalize that work group, that is what we have done in the past. We can do that for this, or if there is some other way that the Board would like to establish that Steering Committee, let us know.

CHAIR BATSAVAGE: Follow up, David.

MR. BORDEN: Personally, I would prefer it if it was equal numbers from the producer states and equal numbers from the coastal states. The way that language is written, Toni, I'm not looking at, is it 4 and 2? Is that what the composition would be?

MS. KERNS: It's 1 person from the Chesapeake, 1 person from the Delaware, 1 person from New York/Hudson, 1 person from Southern New England and 1 person from Northern New England.

MR. BORDEN: Okay, so we end up with 3 producer states and 2 coastal states.

MS. KERNS: Plus, the Board Chair, who is a coastal state.

MR. BORDEN: I guess my only point would be, I would prefer if it was 3 and 3. It would be fine with me if the producer states selected their 3 candidates and the coastal states caucused and selected their 3 candidates.

MS. KERNS: That would be 7 Board members.

CHAIR BATSAVAGE: Dave Sikorski.

MR. DAVID SIKORSKI: I can understand the concern, but I think the whole point of the Steering Committee is to get us to the point where we have the Work Group that can be more broadly representative of everybody's interest. Also, coming from a producer area, we also have a coast, so we have coastal fisheries, bait fishers et cetera. For the Steering Committee, I would prefer we keep it simple, and what Toni just listed off is sufficient for me.

CHAIR BATSAVAGE: Okay, any other thoughts on kind of the original idea of the Steering Committee composition, is everyone okay with that? If there is kind of strong ideas as far as changing that composition, probably should do it through a motion. If not, we'll go with what we were originally discussing. Nichola.

MS. MESERVE: Just a question as to whether the Steering Committee meetings would be open to other Board members to listen in and chime in if they feel like something is missing out.

MS. KERNS: I think yes, generally speaking every Commission meeting is open to the public, unless we're discussing confidential data.

CHAIR BATSAVAGE: Joe Grist.

MR. GRIST: Either way we're going here, we are going to take a look at the APs, right, at the AP

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locals. Long day for all of us, but we're going to look at that, because I think Joe Cimino said earlier, we really need to be going to dive in on the AP and getting it repopulated correctly.

MS. KERNS: The Steering Committee would only have the AP Chair, and we can dive into evaluating what the AP composition should be, as we move along between now and when we get to the Management Objectives Workshop.

CHAIR BATSAVAGE: Okay, just looking around the table. Anything else on this. Toni, is there anything else you need from the Board on this task?

MS. KERNS: No.

CHAIR BATSAVAGE: Thanks, I appreciate that. If I didn't note the **motion passed with no objection**. It might have got lost in the shuffle, but yes, that is what we're going with. Easy to lose track, sorry about that.

UPDATE ON ADDENDUM III IMPLEMENTATION FOR MARYLAND SEASON

CHAIR BATSAVAGE: Well, next on the agenda is an Update on Addendum III implementation for the Maryland Season. I'll look to, or maybe I'll see who wants to cover that.

MS. KERNS: I might be able to get it done real fast for you, if that is helpful, Mike. There are two things I need to report on here. The first was that Maryland did in fact implement the season that was in their implementation plan and they are moving forward with that. We put this on the agenda, just in case there was a change and there is not, so moving forward.

I also wanted to note that Potomac River Fisheries Commission in evaluating their total length definition, actually already had that definition within their current regulations, so they are no longer putting in place what they had proposed in their implementation plan, because what was in their definition already

was sufficient. Letting the Board know about that, that wasn't in the agenda.

CHAIR BATSAVAGE: Any questions on that? Moving along.

DISCUSS TIMELINE AND PROCESS TO PROVIDE FEEDBACK ON THE NOAA FISHERIES STRIPED BASS AQUACULTURE

CHAIR BATSAVAGE: Next item is Discuss a Timeline and Process to Provide Feedback on NOAA Fisheries Striped Bass Aquaculture Plan. We've got an update, a presentation on this at the last meeting, and you'll probably notice, those in the room, that the tables are a little more populated than most striped bass meetings. We have Board members from South Carolina and Florida not on the Striped Bass Board. However, some of the options offered in that plan could be possibly down there into the coast. Just welcoming them as they show up early, and I probably won't be seeing them again at another Striped Bass Board meeting, but you're always welcome if you want to. With that, Toni, I'll turn it over to you.

MS. KERNS: I am not going to re go over the entire Technical Memo that was presented at the last Board meeting. But NOAA did present their technical memo on offshore striped bass aquaculture at our last meeting. Striped bass has been prohibited from being harvested in the EEZ since 1990.

Their technical memorandum looks at advances in science, engineering, genetics, disease management, regulatory frameworks that could make the offshore for pure strain striped bass aquaculture both feasible and manageable, provided a carefully designed regulatory carve out is done.

NOAA is seeking the Board's feedback on our position regarding the memo. We did not really provide a ton of comments back to NOAA at the last Board meeting, and we don't have time on the agenda today to get all of the comments that I think

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this Board and the southern states may want to provide.

I just want to point out a couple of areas where I think that the Board may want to go back and reread the memo and focus potential comments on. These were areas that I saw that I thought that I thought you all, based on conversations that have been had in the past that you may want to talk about.

Then I'll provide a timeline for receiving those comments. In terms of economic analysis, the Board did request an economic analysis from NOAA. I'm not sure at this time they are prepared to do an economic analysis, unless they know they are going to be moving forward with some sort of plan.

But the report doesn't have any published U.S. production costs and economic analysis that they do have in there relies on cost estimates that have been extrapolated from other species like red drum, greater amberjack and salmon operations. But we don't have any actual cost study for striped bass.

There is also not market impact analysis. The report explicitly states that the impact of farmed striped bass on wild caught and import markets would require further analysis. They do acknowledge that one might need to be done. It is an omission that I think this Board has said that they do want to see.

The report talks about using sterilization technologies, in order to make sure that the populations that are in the net pens aren't breeding with the wild fish, but the report also states that the technologies have not been tested. It is something that you may want to look at and think about as you're sending your comments. If those technologies haven't been tested then what types of risk does that put on the wild stock with possible escapement?

The report looks at thermal modeling, but it only uses data from 2020 to 2023, so four years of ocean temperature data is a pretty short baseline for a long-term sighting decision, especially given our known uncertainty with climate. A spatial analysis would benefit from a longer timeframe, especially when those sighting areas are mostly off of our southern states.

The two most prime sightings that it had suggested were off of North Carolina, as well as off of Florida. Some of the disease therapy information that is being suggested, in terms of what would be put into the water has not been tested by the FDA in marine striped bass, so that might be something that the Board would be interested in looking at.

Then lastly is looking at habitat and protected species. For some of the areas that are being suggested for sighting, it is critical right whale habitat that overlaps along the Atlantic Coast, so offshore permitting processes may face a lot of scrutiny under Section 7 consultations, as well as containment risks. It does suggest using an entanglement risk framework, but to my knowledge using a 3D entanglement simulator, but to my knowledge that simulator has not actually been used before. It has not been brought forward to the TRT, so I am not aware of what that simulator would be, so just an untested product.

Those were some of the things that I saw, but there may be additional things in there that are either things that raise concerns for you, or things that you like from the report. What we are suggesting is that the Board provide very specific comments to staff by mid-June. I'll follow up with an e-mail with the report, as well as deadlines for you all to get information back to us.

We would take all of the information that you've given us and draft a letter for the Board to review, and we would invite the southern states again, if they wanted to participate during that timeframe. Anything that this Board would approve for a letter moving forward back to NOAA, would also go to the Policy Board in August for final approval, and then

we would send that letter off to NOAA Fisheries in early August. I can take questions.

CHAIR BATSAVAGE: Questions for Toni. Roy Miller.

MR. MILLER: Mr. Chair, I was just talking a little bit with John. I read the Aquaculture Proposal, and I know they have a dedicated brood stock. But remembering in the past, when I was working for a state agency, we had to decide whether to issue collecting permits to allow capture of wild caught striped bass to be used for aquaculture purposes. I just would like to express concerns with that, should a proposal of that nature come up again. It caused problems before, and I can anticipate it causing problems in the future, if it ever comes up again.

CHAIR BATSAVAGE: Any other questions or thoughts regarding this? Kind of see the timeline. Erika.

MS. ERIKA BURGESS: Thank you for the invitation to sit in on this conversation. A couple points that I did not see in the list that Toni put together that I just want to share for the Board while we're all here is, the document that was provided to us is very brief on conflicts with other ocean users. In an area off of Northeast Florida where they said there are potential sights, we've got shrimpers operating in the ocean, as well as commercial vessel traffic in shipping lanes. We would like to see that taken into consideration with sightings. The other thing that was not mentioned was the potential impact for storms. That area is very often impacted by hurricanes and we would want any infrastructure that was to go out there to be durable and able to persist past those storms.

CHAIR BATSAVAGE: Toni.

MS. KERNS: Thank you, Erika, and I'll note that Danielle did address in her presentation the conflicts with other user groups and I'm trying

to remember. She said that NOAA is well versed in that, dealing with conflict in other user groups. I have that written down, but if you have any concerns with the way conflicts with other user groups have been processed in the past, that maybe we should try to use some of those as examples. If there has been successes or failures in dealing with conflict, we can work together to help develop those comments.

CHAIR BATSAVAGE: Any other thoughts? Yes, Ben Dyar.

MR. BEN DYAR: I appreciate you all having the time for us today as well. I apologize for this question if it's already been answered or directed. But how does this fit in with like, in other regions as in the Gulf and Southern California, where NOAAs extensive work with aquaculture opportunity areas and aquaculture atlases, and deriving all this information and going through these vetting processes of where these sighting locations are. How does that differ from that process, and where does that fit in?

MS. KERNS: I can take that question back to NOAA, Ben, but I don't know, Max is turning his head, he's not sure. I'm not sure, but I can ask of that and then get back to you.

CHAIR BATSAVAGE: Any other thoughts, questions on this? Seeing none; so yes, Toni will follow up with an e-mail asking Board members for comments. You see the timeline where this will be considered, again in August. Thanks for all that.

ELECT VICE CHAIR

CHAIR BATSAVAGE: Next item is to elect a Vice-Chair, so I'll be looking for a motion. Megan.

MS. WARE: **It would be my pleasure to nominate Nichola Meserve.**

CHAIR BATSAVAGE: Second by John Clark. Any discussion on the motion, **any objection to the motion? Motion passes**, congratulations, Nichola.

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MS. MESERVE: No entertaining early retirement, Chris.

ADJOURNMENT

CHAIR BATSAVAGE: On to the last item, Other Business. Is there any other business before the Board? Seeing none; if there is no objection this Board is adjourned. Thanks, everyone.

(Whereupon the meeting adjourned at 3:33 p.m. on Monday, May 4, 2026)



Atlantic States Marine Fisheries Commission

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Sustainable and Cooperative Management of Atlantic Coastal Fisheries

DRAFT LETTER FOR BOARD REVIEW

August xx, 2026

Ms. Danielle Blacklock
Director, Office of Aquaculture
NOAA Fisheries
1315 East-West Highway
Silver Spring, MD 20910

Dear Ms. Blacklock,

This letter responds to NOAA Fisheries' request for the Atlantic States Marine Fisheries Commission's (Commission) feedback on the NOAA Fisheries draft technical memorandum, *Charting A Course for Striped Bass: Science and Regulatory Innovation for Offshore Aquaculture* (NMFS-F/OAQ-001). The Commission appreciates the opportunity to provide feedback on the memorandum and appreciates NOAA Fisheries' engagement with the Commission on this topic.

The Commission recognizes the importance of evaluating innovative approaches to seafood production and understands that striped bass is one of the more recognizable fish for seafood consumers. However, the Commission is concerned the memorandum does not adequately address several significant economic, regulatory, enforcement, biological, and ecological issues associated with potential offshore aquaculture of striped bass, as described in the following sections. There are substantial concerns regarding risks to wild striped bass populations, commercial fisheries, seafood markets, protected species, and marine ecosystems, while also creating significant regulatory and financial obligations for states. Given these risks and the information currently available, the Commission does not support moving forward with consideration of offshore striped bass aquaculture at this time.

Enforcement Concerns

Enforcement capacity in the EEZ is currently limited, and aquaculture sites would create additional enforcement responsibilities, either increasing costs or diverting resources from other enforcement priorities. Since the EEZ is currently closed to striped bass fishing, there is potential for offshore aquaculture to be used as cover for some illegal fishing. The memorandum's discussion of traceability, monitoring, compliance, and enforceability lacks sufficient detail to evaluate whether these programs would be practical or effective. For example, existing tagging requirements do not provide a mechanism to verify whether striped bass fillets sold in seafood markets originate from wild harvest or aquaculture production. Because consumers do not receive documentation at the point of sale, retained aquaculture tags and associated records could be misused to falsely market illegally harvested wild-caught striped bass, including undersized fish, as aquaculture-raised product. Research could be done to evaluate the proposed traceability measures, which currently appear limited to fish racks and fillets, and could include methods to improve fillet-level identification of farmed striped bass.

Regarding on-the-water activity, the integration of vessel monitoring systems (VMS) or remote electronic monitoring, as referenced on page 12 of the memorandum, may not be practical as a tool to prevent illegal wild harvest. Many striped bass fishermen operate smaller vessels that are not currently subject to electronic monitoring requirements. Expanding VMS to these vessels could generate data volumes that exceed the capacity of enforcement agencies to effectively review and act upon.

The memorandum does not clearly identify which agencies would be responsible for carrying out these monitoring and enforcement activities or how they would be funded. Historically, federally permitted activities often result in states and interstate commissions assuming substantial administrative, regulatory, enforcement, and financial responsibilities without corresponding federal resources. Additionally, there is a question of whether all states on the Atlantic coast have the authority to enforce and monitor striped bass aquaculture operations. The report gives enforcement and monitoring details for states in the Commission's striped bass management unit (Maine through North Carolina), but no information is available for the southern states (South Carolina through Florida), and offshore Florida was listed as favorable location for striped bass aquaculture. Many states' enforcement capabilities are already stretched very thin with limited resources. These implementation burdens must be fully evaluated before advancing any offshore striped bass aquaculture program.

Economic Concerns

The memorandum does not adequately address or consider the economic consequences of potential off shore aquaculture on the wild fishery. Increased production of aquaculture-raised striped bass has the potential to flood seafood markets, reducing the value of wild-caught striped bass—a premium product that supports commercial fishermen throughout the Atlantic coast—and directly impacting the wild-caught striped bass harvest fisheries (the mom-and-pop businesses). The report does not attempt to quantify these direct consequences to the wild fishery. Analysis is needed to evaluate the market impacts of an influx of aquaculture-reared striped bass on the wild-caught striped bass fishery, including potential effects on pricing, demand, and overall economics of the fishery.

Rather than creating new economic opportunities, offshore striped bass aquaculture may shift economic benefits from traditional fishing communities to private aquaculture operations. Greater public benefit may be realized by investing in the utilization, marketing, and consumer acceptance of wild-caught species that are harvested sustainably and currently receive limited market value.

User Conflicts

User conflicts need to be addressed in greater detail. The memorandum downplays user conflicts that offshore aquaculture for striped bass would present, especially at a time when user conflicts due to other ocean uses (e.g., offshore wind) are at the forefront. Access to traditional fishing grounds would be reduced for commercial and recreational fisheries, particularly for mobile gear users and for year-round fisheries in warmer waters that have been identified as potentially suitable aquaculture sites. These user conflicts deserve greater consideration given the important role that Regional Fishery Management Councils and the Commission play in managing fisheries that depend upon continued access to fishing grounds.

To inform this issue, more details are needed regarding what offshore farms would look like in practice, and which uses would be allowed or restricted within these shared-use areas. NOAA should clarify whether exclusion zones would be established around farm infrastructure, and if farms are expected to aggregate pelagic finfish species, whether recreational or commercial fishing would be prohibited in the surrounding area. Regarding vessels, available data on the frequency or risk of vessel collisions with offshore aquaculture infrastructure should be considered.

Project Siting

The current description provides limited detail beyond general, high-level considerations, and appears to underestimate the engineering and operational challenges associated with locating striped bass net pens in offshore environment. Based on Figure 1 in the memorandum, offshore waters from Virginia southward appear to offer the most suitable temperature conditions for year-round operations. As ocean temperatures continue to rise, however, suitable production areas are likely to shift over time. The memorandum does not adequately address how the regulatory framework would accommodate the need to relocate facilities as environmental conditions change. Additionally, the timeframe used in the temperature modelling for suitable areas of the coast only includes very recent years, but should consider a longer timeframe.

The areas identified are also highly susceptible to severe weather events, including hurricanes and winter storms. Notably, the strongest hurricanes often stay offshore, which could result in aquaculture facilities taking a direct hit. NOAA should evaluate and describe the expected resilience of offshore aquaculture operations under extreme storm conditions, including the measures that would be implemented to minimize infrastructure damage, fish escapes, and environmental impacts. This information should also specify the depths at which cage systems would need to be submerged under varying storm scenarios. Overall, the term “offshore net-pen system” should be clearly defined including description of system dimensions, design specifications, and schematics.

There is also concern that potential sites are being proposed outside of the engagement and planning for Aquaculture Opportunity Areas (AOA) as seen in other areas of the EEZ as in the Gulf and Southern California which are specific, predefined geographic zones identified by NOAA to support sustainable commercial aquaculture. AOA planning allows for rigorous scientific spatial analysis and public input, these areas are evaluated to be environmentally, socially, and economically suitable for farming finfish, shellfish, and seaweed. The potential sites indicated in this memorandum do not appear to be part of the AOA process. The memorandum had little to no information about public input/outreach regarding aquaculture sites. Stakeholder input and education are needed for stakeholder buy-in and without buy-in, there will likely be pushback against these operations.

Aquaculture Industry Specifics

Additional information is needed regarding the level of industry interest in offshore striped bass aquaculture and the basis for pursuing this initiative. It is unclear whether there is currently an interested party seeking to develop an offshore striped bass aquaculture operation, or whether the intent is to establish a regulatory framework for potential future applicants. If there are no active proposals at this time, it is important to ensure that any regulatory framework is informed by realistic operational practices and industry needs. Experience from offshore wind development has demonstrated that regulations developed without a clear understanding of eventual project designs and operational requirements may not align well with implementation.

Specific to the farm sites, the operating costs and the associated production volumes and average farm scale required to support the economic viability of striped bass aquaculture operations should be identified and evaluated. Information on profitability estimates for striped bass aquaculture, both land-based (pond & RAS) and offshore, is needed. The report included profitability information based on comparable species despite striped bass aquaculture existing in the U.S. There is also a question of whether land-based aquaculture of striped bass could help fill U.S. origin seafood supply/demand.

Ecological Concerns

The memorandum does not address one of the longstanding concerns associated with farming high-value carnivorous marine fish species: dependence on fish-based feeds. Although feed technology continues to evolve, forage fish remain an important component of diets used to optimize growth and product quality.

The ecological tradeoffs associated with diverting forage resources into aquaculture deserve careful consideration. Maintaining healthy forage fish populations benefits not only wild striped bass but also numerous marine mammals, seabirds, and other ecologically and economically important species.

Regarding habitat, offshore units/structures tend to act as fish “attractor” devices through complex structure, food availability or prey availability and could have unforeseen effects on essential fish habitat (EFH) in close proximity to other bottom structure or pelagic species. Any potential threat of offshore striped bass aquaculture to EFH would vary widely depending on siting, depth, benthic type below the facility, etc. Some EFH concerns include any coral or live/hardbottom habitat, including deepwater coral communities; marine and estuarine waters; any waters that support diadromous fishes and spawning or nursery habitat; and waters hydrologically and ecologically connected to waters that support EFH. Management plans for any offshore facility should require permittees to have adequate funds (e.g., assurance bond) committed to ensure removal of fish and decommissioning of the facilities that are abandoned, obsolete or storm-damaged or had their permits revoked. This would ensure no continued effects on EFH.

Protected Species

Offshore aquaculture operations create the potential for entanglement and other interactions with species protected under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). The current information in the memorandum is limited on this issue and remains a potentially significant outstanding concern. If available documentation indicates that entanglement risk is low but not negligible, quantitative information should be provided regarding the frequency of marine mammal and seabird entanglements. Regarding implementation, one question is how frequently net systems are inspected for integrity and potential wildlife interactions.

Biological Risks: Escapement, Genetic Concerns, and Disease

Significant biological risks remain unresolved. Disease transmission, parasite transfer, escape of cultured fish, and genetic interactions with wild striped bass populations continue to present legitimate concerns. Likewise, questions remain regarding the adequacy and consistency of federal oversight related to therapeutants, antibiotics, and other chemicals that may be used in commercial aquaculture operations. Wild fish in close proximity to facilities could be exposed to therapeutics environmentally or through excess feed escapement and potential parasitic infection with unknown effects. This also applies to therapeutics used to prevent parasitic infections, which can be a problem in culture facilities. These issues warrant additional scientific evaluation before large-scale offshore production is considered.

The memorandum should explain how genetic tracking would be implemented in practice. If “pure-strain” stocks are non-interbreeding (e.g., sterile), NOAA should evaluate whether this would affect the economic viability of production, particularly if such fish are considered genetically modified. NOAA should describe how consumers would be informed that the product is genetically modified. If pure-strain stocks are not sterile, there are concerns regarding the risk of escapement and potential impacts on wild striped bass populations and information is needed on average escapement rates from similar net-pen aquaculture systems. The term “pure-strain striped bass” should also be clearly defined.

Information should also be provided regarding how disease events would be managed given the apparent lack of approved antibiotics for striped bass. Wild striped bass experiencing stress, such as during overwintering, can develop significant skin lesions that reduce marketability. NOAA should provide available data on fish condition and market quality of aquaculture-reared striped bass under culture conditions.

The memorandum notes there may be some small losses (escapements) that may intermingle with the wild population, but that risk should be given more weight and consideration, as well as the risk of a catastrophic failure (which would be a real risk considering weather events and potential vessel interactions). There is no way to guarantee that aquaculture striped bass would not mix with the wild population, and these risks are much greater in open water systems. Containment rules as well as genetic modification of cultured fish (triploids and diploids) or potential sterilization techniques are not necessarily validated for striped bass in large-scale production culture situations.

Policy and Regulatory Roles

Strong regulatory barriers for starting these type of operations exist, as they should if they are to be done properly. Many of the regulatory concepts presented in the memorandum remain vague with respect to implementation. There appears to be limited direct regulatory authority by NOAA or the Commission over offshore aquaculture operations. Further discussion or clarification is needed regarding whether EPA or USACE are appropriately positioned to address issues related to biosecurity and potential impacts on wild stocks. It may be more appropriate for NOAA Fisheries and USFWS to have a more direct oversight role, beyond participation as cooperating agencies in the NEPA process, which is anticipated to be led by USACE.

The memorandum notes that the Commission may wish to consider whether existing authorities could be used to develop monitoring and enforcement programs specific to striped bass aquaculture. However, it is indicated that such actions would serve primarily to “influence” federal partners rather than establish mandatory requirements. Clarification is needed regarding how Commission-developed actions would be used by NOAA Fisheries and other permitting agencies, particularly given the significant time and resources required to develop such programs.

Conclusion

In summary, offshore net pen aquaculture of striped bass has a very limited operational history and no demonstrated record of large-scale, long-term success in the United States. The Commission has substantial concerns including risks to wild striped bass populations, commercial fisheries, seafood markets, marine ecosystems, and protected species, enforcement concerns, as well as the potential for significant regulatory and financial obligations for states. Based on the information currently available, these risks are not adequately balanced by the potential public benefits described in the memorandum. Given these risks and unresolved issues described above, the Commission does not support moving forward with consideration of offshore striped bass aquaculture at this time.

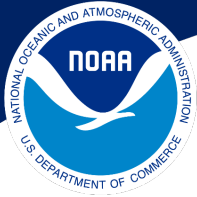
The Commission is focused on rebuilding the wild stock of striped bass, including upcoming discussions on whether hatchery stocking can enhance that effort. The potential for offshore aquaculture does not seem to support that rebuilding effort, and instead would pose risks to the resource and the fisheries. Land-based aquaculture systems may provide a more readily achievable path toward the same domestic seafood production goals with substantially fewer of the risks described in this letter. If NOAA elects to pursue offshore striped bass aquaculture, any effort should begin at a small scale and address the concerns identified in this letter, with meaningful opportunities for stakeholder input built in from the outset.

The Commission appreciates the opportunity to provide these comments and is available for further discussion.

Respectfully,

Robert E. Beal
ASMFC Executive Director

L26-xx



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**DRAFT PUBLICATION
FOR EXTERNAL REVIEW
FEBRUARY 2026**

Charting A Course for Striped Bass: Science and Regulatory Innovation for Offshore Aquaculture



U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA Technical Memorandum NMFS-F/OAQ-001
FEBRUARY 2026

Charting A Course for Striped Bass: Science and Regulatory Innovation for Offshore Aquaculture

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**NOAA Technical Memorandum NMFS-F/OAQ-001
February 2026**



U.S. Department of Commerce
Howard Lutnick, Secretary

National Oceanic and Atmospheric Administration
Neil Jacobs, NOAA Administrator

National Marine Fisheries Service
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About:

The mission of the National Oceanic and Atmospheric Administration (NOAA) is to understand and predict changes in the Earth's environment and to conserve and manage coastal and oceanic resources and habitats to support our Nation's economic, social, and environmental needs. The NOAA Fisheries Office of Aquaculture advances cutting-edge science and research, while supporting federal policymaking and regulation, to promote sustainable aquaculture in the United States alongside healthy commercial and recreational fisheries. We also work to ensure that science, policies, and regulations allow communities to realize the social, economic, and environmental benefits of aquaculture.

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1 Executive Summary

Striped bass (*Morone saxatilis*) is one of the most valued fish species along the Atlantic coast of the United States (U.S.), noted for its ecological, cultural, and economic importance. Recreational and commercial fisheries have long depended on this species, but harvest in federal waters of the Exclusive Economic Zone (EEZ) along the East Coast has been prohibited since 1990. While the moratorium was vital for rebuilding wild stocks, it also blocks the potential to develop striped bass aquaculture offshore, despite major advances in science, technology, and management that now make such development both feasible and promising. Balancing aquaculture development with protection of wild striped bass populations and the fisheries they support is essential for ensuring the resilience of this iconic species. Over the past three decades, substantial progress has been made in aquaculture biology, offshore engineering, disease management, and regulatory oversight. Controlled breeding, biosecurity protocols, site selection tools, and environmental monitoring now allow offshore aquaculture systems to reduce risks of escapement, disease transmission, and ecosystem impacts. At the same time, governance frameworks have evolved to better integrate aquaculture with other ocean uses and conservation objectives. These advances suggest that offshore production of pure-strain striped bass could be feasible under a carefully designed regulatory structure that distinguishes aquaculture from wild harvest and ensures accountability, traceability, and environmental safeguards.

The purpose of this discussion paper is to identify the legal, policy, and scientific constraints on the production of cultured pure-strain striped bass in federal waters and outline the economic and environmental topics raised by the Atlantic States Marine Fisheries Commission (ASMFC). At the 2024 Winter Meeting of the ASMFC, Danielle Blacklock, Director of the NOAA Fisheries Office of Aquaculture, led the Interstate Fisheries Management Program (ISFMP) Policy Board in a discussion on the future of aquaculture and the potential role of Atlantic Striped Bass in U.S. seafood production. The Board raised longstanding concerns, describing issues on escapement, ecosystem impacts, enforcement related to the existing moratorium in the EEZ and illegal harvest, competition with wild-caught markets, economic feasibility, and the challenges of managing aquaculture alongside other ocean uses.

Building on this exchange, this Technical Memorandum provides historical context, summarizes the Commission's concerns, and identifies potential pathways forward. It examines the biological foundations, regulatory history, technological readiness, environmental considerations, market dynamics, and governance needs for striped bass aquaculture. The memo highlights how coordinated science, policy, and industry innovation could support sustainable offshore farming of this species in a way that complements wild stock conservation and contributes to U.S. seafood supply and coastal economies.

NOAA Fisheries, in coordination with ASMFC, could amend the relevant regulatory provisions to allow aquaculture as an explicit exception to the EEZ moratorium on the fishing, harvest, possession, and retention of striped bass. The sections that follow summarize the key regulatory and scientific issues and outline proposed next steps.

Summary of Key Regulatory and Science Issues

1.1 Enforcement Considerations

Fishery managers have expressed a need for strong, enforceable assurances that the development of an aquaculture market for pure-strain striped bass will not create incentives for illegal harvest or lead to negative impacts on wild stocks and the fisheries they support. The ASMFC (through its Law Enforcement Committee), state agencies, and NOAA Fisheries' Office of Law Enforcement (OLE) collaborate extensively on interjurisdictional fisheries enforcement. State precedents for labeling and tagging farmed product offer models for ensuring consumer confidence and preventing substitution of wild fish into aquaculture supply chains. Product differentiation and proper enforcement mitigate these challenges by providing better accountability on the water and enabling law enforcement to track a fish from its origin. Strategies could be developed for regulatory frameworks to ensure that aquaculture-raised striped bass are accurately labeled and traceable throughout the supply chain.

1.2 Economic Contributions

Market demand strongly supports the development of a domestic striped bass aquaculture sector. U.S. seafood consumption continues to outpace supply, with the majority of products imported. The development of a robust striped bass aquaculture industry has the potential to generate similar spillover benefits, particularly for coastal communities. Recent economic research suggests that striped bass aquaculture is most profitable in offshore net-pen systems, with breakeven prices comparable to those of commercially farmed red drum (*Sciaenops ocellatus*). Demand-side conditions are favorable, yet production cost challenges and regulatory inconsistencies, especially in states with gamefish designations, may be addressed. Interstate transport and sale of pure-strain farmed striped bass could present barriers for market development that will require synergies between state and federal regulations to avoid enforcement challenges and ensure transparency. A complete understanding of the impacts that a farmed striped bass industry will have on existing imports and wild-caught alternatives will require further analysis on potential production volumes and targeted markets. However, introducing farmed striped bass into non-traditional retail and food-service channels could expand

consumer exposure to the species, increasing overall demand for both farmed and wild-caught products.

1.3 Managing Ocean User Conflicts

The identification of suitable areas for aquaculture development, coupled with careful site selection and management, is fundamental to ensuring the long-term success and sustainability of offshore aquaculture. In the U.S., where competition for nearshore space is intense, expansion into the EEZ provides opportunities for larger sites with fewer nearshore user conflicts and greater social acceptance among commercial and recreational fishing communities. As part of NOAA's National Ocean Service, the National Centers for Coastal Ocean Science (NCCOS) plays a central role by developing science-based inclusive decision tools to inform precision siting for aquaculture and other sectors of the ocean economy.

1.4 Environmental Concerns

In the context of striped bass aquaculture, potential environmental effects can be grouped into several categories: (1) water quality, (2) benthic and sedimentary processes, (3) interactions with marine life and habitats, (4) cumulative and landscape-scale effects, and (5) mitigation strategies, including novel approaches such as integrated multi-trophic aquaculture (IMTA). Modern production technologies, standardized operating procedures, and best management practices reduce risks of degradation to water quality, benthic habitats, and marine life. All of these issues are managed by the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE), in coordination with NOAA through consultations under existing federal law. EPA generally applies water quality models to characterize interactions between effluent and the receiving environment. Further, the NOAA NCCOS has ongoing collaborations with the EPA to provide depositional and water quality modeling products and science advice to support agency permitting and associated environmental reviews and consultations for finfish aquaculture projects proposed for federal waters.

1.5 Escapement and Genetic Concerns

Escape events are among the most widely recognized ecological risks associated with marine finfish aquaculture. Recent advances in genomic technologies now enable high-resolution monitoring of striped bass population structure. These tools have been applied to striped bass, where they have clarified stock composition and informed management across the species' range. Decades of hatchery experience, the success of the hybrid striped bass industry, and advances in selective breeding and fish health management have established a strong technical foundation for farming pure-strain striped bass. Offshore net-pen systems, which have been successfully demonstrated internationally,

provide suitable growing conditions while reducing many environmental pressures on coastal ecosystems. Emerging tools in genetics, automation, and biosecurity further strengthen the case for expansion into offshore environments. Additionally, NOAA and partners have developed models to evaluate genetic and ecological risks associated with aquaculture escape events. The intent of these tools are to support risk-based assessments of offshore aquaculture operations and to inform the development of management and engineering strategies that reduce the potential adverse effects of escape events on wild populations.

1.6 Disease

Equally important to environmental performance is maintenance of aquatic animal health. Disease represents one of the most significant operational risks in striped bass aquaculture and requires continuous, proactive management. Striped bass are susceptible to a range of pathogens and parasites, with recent research improving understanding of disease dynamics in both wild and farmed populations. Even well-managed farms may periodically require therapeutic intervention to control outbreaks, limit mortality, and protect animal welfare.

The Food and Drug Administration (FDA) provides centralized oversight of aquaculture therapeutics, ensuring that their use is scientifically justified and environmentally protective. At present, no antibiotics are approved for striped bass or most marine finfish species, reinforcing the importance of preventative health strategies. For striped bass aquaculture, disease prevention is therefore the primary line of defense, relying on vaccination where available, rigorous biosecurity protocols, water quality management, and structured health-monitoring programs to enable early detection and response. By integrating science-based biosecurity, judicious therapeutic use, and informed site selection, offshore aquaculture operations can reduce pathogen pressure, safeguard stock health, and minimize both economic losses and environmental risks. Comprehensive health-management frameworks that emphasize prevention, surveillance, and targeted intervention are thus essential for the sustainable development of offshore striped bass aquaculture.

1.7 Summary of Next Steps

Production of striped bass is already occurring abroad, with farmed product entering U.S. markets and competing with domestic seafood. The commercial appeal of cultivating pure-strain striped bass is therefore grounded in the existence of an established and recognized market opportunity. While demand in many regions remains seasonal, a key opportunity lies in expanding striped bass into a stable, year-round product that can complement and relieve pressure on wild fisheries while increasing total supply.

Realizing this opportunity will require coordinated progress across science, industry, and governance. Priority research needs include continued broodstock and selective-breeding programs, deployment of genetic safeguards, offshore production trials, fish health management, and development of sustainable feed strategies. At the same time, policy modernization will be essential, including reforms to regulatory frameworks in the EEZ, strengthened interagency coordination of federal permitting, expansion of marine spatial planning tools, and supporting workforce development and stakeholder engagement.

Striped bass aquaculture represents a strategic opportunity to expand domestic seafood production, strengthen coastal economies, and reinforce conservation of wild stocks. When science, governance, and markets are aligned, offshore farming of this species can move from technical feasibility to commercial reality, helping the United States advance national goals for seafood security, economic growth, and resilient coastal communities while coexisting with and supporting the long-term sustainability of commercial and recreational fisheries.

DRAFT

2 Overview

2.1 Biology and Distribution of Striped Bass

The striped bass (*Morone saxatilis*) is one of the most important sport fish and commercial fisheries along the Atlantic coast of North America. It is an all-time favorite for anglers. It belongs to the family Moronidae, which comprises both freshwater and anadromous taxa. In North America, the genus *Morone* is represented by four species: striped bass, white perch (*M. americana*), white bass (*M. chrysops*), and yellow bass (*M. mississippiensis*). Striped bass is the largest and longest-lived member of the group, with individuals documented to live more than 30 years and reach weights exceeding 100 pounds, although fish over 75 pounds are rare (Bowers, 1900; Smith, 1907).

Striped bass populations display regionally distinct migratory behaviors along the U.S. Atlantic coast. North of Cape Hatteras, North Carolina, adults are anadromous, ascending freshwater or brackish rivers in spring to spawn before returning to the coastal ocean (Rulifson & Dadswell, 1995; Morris et al. 2003). Major spawning grounds on the U.S. Atlantic coast includes the Chesapeake Bay (Virginia and Maryland), the Hudson River, and the Delaware River, although smaller spawning populations exist in several other bays and rivers as well, including the Albemarle Sound-Roanoke River (North Carolina) and the Kennebec River (Maine). Larval and juvenile recruitment occurs in estuaries, where young fish typically reside for one to two years before dispersing offshore. Seasonal migrations extend northward to Nova Scotia during summer and southward to Virginia and North Carolina during winter, where spawning occurs in spring (Greene et al., 2009). In the Chesapeake Bay, migration patterns differ by age and sex, reflecting ontogenetic variation in maturity (Kohlenstein, 1981). The Hudson River stock shows similar dynamics, with both resident and ocean-migratory contingents (McLaren et al., 1981). In the Bay of Fundy, adults migrate downstream after spawning, while juveniles either remain in rivers or disperse along the coast (Rulifson & Dadswell, 1995).

In contrast, striped bass populations south of Cape Hatteras, extending to the St. John's River in northern Florida and into the Gulf of America, are primarily riverine and potamodromous, lacking consistent oceanic migrations (Setzler-Hamilton 1980; McIlwain, 1980). Historically, the Gulf range extended from the Suwannee River, Florida, westward to rivers of the Lake Pontchartrain basin in Louisiana (Pearson, 1938; Merriman, 1941; Barkuloo, 1961, 1967; GSMFC, 2006). Today, the only remnant population persists in the Apalachicola–Chattahoochee–Flint (ACF) river system spanning northwest Florida, Georgia, and Alabama. No records exist of Gulf specimens captured in open ocean habitats, although telemetry studies indicate that ACF striped bass occasionally enter the Gulf and migrate along the coastline (McIlwain, 1980; Fruge, 2006; Long et al., 2013).

Commercial landings of striped bass in the Gulf ended in the 1960s, however, coastal stock enhancement and contributions from reservoir escapement have created recreational fisheries in some areas. Although not native to Texas, striped bass are occasionally reported in estuaries and rivers as escapees from stocked reservoirs. These reports, documented by Texas Parks and Wildlife through gill net and creel surveys, occur mostly in Sabine, Galveston, and Matagorda Bays (Texas Parks and Wildlife, n.d.).

Beyond their native range along the Atlantic and Gulf coasts, striped bass were successfully introduced to the Pacific coast in the late nineteenth century (ca. 1879). Within a decade, they supported vibrant recreational and commercial fisheries from southern California to the Columbia River, Oregon (Nichols, 1966). An introduction to Kauai, Hawaii, in 1920 was unsuccessful, as the transplanted California fish failed to survive (Randall, 1987).

2.2 Striped Bass Fisheries Management

Management of Atlantic striped bass is coordinated through the Atlantic States Marine Fisheries Commission (ASMFC), which works in partnership with state and federal agencies to assess population status and implement regulatory measures across the species' range (ASMFC, 2022a). The management unit includes all coastal migratory striped bass stocks from Maine through North Carolina. ASMFC has primary authority for striped bass management within state waters, while NOAA Fisheries (NMFS) has management authority in federal waters. Federal waters under the Magnuson-Stevens Fishery Conservation and Management Act are defined as the Exclusive Economic Zone (EEZ), which extends from the seaward boundary of state waters out to 200 nautical miles offshore.

Stock assessments have consistently documented the species' natural population variability and periods of overexploitation. Severe overfishing during the late 1970s and early 1980s led to a coastwide collapse, prompting the adoption of a moratorium and strict harvest controls in the mid-1980s (Richards & Rago, 1999; ASMFC, 1990). These actions facilitated recovery, and by the mid-1990s the stock was declared rebuilt (ASMFC, 1997).

Since recovery, striped bass have remained among the most intensively managed fisheries along the Atlantic coast. Regulatory tools have included size and slot limits, seasonal closures, quotas, and gear restrictions, with measures adjusted adaptively in response to new scientific assessments (ASMFC, 2022a). Despite these efforts, the 2018 benchmark stock assessment concluded that the stock was overfished and that overfishing was occurring (NEFSC, 2019). In response, the ASMFC enacted harvest reductions in 2020 to curb fishing mortality and initiate rebuilding (ASMFC, 2020).

Total removals in 2021, including commercial harvest, commercial discards, and recreational harvest and release mortality, were estimated at 5.1 million fish, similar to

2020 levels (ASMFC, 2022b). Recreational removals accounted for approximately 86% of this total, reflecting the dominance of the recreational sector. The commercial fishery, managed under state-specific quotas, has maintained relatively stable landings since 2004, while the recreational fishery is managed through bag limits, size restrictions, and seasonal closures in some jurisdictions (ASMFC, 2022b).

Broader management reforms were codified in Amendment 7 to the Interstate Fishery Management Plan (FMP), approved in 2022. Amendment 7 introduced more precautionary recruitment triggers, clarified conservation equivalency standards, enhanced measures to reduce recreational release mortality, and reaffirmed the requirement to rebuild the stock by 2029 (ASMFC, 2022a). Addendum I, approved in May 2023, further allowed for voluntary transfers of commercial quota in the ocean region, contingent on stock status (ASMFC, 2023).

Following the 2024 Stock Assessment Update, which determined the stock remained overfished though not experiencing overfishing, the ASMFC initiated Draft Addendum III in December 2024. This addendum, currently under development, is intended to provide new recreational and commercial measures for implementation in 2026 to ensure rebuilding by 2029 (ASMFC, 2024a). The Board is expected to finalize the addendum following public comment in late 2025, with implementation planned for early 2026 (ASMFC, 2025).

This evolving management framework illustrates the dynamic and adaptive nature of striped bass governance. The challenge remains to balance sustainable harvest opportunities with long-term conservation goals for a species that holds ecological, cultural, and economic importance along the U.S. Atlantic seaboard.

2.3 Legal History of Striped Bass Management

2.3.1 Atlantic States Marine Fisheries Commission and the Striped Bass Conservation Act of 1984

The ASMFC, established in 1942 through an interstate compact, was created to coordinate management of interjurisdictional fisheries along the Atlantic seaboard, including striped bass (ASMFC, 2022a). The Commission is composed of representatives from 15 states, the District of Columbia, the Potomac River Fisheries Commission, and federal agencies including NMFS and the USFWS. Collectively, these entities hold primary management authority and adopt regulations consistent with the Interstate FMP (ASMFC, 1990).

By the mid-1970s, striped bass populations had declined to historic lows. In 1979, Congress directed NMFS and USFWS to conduct a comprehensive study of the causes of this decline, examining environmental change, predation, competition, and fishing mortality (U.S. Congress, 1979)¹. In response, ASMFC adopted the first Atlantic Striped Bass FMP in 1981 (ASMFC, 1981). To strengthen implementation, Congress enacted the Atlantic Striped Bass Conservation Act of 1984 (Pub. L. 98-613), which required states to implement ASMFC's striped bass regulations and established a federal enforcement backstop (U.S. Congress, 1984).

The Striped Bass Act empowered ASMFC to notify the Secretaries of Commerce and the Interior if a state failed to comply with the interstate FMP. Upon such notification, the Secretaries could jointly impose a moratorium on striped bass fishing in that state's waters (ASMFC, 1990). This enforcement authority, unique among the interstate marine fishery commissions, has proven effective in ensuring state compliance with ASMFC management actions (NMFS, 2020a).²

Congress strengthened the Striped Bass Act through amendments in 1988, authorizing the Secretary of Commerce acting through NMFS to regulate striped bass within the federal waters of the EEZ (U.S. Congress, 1988). Using this authority, the Secretary may develop offshore regulations, but any regulations are required to be consistent with the Magnuson–Stevens Fishery Conservation and Management Act (16 U.S.C. §1851 et seq.) and compatible with the ASMFC striped bass FMP. The 1988 and subsequent amendments also authorized NMFS and USFWS to carry out annual studies and population assessments of striped bass. The amendments also mandated biennial stock assessment and management reports from the Secretaries to ASMFC and Congress, expanded requirements for public participation in preparation of management plans, and provided dedicated annual funding for striped bass research and assessment (NMFS & USFWS, 1990).

In November 1990, NMFS implemented a moratorium on the harvest and possession of striped bass in the EEZ under the Striped Bass Act (55 Fed. Reg. 40184, 1990). This action was designed to reinforce ASMFC's rebuilding program, provide additional protection for striped bass thereby reducing fishing mortality, and ensure the effectiveness of state regulations. The moratorium remains in effect today (NMFS, 2020b). Amendment 4 to the Striped Bass Plan, adopted in 1989, allowed for limited increases in harvest. Amendment 4 relaxed the measures, and as states reopened fisheries, NMFS closed federal waters of the EEZ to ensure effectiveness of state

¹ "Reauthorization of the Atlantic Striped Bass Conservation Act", U.S. House of Representatives Report, 106-698.

² The Atlantic Coastal Fishery Cooperative Management Act (1993) generally mirrors the Striped Bass Act in giving the Secretary of Commerce the authority to impose moratoria in State waters, albeit for other Atlantic fisheries managed under ASMFC-approved fishery management plans. 1988 Amendments and the Federal Moratorium.

measures (ASMFC, 1989). Although reopening of the EEZ has been periodically evaluated, including under Amendment 6 in 2003, both managers and stakeholders have consistently supported its continued closure, citing the predominance of mature, spawning-capable females offshore and the risk of increased fishing mortality if federal waters of the EEZ were reopened (ASMFC, 2003).

2.3.2 Executive Order 13449

In 2007, Executive Order 13449 affirmed federal policy to conserve striped bass and red drum, while clarifying that aquaculture production of these species was not restricted (Bush, 2007). The order declared that it is “the policy of the U.S. to conserve striped bass and red drum for the recreational, economic, and environmental benefit of the present and future generations of Americans” (Bush, 2007). The E.O. notes, importantly, that the order must be implemented in a manner consistent with applicable law. The E.O. essentially directed NOAA to promulgate regulations that restrict the sale of EEZ striped bass if it could do so consistent with the law. NOAA already had regulations on the books (i.e., closure of federal waters of the EEZ) that achieved the policies of the E.O.

2.3.3 Federal Jurisdiction and Regulations (Current Legal Constraints)

Management authority for Atlantic striped bass within state waters resides with the coastal states, coordinated through the ASMFC’s Striped Bass FMP (ASMFC, 2022a). Federal authority in the EEZ is derived from the Magnuson Stevens Act, which predates the Atlantic Striped Bass Conservation Act and which requires NMFS to ensure that any regulations implemented for striped bass in the EEZ: (1) are consistent with the national standards under Section 301 of the MSA (16 U.S.C. §1851 et seq.); (2) are compatible with the ASMFC Striped Bass FMP and any federal moratoria authorized by statute; (3) ensure the effectiveness of state regulations within coastal waters; and (4) achieve long-term conservation and management objectives for the Atlantic striped bass resource (U.S. Congress, 1984; NMFS, 2020). In other words, NMFS or the Councils could develop a federal FMP for striped bass under the MSA if it so chooses. Alternatively, NMFS may implement regulations for striped bass under the ACA instead, which is the scheme we have today.

Federal regulations in the EEZ can be developed to complement ASMFC’s Striped Bass FMP. Currently, federal regulations prohibit fishing for, harvesting, possessing, or retaining Atlantic striped bass in the EEZ (50 C.F.R. §697.7). Limited exceptions exist in Block Island Sound, where possession is permitted during continuous transit provided no fishing occurs in EEZ waters (NMFS, 1990).

In 1995, following ASMFC’s declaration that striped bass stocks were rebuilt, NMFS considered lifting the EEZ ban or revising it to align with state size limits, as recommended by the Commission (ASMFC, 1997). After reviewing public comment and updated mortality estimates indicating fishing pressure was higher than previously believed, NMFS

elected to maintain the EEZ moratorium (NMFS, 1995). Further, Amendment 6 included a recommendation to NMFS to consider reopening the EEZ (ASMFC, 2003). Following public review and consideration of updated stock assessments, NMFS concluded in 2006 that reopening the EEZ posed unacceptable risks because effort levels and associated fishing mortality could not be reliably controlled (NMFS, 2006).

Currently, implementing regulations (50 CFR 697.7(b)) state that it is unlawful for any person to do any of the following:

- (1) Fish for Atlantic striped bass in the EEZ.
- (2) Harvest any Atlantic striped bass from the EEZ.
- (3) Possess any Atlantic striped bass in or from the EEZ, except in the following area: The EEZ within Block Island Sound, north of a line connecting Montauk Light, Montauk Point, NY, and Block Island Southeast Light, Block Island, RI; and west of a line connecting Point Judith Light, Point Judith, RI, and Block Island Southeast Light, Block Island, RI. Within this area, possession of Atlantic striped bass is permitted, provided no fishing takes place from the vessel while in the EEZ and the vessel is in continuous transit.
- (4) Retain any Atlantic striped bass taken in or from the EEZ.

2.4 Solutions and Recommendations

A regulatory pathway that allows for offshore aquaculture of striped bass in the U.S. EEZ could be achieved without undermining the conservation achievements of the Striped Bass Conservation Act or ASMFC's management program. The following solutions are recommended:

2.4.1 Regulatory Carve-Out for Aquaculture

NMFS could lead an effort to amend existing regulations to explicitly recognize aquaculture operations as an exception to the EEZ moratorium. Permitting criteria may be established specific to aquaculture while reaffirming the prohibition on wild harvest in the EEZ. The language would have to be specific about who, when, and where the exemption would apply. This amendment would be subject to public comment and could include commentary by the ASMFC. While straightforward textually, NMFS intent is to work with the ASMFC to address any possible concerns before such action is considered.

2.4.2 Enforcement and Monitoring Framework

Federal and state enforcement agencies may adopt a robust compliance and monitoring program for aquaculture operations. This may include reporting requirements, periodic

inspections, and integration of vessel monitoring systems or remote electronic monitoring to ensure no illegal harvest of wild striped bass occurs under the guise of aquaculture.

2.4.3 Traceability and Supply Chain Integrity

A comprehensive traceability system (“farm-to-market”) is essential to differentiate cultured striped bass from wild-caught products. Tools could include genetic certification, tagging, or electronic product tracking. Such measures would prevent substitution of illegally harvested wild fish into aquaculture supply chains, thereby preserving confidence among regulators, markets, and consumers. Importantly, this approach would align with existing wild striped bass tagging programs used by coastal states, creating a seamless framework for distinguishing wild and farmed fish in commerce.

2.4.4 Alignment with Fisheries Management Measures

Complimentary aquaculture regulations could be developed by the States in consideration of existing striped bass fisheries management tools such as bag limits, size limits, and possession limits. While these limits may not apply directly to aquaculture, aligning aquaculture rules with conservation objectives will minimize regulatory conflicts and reinforce stock protection.

2.4.5 Certification of Pure-Strain Cultured Striped Bass

To ensure that aquaculture production supports conservation, cultured fish could be certified as pure-strain and non-interbreeding with wild stocks. Hatchery protocols, broodstock management, and genetic testing would safeguard against introgression and maintain the integrity of wild striped bass populations. Non-interbreeding status can be achieved through strict physical containment measures, siting farms away from migratory stocks, or by applying genetic control approaches such as triploidy, sterility induction, or technologies to prevent successful interbreeding with wild fish.

2.4.6 Preventing Market Leakage of Wild Harvest

Clear rules, coupled with enforcement and traceability, must ensure that wild-caught striped bass do not enter markets under the label of cultured product. This will protect both the conservation gains achieved under ASMFC management and the credibility of aquaculture enterprises. Such safeguards are not new; they already exist within the current hybrid striped bass and pond-farmed striped bass industries, where farmed product is clearly distinguished from wild harvest through tagging, documentation, and distribution controls. Building on this established framework, similar approaches can be extended to offshore aquaculture operations to provide regulators, markets, and consumers with confidence that aquaculture production remains separate from wild harvest.

3 Striped Bass Aquaculture in the EEZ: Jurisdiction, Enforcement, and ASMFC's Potential Role

The governance landscape for striped bass in federal waters remains shaped by moratoria and ASMFC oversight, yet opportunities exist to adapt these frameworks for aquaculture without undermining wild stock protections. Traceability systems, tagging protocols, and strong enforcement provisions can close loopholes that otherwise risk illegal harvest. With proactive engagement, ASMFC and federal agencies can ensure that aquaculture complements conservation rather than conflicts with it.

3.1 Jurisdictional Context

As outlined in Section 2.3, harvest within the U.S. East Coast EEZ is prohibited. This section explores how the ASMFC could consider adapting existing authorities for oversight of striped bass aquaculture. These restrictions do not apply in the Gulf of America, where applications are actively being explored to farm Atlantic striped bass, not hybrid varieties, and commercial activity is already occurring, for the purpose of human consumption. Pond-based farms are operating in North Carolina, South Carolina, and Texas. North Carolina and Ohio are pursuing commercial-scale recirculating aquaculture following successful research trials. To have a meaningful role in the development of this industry, the ASMFC could consider using existing authority to establish monitoring and enforcement programs for striped bass aquaculture as the market expands and interest grows for production in the Atlantic.

Permitting for most aquaculture operations in the U.S. EEZ currently falls under the authority of federal agencies, specifically the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (ACE). Under the Magnuson-Stevens Act, the Regional Fishery Management Councils (RFMC) are consulted by NMFS in relation to impacts to Essential Fish Habitat (EFH) regarding the regulatory actions taken by either the EPA or the ACE. The ASMFC has representation on some regional fisheries management councils, but does not currently have a direct regulatory or enforcement role in EEZ aquaculture.

To clearly outline the current situation: permitting within the EEZ primarily falls under the jurisdiction of the EPA and the ACE. The RFMCs are typically not involved beyond Essential Fish Habitat (EFH) consultations, or to the extent a Council has taken actions on policies concerning aquaculture.

A complicating exception to the general rule above is that the management of Atlantic striped bass in state waters is primarily the responsibility of the coastal states, and is promulgated through the ASMFC's Striped Bass FMP. The management unit includes all coastal migratory striped bass stocks on the East Coast of the U.S., excluding the EEZ,

which is managed separately by NMFS. Under the Atlantic Striped Bass Act, Section 5158 requires NMFS to ensure that any regulations implemented in the EEZ for striped bass:

- 1) Are consistent with the national standards in Section 301 of the MSA (16 U.S.C. 1801 et seq.).
- 2) Are compatible with the Striped Bass FMP and each federal moratorium in effect, as authorized by statute.
- 3) Ensure the effectiveness of State regulations within the coastal waters of a state.
- 4) Achieve long term conservation and management goals for the Atlantic striped bass resource. Federal regulations in the EEZ can be developed to complement ASMFC's Striped Bass FMP.

In November 1990, NMFS implemented a moratorium on the harvest and possession of striped bass in the EEZ under the Striped Bass Act to support the ASMFC Striped Bass Plan, provide additional protection for striped bass, and ensure the effectiveness of state regulations. This moratorium remains in effect today and current federal regulations ban the fishing, harvesting, possession and retention of Atlantic striped bass in the EEZ. As interest grows in the commercial culture of pure-strain striped bass in federal waters both in the Gulf of America and along the Atlantic, it is essential to recognize the regulatory gap that exists and the opportunity for ASMFC to step into a more proactive and protective role.

If the ASMFC wishes to have a meaningful role in this process, it could implement enforcement provisions specific to striped bass aquaculture, an authority that it currently possesses. It is also important to note that the ASMFC may be compelled to act regardless, given the potential expansion of pure-strain striped bass aquaculture in the Gulf of America and the potential of that product entering markets along the Atlantic.

This represents a timely opportunity for the ASMFC to actively engage with its stakeholders and ensure its voice is heard in shaping policy.

3.2 Scenarios for ASMFC Involvement

The expansion of pure-strain striped bass aquaculture presents both economic opportunity and ecological risk. The ASMFC is uniquely positioned to provide oversight of this industry, in conjunction with their protection of the wild striped bass stock. While it does not control permitting in the EEZ, the Commission establishes fishery management provisions and compliance standards that apply to its member jurisdictions, and thus influence the actions taken by Federal agencies working in the EEZ. If the ASMFC wishes to ensure that aquaculture development walks in parallel with decades of conservation work, it can consider exercising its authority to define and enforce compliance expectations related to striped bass aquaculture. The emergence of pure-strain

production in regions like the Gulf of America underscores the urgency of this engagement.

Core Enforcement and Compliance Issues

Ultimately, fishery managers need strong, enforceable assurances that the development of an aquaculture market for pure-strain striped bass will not create incentives for illegal harvest, not undermine the commercial fishery or cause negative impacts on wild stocks. The primary enforcement concern appears to be illegal harvest, direct illegal sales of striped bass to consumers and restaurants. Strategies such as product differentiation and proper enforcement mitigate these challenges by improving accountability on the water and enabling law enforcement to track fish back to their origin. Effective regulation may include:

1. Traceability and Product Differentiation

Consistent labeling protocols across the supply chain, from production through market, are critical to preventing product misrepresentation. Effective approaches include physical identifiers, documentation procedures, and standardized processing requirements. Regulatory frameworks vary by jurisdiction, with some states tagging fish at the point of landing and others at the point of sale. The ASMFC has considered mandating dockside landing tags for all states, citing concerns that point-of-sale systems create greater opportunities for illegal harvest. A uniform dockside landing requirement could strengthen enforcement by reducing the risk of unrecorded landings, particularly in states with individual quotas where incentives for illegal sales are high. By ensuring traceability from the time fish are landed, tagging provides enforcement agencies with a critical tool to safeguard quota integrity and deter unlawful market activity.

Harvest of aquaculture striped bass from large offshore farms presents unique challenges for product tagging. Unlike small-scale operations, tagging at the point of capture, during loading to a well boat, or aboard a harvest vessel is impractical when tens of thousands of fish may be collected in a single event. Although gill- or tail-tagging systems can process up to approximately 200 fish per minute, they require individual handling, may adversely affect product quality, and can raise animal welfare concerns.

Dockside tagging reduces the risk of illegal mislabeling between aquaculture and wild-caught fish and is generally supported by enforcement agencies as a means of enhancing oversight, reducing opportunities for unlawful practices, and strengthening accountability across the seafood supply chain. Implementation considerations include enforcement logistics, operational safety, and consistency across fisheries with differing management structures. In particular, fisheries operating under individual quota systems are especially vulnerable to quota evasion, making rigorous dockside tagging a critical tool for compliance and traceability.

2. Monitoring and Market Controls

Reporting and tracking mechanisms must be adopted to monitor volumes of production, sales, and distribution of cultured striped bass. Rules concerning possession limits, vessel traffic, and size regulations may be considered, where appropriate, to ensure that aquaculture harvests are not masking illegal wild harvests.

3. Enforcement and Penalties

Penalty structures can deter violations, including fraudulent substitution between wild-caught and aquaculture products. Penalties should be calibrated to serve as effective deterrents and implemented through a clearly articulated enforcement framework that coordinates federal, state, and interstate authorities. Enforcement records show persistent convictions for the illegal possession or sale of fish by recreational fishers, underscoring the need for robust accountability measures (ASMFC, 2025). While the direct risk of recreational fish being misrepresented as aquaculture products may be relatively low, traceability systems and tagging requirements strengthen oversight and help address illicit market activity. There may also be value in exploring tagging protocols for recreational harvest, which could support traceability efforts and help deter unauthorized sales. In addition, consideration could be given to consistent size restrictions across recreational and commercial sectors.

4. Enforcement Burden and Legal Authorizations

The ASMFC and NOAA (specifically NMFS Office of Law Enforcement, OLE) collaborate extensively on fisheries enforcement. Their partnership blends federal oversight with regional/state-level enforcement, sharing burdens via multi-agency agreements and funding mechanisms tied to the Magnuson-Stevens Act and the Atlantic Coastal Fisheries Cooperative Management Act.

Under the Atlantic Coastal Fisheries Cooperative Management Act, NOAA provides funding to the states, in part, to support law enforcement capacity, including for Joint Enforcement Agreements (JEAs). NOAA's OLE maintains formal agreements with a wide list of states (e.g., MD, MA, FL, GA, etc.) to ensure nationwide coverage. ASMFC's Law Enforcement Committee (LEC) includes representatives from each member state plus NOAA, U.S. Coast Guard (USCG), and U.S. Fish and Wildlife Service (USFWS). Its tasks include reviewing enforcement plans, coordinating cross-jurisdictional efforts, and advising on regulation enforceability.

5. Law Enforcement Considerations

When reviewing investigation and criminal provisions, the following may be considered by the Law Enforcement Committee of the Atlantic States Marine Fisheries Commission:

- Consider a uniform regional traceability system for all seafood products harvested or produced for commercial sale, clearly distinguishing aquaculture from wild-caught sources.
- Standardize labels by year, type (aquaculture vs. wild-caught), color, and inscriptions for easy identification and traceability.
- Issue time-limited tags or labels (valid for a single calendar or fishing year) to ensure currency and prevent reuse or fraud.
- Include essential information on each tag, such as year, state or facility of origin, source type (aquaculture/wild), size limits (if applicable), and a unique identifier.
- Use tamper-evident and traceable tags that cannot be transferred between fish or altered without detection.
- Consider immediate tagging at the point of harvest or harvest-equivalent (e.g., at aquaculture facility dispatch or wild harvest landing).
- Require aquaculture operations to report production volumes and verify tag use based on certified harvest quantities.
- Enforce annual or seasonal return of all unused tags or labels, and prohibit federal permit renewal for non-compliance.
- Integrate tag tracking into dealer reports or electronic trip tickets, including identification of whether the product is farmed or wild-caught.
- Apply meaningful penalties, including license suspension or revocation, for mislabeling, misuse of tags, or other violations at the state or federal level.
- Ensure real-time, centralized access to tag issuance and use data for authorized enforcement personnel to facilitate on-the-ground inspections and audits.

Existing Models and Precedents

States have already taken action to regulate striped bass aquaculture in ways that promote transparency and accountability. Some states require a tagging program for commercially harvested striped bass. It is unlawful to sell or purchase commercially caught striped bass without a commercial tag. The intent is to prevent the sale or purchase of untagged striped bass in a state or jurisdiction where there is currently no commercial fishery program. Notably, Virginia had previously administered a detailed regulatory framework for culture of pure-strain striped bass. These efforts provide a valuable foundation for broader regional and federal collaboration.

A strong regulatory framework with effective enforcement and monitoring is essential to maintaining the integrity of the seafood supply chain. Clear differentiation between aquaculture-raised striped bass and wild-caught striped bass is critical to ensure consumer transparency and market fairness. To address these concerns, several Atlantic coastal states, including Massachusetts, Maine, New Hampshire, and Virginia (prior to repeal) have taken steps to regulate the labeling, handling, and marketing of aquaculture-

raised hybrid striped bass. These state efforts promote transparency and accountability and provide a valuable foundation for broader regional and federal collaboration.

1. Maine and New Hampshire

Maine and New Hampshire have adopted similar regulatory frameworks to ensure that aquaculture-raised striped bass are accurately labeled and traceable throughout the supply chain. This alignment reflects a broader regional effort to promote consistency in labeling and enforcement standards across jurisdictions.

The sale of wild striped bass caught for personal use or by commercial fisheries in other states or jurisdictions is prohibited in the State of Maine. Striped bass sold in Maine markets and restaurants is therefore a cultured product and is primarily hybrid striped bass. In Maine, regulations under 13 DMR § 188-42-02 require containers of aquaculture-raised hybrid striped bass, whether whole or filleted, to be labeled as “Hybrid Striped Bass” and include the state of origin; the names, permit numbers, and addresses of shipping and receiving dealers; the date of shipment; and the net weight of the container. Fillets must retain their skin, and like in Massachusetts, the use of the term “striped bass” for marketing hybrid products is prohibited. Possession exemptions already exist in Maine; chiefly the exemption applies to aquaculture products that do not meet the legal size or season requirements for wild-caught marine organisms of the same species.

New Hampshire enforces nearly identical standards through N.H Admin. Code § Fis 807.14. The regulation cites the potential for hybrid striped bass markets to be used as outlets for undersized striped bass and emphasizes the importance of regulatory consistency across states. Like Maine and Massachusetts, New Hampshire mandates clear product labeling, skin-on requirements for fillets, and restricts the use of the term “striped bass” in marketing or sales for hybrid striped bass.



2. Virginia

Regulations for the commercial striped bass fishery in Virginia include minimum sizes, possession limits, gear restrictions, seasons, and quotas. Virginia previously administered a detailed regulatory framework for the lawful propagation, sale, and transport of aquaculture-raised striped bass and hybrid striped bass under 4VAC20-252.

Under this system, anyone seeking to operate an aquaculture facility to raise striped bass or hybrid striped bass in Virginia was required to obtain a permit from the Virginia Marine Resources Commission. The permit authorized and defined the limits for the purchase,

possession, sale, transfer, and transport of striped bass and hybrid striped bass for aquaculture purposes. Permits were issued annually on a non-transferable basis, and were automatically renewed by the Commission provided the facility had been adequately maintained and remained structurally unchanged and in compliance with all permit conditions.

Permitted facilities were only allowed to acquire eggs, fry, and fingerlings from state-permitted, disease-free dealers. Each acquisition required documentation with receipts detailing the species, quantity, date, source, and destination. Harvesting striped bass from Virginia's tidal waters for the purpose of artificial spawning in aquaculture facilities remained subject to applicable state fishing laws, such as size limits and seasonal closures. Under the previous section, 4VAC20-252-210(C), striped bass or hybrid striped bass produced at a permitted aquaculture facility in another state may be imported for sale in Virginia, provided that all standards outlined in the regulation are met. Section 252-210 was repealed in April 2024 as an attempt to streamline regulations by the Commonwealth.

All market-ready fish had to be labeled with the name, address, and permit number of the producing facility. In addition, all sales and resales needed to be accompanied by a receipt documenting the species, seller, purchaser, date of sale, and production facility information. Copies of receipts were required to be kept by both parties and made available to enforcement authorities upon request. Permitted facilities were also required to maintain a chronological file of transactions for inspection by the Department of Wildlife Resources or agents of the Marine Resources Commission.

3. Massachusetts

Though Massachusetts does not have a legal framework addressing the aquaculture of pure strain striped bass, it does have an analogous legal framework for product differentiation of aquaculture vs wild caught product. Massachusetts enforces robust standards under 322 CMR 14.00 for the sale, transport, and distribution of aquaculture-raised finfish, with specific provisions for aquaculture-raised hybrid striped bass. Under Section 14.01, the state requires that all containers of aquaculture-raised striped bass, whether whole or filleted, are clearly labeled as "Hybrid Striped Bass". The labels must also include information on the state of origin, the names, and addresses of shipping and receiving dealers, the permit numbers of the shipping and receiving dealers, the date of shipment, and the net container weight. Aquaculture-raised hybrid striped bass fillets are also required to have the skin attached. Additionally, 322 CMR 14.01(5) makes it unlawful to promote, market, sell, or advertise hybrid striped bass products as "striped bass". Massachusetts extends these labeling requirements to all aquacultured finfish species that are wild caught and landed in the state. It also prohibits any sale, promotion, or

transport of aquaculture-raised finfish unless they are properly labeled and clearly identified as being an aquaculture product.

4. North Carolina

Finally, while not directed toward aquaculture, an analogous legal framework for product differentiation exists in North Carolina. The state governs the possession and sale of wild-caught striped bass through a permitting and tagging system under 15A NCAC 030. 0503. Fish dealers must obtain a Striped Bass Dealer Permit for a specific harvest area- the Atlantic Ocean, the Albemarle Sound Management Area, or the Joint and Coastal Fishing Waters of the Central/Southern Management Area. Sale, purchase, or possession of striped bass without a validated dealer permit is unlawful. Striped bass taken from open harvest proclamation areas must have a tag attached to the mouth and gill cover. Tags are issued by the North Carolina Division of Marine Fisheries and must not be bought, sold, or transferred. These regulations support accountability and traceability and are designed to separate legally harvested wild-caught fish from illegal or misrepresented products in the market. Farmed striped bass in North Carolina are not subject to tagging requirements for transport or retail sale but must be accompanied by documentation identifying their cultured origin throughout shipment and distribution. The production of farmed striped bass requires appropriate permits or licenses from the North Carolina Department of Agriculture and Consumer Services, with additional regulatory oversight by the North Carolina Division of Marine Fisheries.

Without clear and consistent standards for traceability, aquaculture markets could unintentionally become an outlet for illegally harvested or undersized wild-caught striped bass. This not only undermines fishery management goals, but also erodes consumer confidence. Together, these state-level regulations demonstrate a coordinated approach to strengthen transparency, traceability, and compliance in the seafood supply chain. Additionally, they provide a valuable foundation for coordinated regional strategies or future federal policies aimed at ensuring product integrity and building consumer trust in the growing domestic aquaculture sector.

4 Marine Spatial Planning and Siting

The identification of suitable areas for aquaculture development, coupled with careful site selection and management, is fundamental to ensuring the success and long-term sustainability of offshore aquaculture. Forecasting environmental interactions represents a critical first step, providing the foundation for coastal and ocean-use planning while helping to equitably address points of resistance to aquaculture expansion.

This section highlights the challenges associated with unplanned or poorly coordinated aquaculture development and emphasizes the benefits of structured marine spatial planning (MSP) approaches. Spatial planning tools ranging from geographic information systems (GIS) and remote sensing to coupled biophysical and socioeconomic models offer science-based frameworks to guide aquaculture expansion in both coastal and offshore environments (Froehlich et al., 2017; Lester et al., 2018). Integrated approaches, such as the ecosystem approach to aquaculture (EAA), explicitly account for ecological carrying capacity, stakeholder interests, and governance structures (Morris et al., 2025; Theuerkauf et al., 2019). Increasingly, these tools are being adopted by regulatory agencies and decision-makers to address environmental, economic, social, and governance considerations, including biosecurity, climate change, and competition among ocean users.

Recent advances in MSP have yielded a suite of decision-support tools that foster coordinated, participatory, and integrated approaches to aquaculture management (Kapetsky et al., 2013; Gentry et al., 2017). Such tools not only help protect natural resources but also provide mechanisms to balance multiple, and often conflicting, uses of marine space. Drawing on case studies, this section identifies both successful examples of MSP implementation and common pitfalls or barriers that may hinder practical application.

Planning for aquaculture operations in U.S. federal waters requires a particularly high level of spatial analysis, given the diversity of existing ocean uses and the complex siting criteria required for offshore fish farms. Suitable sites must balance biophysical parameters (e.g., water depth, current speed, wave exposure, distance to port) with regulatory requirements, ecological sustainability, and social acceptance. Effective planning also necessitates consideration of cumulative impacts across time and space, as well as harmonization of aquaculture siting with broader sustainability goals and regulatory frameworks.

Recent planning and permitting efforts in the Gulf of America and Southern California highlight the necessity of multi-agency collaboration in evaluating candidate farm areas (Riley et al., 2021; Morris et al., 2021; Wickliffe et al., 2024). These processes incorporated assessments of navigation corridors, military operations, industrial activities, commercial and recreational fisheries, protected species, and sensitive habitats to minimize conflicts across ocean sectors. In both cases, spatial analysis tools proved essential at different stages of decision-making. For example, automatic identification system (AIS) vessel-tracking data, which record ship position, course, and speed, were used to evaluate potential navigational conflicts during planning. These analyses highlighted when specific data layers (e.g., vessel traffic, habitat mapping, socioeconomic information) were most informative—some being critical during the early planning phase to guide siting alternatives, and others later in permitting phases to refine project footprints and mitigate conflicts.

Together, the Gulf of America and Southern California case studies represent the most significant federal step yet to support offshore aquaculture development and underscore the importance of structured spatial planning in advancing offshore aquaculture for species such as striped bass along the U.S. coastline. By integrating ecological, economic, and social dimensions, MSP provides a transparent and adaptive framework capable of facilitating industry growth while safeguarding ecosystem health and compatibility among multiple oceanic uses.

As part of NOAA's National Ocean Service, the National Centers for Coastal Ocean Science (NCCOS) plays a central role in advancing MSP by developing science-based inclusive decision tools to inform precision siting for aquaculture and other sectors of the ocean economy. NCCOS integrates GIS technologies with ecological and ocean-use data to support planning, scoping, authorizing, and mitigating activities. These robust quantitative tools are paired with community and stakeholder engagement methods to bring in social-cultural considerations into the analysis. This approach provides strategies for siting aquaculture operations that account for regulatory and management priorities as well as stakeholder concerns. By reducing user conflicts and enabling coordination among regulators, operators, and stakeholders, spatial planning supports responsible aquaculture development in U.S. federal waters.

4.1 Siting Considerations for Atlantic Striped Bass

NOAA's NCCOS conducted a preliminary spatial analysis to identify thermally suitable areas for striped bass aquaculture along the U.S. Atlantic coast. The analysis evaluated both state and federal waters from Maine through Florida by quantifying how often water temperatures fell within defined biological production thresholds.

The suitable temperature range is defined as the range of water temperatures over which striped bass can maintain normal physiological function, survive, feed, and grow at commercially viable rates. Recent work conducted with industry partners indicates that temperatures from 15 to 30 °C support commercial production of striped bass from approximately 50 g to 2.5 kg (Andersen et al., 2021). Within this broader suitable range, the optimal temperature range represents the narrower thermal window that maximizes growth, feed conversion, and production efficiency. Laboratory studies of juvenile striped bass have identified optimal temperatures ranging from 24 to 28 °C (Cox & Coutant, 1981; Secor et al., 2000), while grow-out performance in production settings is generally reported optimal between 22 and 26 °C (R. Borski, North Carolina State University, pers. comm.). This framework aligns with bioenergetic growth models developed for striped bass, where the suitable thermal range represents conditions that sustain survival and growth (Hartman & Brandt, 1995), while the optimal range for aquaculture identifies the temperatures that maximize growth, production efficiency, and profitability (Klinger et al., 2017; Mengual et al., 2021).

Temperatures below 15 °C or above 30 °C are expected to reduce physiological performance, slow growth, and lower economic returns. Because striped bass in offshore systems are fully submerged, the assessment used modeled temperatures between 6-10 m depth to represent cage conditions. The siting analysis also limited candidate areas to water depths of 50 to 150 m to support cage infrastructure and to locations within 30 nautical miles of shore, since greater distances are likely to reduce economic viability.

The Naval Research Laboratory Global Ocean Forecasting System 3.1: 41-layer HYCOM + NCODA Global 1/12° Analysis dataset was used to estimate temperatures at depth as it provided the high spatial and temporal range and resolution needed for this analysis. The dataset provides modeled temperatures at 40 depth levels throughout the global ocean, at eight times throughout the day to inform daily temperature ranges. For each grid cell, minimum and maximum daily temperatures were extracted, and a location was considered to fall within the thermal range only if both values were within the defined threshold range. The number of qualifying days was then tallied across the study period. Cage culture constraints, as outlined previously, were applied to further isolate areas with appropriate thermal conditions, sufficient depth for viable cage deployment, and distances from shore that are economically realistic. Depth estimates were sourced from the NOAA National Centers for Environmental Information Earth Topography (ETOPO) Global Relief Model (NOAA NCEI, 2022). Data from 2020–2023 were used to calculate the mean number of days within suitable and optimal ranges per year.

Large areas of thermal suitability were identified throughout the mid-Atlantic and southern Atlantic regions, with many locations remaining within the suitable range for nearly an entire year (Figure 1). When cage culture siting criteria were applied (i.e., depth and distance to shore) the extent of available areas decreased substantially; however, regions off Florida and North Carolina continued to provide broad areas of suitable conditions. Optimal temperatures were less common than the broader suitable range, as expected, but conditions exceeding 100 days per year at optimal temperatures were observed along the mid-Atlantic and southern coast. Despite the prevalence of wild striped bass populations in the northeast, areas north of Cape Hatteras, North Carolina, frequently experienced temperatures below the suitable range, often for weeks at a time and more than 100–200 days annually. Elevated temperatures were less problematic, as the Gulf Stream remains offshore of the 30 nm distance from shore constraint that was applied.

During our study period, an average of 68.2 million ha of state and federal waters along the Atlantic coast met the suitable temperature range for striped bass aquaculture ≥ 250 days annually. Within this area, an average of 27.1 million ha was within the optimal temperature range for at least 150 days. When depth and distance from shore criteria were applied to the areas that experienced optimal temperatures

on average ≥ 180 days the area decreased to 429,000 ha, located off the coasts of North Carolina and Florida.

Although the physiological performance, growth, and bioenergetics of striped bass is comparatively well studied (e.g., Anweiler et al., 2019; Penny & Pavey, 2021; 2023), important uncertainties remain regarding the thermal tolerances of different populations and life history stages. Laboratory studies are required to clarify how thermal thresholds vary across developmental stages and genetics, thereby informing more precise bioenergetic modeling. Additional physiological thresholds should also be quantified and integrated into future analyses to better characterize the species' aquaculture potential.

Expanding this analysis to other regions of the U.S. EEZ would provide a broader perspective on feasibility. Moreover, as ocean conditions continue to shift, evaluating bioenergetic thresholds under forecasted climate and thermal regimes will be essential to assessing the opportunity and longevity of aquaculture potential. Such analyses should also consider the adaptive capacity of both the industry and the species itself when estimating long-term temperature changes. Finally, extending this framework to other candidate species would help identify opportunities for advancing offshore aquaculture in U.S. waters.

Climate Change and Ocean Warming

Projected warming of the northwest Atlantic is expected to alter thermal suitability for striped bass. Offshore sites in North Carolina and Florida already approach the upper tolerance threshold of 30°C during summer months, potentially increasing risks of thermal stress (Friedland et al., 2025). Conversely, northern sites may become more viable under warming scenarios.



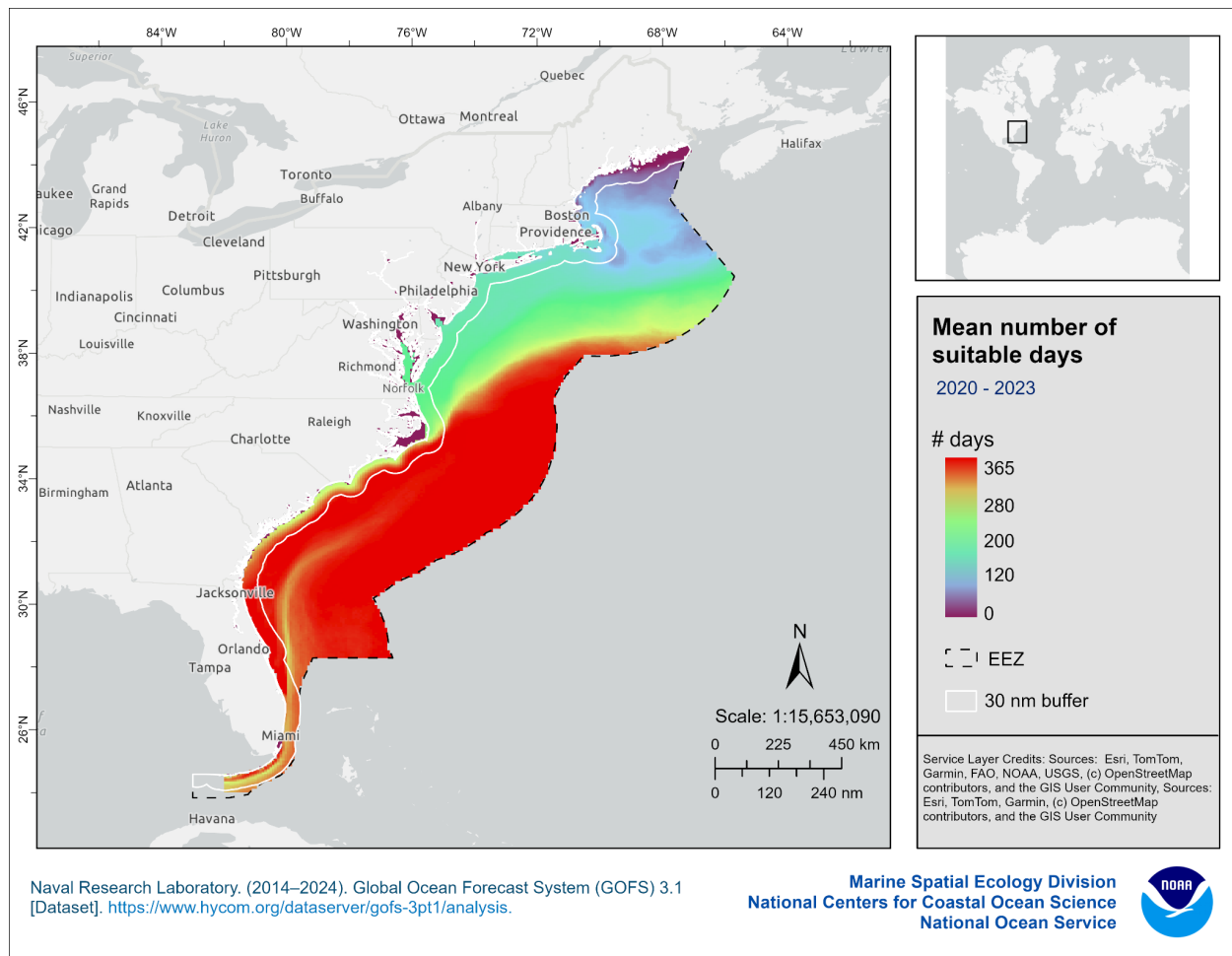


Figure 1. Number of days at suitable temperatures (15–30 °C) for striped bass, *Morone saxatilis*, in 2023. Water temperatures are presented for coastal and offshore waters through the extent of the Atlantic Coast U.S. EEZ (200 nm).

5 Consumer Awareness and Markets

Market conditions strongly favor the development of a domestic pure strain striped bass aquaculture sector (Andersen et al., 2021). Demand for sustainable, locally produced seafood is high, while wild harvests remain limited and imports of striped bass dominate supply. Pure-strain striped bass is well positioned to fill this gap, offering a recognizable and desirable product with strong consumer appeal and broad market potential.

When assessing the economic viability and sustainability of any new aquaculture industry, understanding market conditions, including supply and demand dynamics, is fundamental. These data inform pricing strategies, consumer behavior, and resource planning, while also guiding regulators and legislators on how to maximize economic benefits and minimize conflicts with existing enterprises.

Commercial hybrid striped bass aquaculture has been established in the U.S. since the late 1980s, complementing centuries of commercial capture fisheries. Despite these markets, interest from both producers and buyers is growing for pure-strain striped bass to meet rising demand for white-fleshed marine fish. Recent research and stakeholder engagement have also identified striped bass as a top candidate species for marine aquaculture expansion in the U.S. (Rexroad et al., 2021; Andersen et al., 2021; StriperHub, <https://ncseagrant.ncsu.edu/striperhub/>). These developments underscore the importance of evaluating the species' economic characteristics as commercialization advances.

5.1 Supply

A critical component of any economic analysis is the characterization of current market supply. For domestic aquaculture, evaluating the supply of wild-caught and imported alternatives provides insight into existing demand for a species and reveals trends in market strength over time. A comprehensive supply analysis for striped bass and other marine finfish species was previously conducted by Engle, van Senten, and Schwarz (2023); a similar methodology will be applied here using updated statistics to reflect current market conditions. This analysis will also incorporate the supply of farmed hybrid striped bass, given its relevance and similarity to the striped bass market.

According to the FAO (2025a), the only two regions where pure strain striped bass has been farmed since 1950 are Mexico and the Palestinian Territories. In 2023, Mexico had not reported any production (1,406 metric tons; 2022) and the Palestinian Territories had produced only 4 metric tons (FAO 2025a). Seven countries have produced farmed hybrid striped bass since 1950, however only four (Denmark, Israel, Italy, and the U.S.) reported production in 2024. The U.S. produced nearly 80% of the total supply of farmed hybrid striped bass in 2023 reaching 2,404 metric tons (FAO 2025a). Although the 2023 USDA Census of Aquaculture did not individually report statistics on food fish striped bass farms, 51 operations were identified as producing pure striped bass for “conservation, recreation, enhancement, or restoration purposes” in 2023 (USDA-NASS 2024).

Several states along the Atlantic coast allow for variable scales of commercial striped bass harvest, including Massachusetts, Rhode Island, New York, Delaware, Maryland, Virginia, and North Carolina. Commercial landings of striped bass reached 1,788 metric tons in 2023 while recreational landings were more than six times that (10,961 metric tons) in the same period (NOAA 2025b). While commercial landings remained relatively

flat from the prior year, recreational landings fell by 33% in 2023 compared to 2022 (NOAA 2025b). Overall, the current supply of striped bass products in the U.S. is limited, fragmented, and unable to keep pace with demand. Wild harvests are strictly regulated and hybrid aquaculture production, though established, has not scaled to meet broader seafood market needs. These constraints on supply highlight the opportunity for pure-strain striped bass aquaculture to expand domestic availability. With this supply gap established, the following section considers consumer demand and market drivers that make striped bass a compelling candidate for offshore aquaculture development.

5.2 Demand

The U.S. per capita consumption of seafood has remained relatively stable for the last 20 years, reaching 22.1 kg of consumption in 2022 similar to other “high-income countries” (FAO 2024). However, demand for imported seafood in the U.S. still remains the highest in the world, purchasing \$26.6 billion in 2024 which was \$4 billion more than the next country, China (FAO 2025b). In fact, 70-90% of the total seafood that is consumed in the U.S. is imported, with more than half of that volume coming from farmed sources (NMFS 2024). In recent years, the American consumer has shown an affinity for farmed products and is willing to pay more for locally produced seafood (Fonner & Sylvia 2015; Brayden et al., 2018; Quagraine 2019; Bouchard et al., 2021; Asche et al., 2022; Athnos et al., 2023). A domestic farmed striped bass industry has the potential to tap into these markets and take advantage of these US demand characteristics.

The primary market for striped bass extends across much of the U.S. eastern seaboard and Gulf States, where the species is well recognized and valued due to its long-standing fisheries. Additional, though smaller, markets exist in inland states. Wild-caught striped bass are harvested commercially under strict state-specific seasonal quotas and size limits and are typically landed at larger sizes (greater than 8–10 lbs.), making them well suited for fillet markets and high-end restaurants. In contrast, hybrid striped bass supply a different niche, commonly marketed at smaller sizes (1.5–2.0 lb.) and sold whole or live, particularly to urban ethnic markets. Farmed striped bass could enter channels similar to those of wild-caught fish while offering the advantage of year-round availability. As a highly recognizable product with versatile applications (e.g., whole fish, fillets, sushi), farmed striped bass would be positioned to complement, rather than replace, existing market segments.

Consumer preferences for several aquaculture species highlighted in the southeastern U.S. have been evaluated to better understand consumption habits (Agyeman et al. 2025; Rexroad et al. 2021). Respondents who rated the “source” of their striped bass as an important attribute, consumed it seasonally, and preferred to purchase it in restaurants or grocery stores were more likely to express strong demand (Agyeman et al. 2025). These findings suggest that future producers could successfully market striped bass through restaurants and grocery stores to seasonal consumers already familiar with the product.

Interestingly, price was not a statistically significant factor influencing the likelihood of purchase (Agyeman et al. 2025). Further work on consumer perceptions specific to striped bass is currently being conducted by StriperHub.

The extent to which farmed striped bass will substitute for imported or wild-caught striped bass in domestic markets remains uncertain and will require further study once production facilities are established. Market impacts will depend on factors such as relative price and availability of alternatives, product quality, production volumes, and the specific market channels targeted. Importantly, the introduction of a farmed product could also stimulate overall demand by increasing consumer exposure to striped bass in different seasons and product forms not traditionally available.

5.3 Harvest, Transport, and Processing

Hybrid striped bass are typically harvested at a size of 1.5-2.5 lbs., which is attained after 16-20 months of growout depending on the culture practices and environmental conditions. Fish are harvested using seines, lift nets, or pumping systems, and are either immediately placed in ice slurries to maintain product quality or live-hauled to urban ethnic markets which often provide the highest prices. Regardless of the sales channel, hybrid striped bass are sold almost exclusively as whole fish, with limited processing into fillets or other value-added products. At typical harvest sizes, hybrid striped bass yield only 30–35% fillet recovery, which is comparatively low and provides little incentive for processors to pursue fillet production.

Pure striped bass are produced in much smaller volumes, largely for regional markets. In the U.S., their proposed market size is 3–7 lbs., which can be attained in 24–36 months under favorable culture conditions. Unlike hybrids, pure striped bass are envisioned for harvest and processing into fillets and other value-added products, following a model more typical of marine finfish such as salmon. At these larger harvest sizes (≥ 3 lbs.), striped bass can achieve fillet yields closer to 40%, producing thicker cuts that resemble their wild-caught counterparts, a characteristic that enhances consumer familiarity and market appeal.

Efficient harvest and processing logistics are critical to resource use in offshore striped bass aquaculture. Variables such as harvest frequency, size uniformity, and stocking density directly influence costs and product quality (Engle et al., 2024). Uniform fish size simplifies grading and increases processing efficiency, though variability at scale can complicate operations. Optimizing stocking densities and harvest timing improves yields and reduces waste (Andersen et al., 2021).

Cold-chain management is important for striped bass, a high-value product requiring rapid chilling and continuous refrigeration to maintain freshness. Offshore distance complicates logistics, often necessitating insulated containers or onboard chilling systems (Srikanth et al., 2018). Efficient harvest and processing capacity will be critical for maintaining product quality, securing consistent supply, and enabling striped bass to penetrate broader domestic seafood markets.

5.4 Production Costs and Economic Contribution

Although no published studies have directly measured the cost of production for striped bass aquaculture in the U.S., several analyses have drawn on data from related species and production systems. Engle et al. (2024) estimated production costs for striped bass under three scenarios in the southern U.S.: coastal ponds modeled after red drum farms, offshore net pens modeled after greater amberjack (*Seriola dumerili*) and salmon farms, and recirculating aquaculture systems (RAS) modeled after salmon and rainbow trout facilities. Capital investments, production costs, and equipment requirements were adapted from these established industries, while biological performance assumptions for striped bass were derived from scientific literature and expert consultation. The analysis indicated that striped bass aquaculture was only profitable in offshore net pens, with breakeven prices comparable to those of commercially farmed red drum. Breakeven yields were similar to those of black drum, but higher than those required for species such as spotted seatrout and Florida pompano. Additional commercial research is needed to refine these estimates, and profitability in pond or RAS culture may be achievable with further technological and management improvements.

Economic contribution analyses provide broader insight into the linkages between aquaculture and other sectors of local, state, and national economies. A recent study by Kumar et al. (2024) found that U.S. aquaculture contributed \$3.8 billion to the national economy and supported more than 22,000 jobs. Foodfish farms exhibited an economic multiplier of 1.79, while marine aquaculture had a multiplier of 1.78, meaning that each dollar spent generated an additional \$0.79 and \$0.78, respectively, in related economic activity. The development of a robust striped bass aquaculture industry has the potential to generate similar spillover benefits, particularly for coastal communities. Such growth could stimulate investment in marine infrastructure and logistics networks, creating shared benefits across multiple industries.

5.5 Conclusion

While the true economic and marketing characteristics of striped bass aquaculture cannot be fully assessed until a commercial industry is established in the U.S., potential can be estimated from current science, existing literature, and comparable industry sectors. Hybrid striped bass has been cultured successfully at commercial scale since the 1980s.

There is momentum and a growing shift toward pure-strain striped bass culture, with several farms in North Carolina, Florida, and Texas already pursuing this transition. In contrast, the supply of wild striped bass in the U.S. remains limited relative to other fisheries, and the long-term sustainability of both commercial and recreational harvest is increasingly uncertain.

Demand for seafood in the U.S. remains strong with the majority of products being imported. While commercial-scale striped bass aquaculture is still in the early stages, economic indicators suggest the species has viable market potential, particularly in the context of growing consumer demand for domestic, sustainably produced seafood. Demand-side conditions are favorable, yet production cost challenges and regulatory inconsistencies—especially in states with gamefish designations—must be addressed. Interstate transport and sale of pure-strain farmed striped bass could present barriers for market development that will require synergies between state and federal regulations to avoid enforcement challenges and ensure transparency.

6 Striped Bass Aquaculture History

The history of striped bass aquaculture has been detailed extensively in the literature, with Andersen et al. (2021) offering the most current account. The culture of striped bass was first described in the late nineteenth century by managers with an interest in stock enhancement to improve production of fish for enhancing commercial and recreational fisheries for tributaries of Albemarle Sound, Chesapeake Bay, Delaware Bay, and New York Bay (Worth 1884a; Bowers 1900). The first published report of a successful hatch of striped bass eggs under artificial conditions was made in 1874 by Spencer Baird, the first commissioner of the U.S. Commission of Fish and Fisheries (Baird, 1874). In 1879, the U.S. Fish and Wildlife Service (USFWS) hatched striped bass fry at a site located along the Albemarle Sound in North Carolina that had been used as an American shad (*Alosa sapidissima*) hatchery (USFWS, 1882). The U.S. Fish Commission established the first dedicated hatchery for the propagation of striped bass in Weldon, NC (Worth 1884b). The Edenton National Fish Hatchery was then established in North Carolina in 1898 by the USFWS with a similar purpose to Weldon (Woodroffe, 2012).

In the early twentieth century, the USFWS published technical manuals detailing procedures for spawning, hatching, and fry release of various cultured fishes, including striped bass (Piper, 1982). By 1910, the foundational methods for striped bass propagation were already established; however, the U.S. Bureau of Fisheries, formerly U.S. Fish Commission, abandoned plans for marine stock enhancement (Worth, 1910). Interest in hatchery-based programs was revived in the 1950s, following the discovery of a naturally reproducing striped bass population in the Santee-Cooper Reservoir system of South Carolina (Scruggs Jr., 1957). This development stimulated a large-scale augmentation program aimed at creating self-sustaining populations in freshwater rivers

and reservoirs across the southeastern U.S., including Kentucky, Alabama, Georgia, and South Carolina (Geiger & Parker, 1985; Kinman, 1988; Stevens, 1975). By the 1980s, striped bass had been successfully stocked into hundreds of reservoirs across at least 36 states (Stevens, 1984; Kinman, 1988). Despite much success advancing culture and stocking practices, striped bass remained a challenging species.

A range of biological and operational constraints historically limited the development of striped bass culture. Key challenges included: (1) high sensitivity to handling and confinement stress; (2) inconsistent spawning success and unreliable hatchery production; (3) cannibalism during larval and juvenile stages, particularly under high stocking densities; (4) susceptibility to bacterial, parasitic, and viral diseases; and (5) elevated mortality during harvest, grading, and transport. Collectively, these constraints hindered large-scale adoption of striped bass aquaculture and shifted industry emphasis toward the culture of hybrid striped bass, which demonstrate improved tolerance to handling and environmental variability, more consistent performance on formulated feeds, and greater overall resilience to health management challenges. While history shows technical challenges, the hybrid industry demonstrates scalable solutions that inform pure-strain development.

6.1 Striped Bass Aquaculture: Lessons from the Hybrid Industry and Pathways for Expansion

Beginning in the 1960s, hybrid crosses between striped bass and other Moronids were produced because preliminary findings indicated that hybrids exhibited greater tolerance to extremes in temperature and dissolved oxygen than either parental species so were better suited in many aquaculture systems (Logan 1968). The most common cross made was between striped bass males and white bass (*M. chrysops*) females (i.e., sunshine bass) because many producers found that spawning smaller white bass females required less expertise than spawning striped bass females (Smith 1988). It was not until emergency fishing moratoriums were imposed (Maryland 1985–90; Virginia 1989–90) following the collapse of the striped bass fishery in the 1980s that the path for commercial hybrid striped bass aquaculture as a means of supplying a valuable seafood product emerged (Hodson & Hayes, 1990).

Today, the hybrid striped bass industry is fourth in value among finfish species in the U.S., behind only channel catfish, Atlantic salmon, and rainbow trout. Hybrid striped bass are currently cultured in about 19 different states, particularly in the South and Midwest, in constructed, inland freshwater ponds. The fish are usually grown for about 16 months, and are marketed whole at approximately 680 g (1.5 lbs.; D'Abramo et al., 2002). In coastal states, consumers are accustomed to, and often prefer, pure-strain wild striped bass harvested from marine environments. Pure strain striped bass, rather than hybrids, are also highly preferred in lucrative ethnic markets, seafood restaurants and sushi bars,

and unlike hybrids, these pure strain striped bass can be grown in “open” systems (e.g., coastal areas) with reduced risk of genetic contamination of wild stocks. Marine striped bass culture was even initiated to meet this demand, and for these purposes, fish are generally grown to larger sizes (2.2 kg) for whole, gutted, or filleted market forms.

Although hybrids have successfully established their niche in the US aquaculture landscape, they have struggled to penetrate mainstream markets where pure striped bass have an advantage. Nonetheless, they offer a close industry comparable in terms of production planning discussions and have helped lay the foundational research for pure striped bass aquaculture. The remaining sections of this chapter will provide an overview of the current understanding of production planning and intensive culture systems for striped bass by drawing upon strategies from the closely related and established U.S. hybrid industry.

6.2 Hatchery and Nursery Systems

Hatcheries typically maintain broodstock, which are induced to spawn using temperature and photoperiod manipulation, behavioral cues, and hormone induction when necessary (Hodson and Sullivan 1993; Clark et al., 2005; Andersen et al., 2021). Once spawned, fertilized eggs are incubated in McDonald-type hatching jars or tanks until they hatch, usually within 2-3 days at water temperatures of 18-22°C. After hatching, the larvae are either transferred directly into fertilized ponds or maintained in indoor nursery tanks where they are fed a diet of live zooplankton such as rotifers and brine shrimp nauplii (i.e., *Artemia*). As the larvae grow, they are weaned onto commercially prepared diets.

Once juvenile striped bass reach a size of approximately 1–2 g, they are typically transferred to outdoor nursery ponds or larger tanks for further grow-out. Earthen ponds, ranging from 0.1 to 1.0 ha, are fertilized to enhance natural productivity and supplemented with commercial feeds. Juveniles are commonly stocked at densities of 50,000–100,000 fish per hectare and grown to 10–50 g over a period of 3–4 months.

Indoor RAS systems represent an alternative nursery method, particularly in regions where temperatures are unsuitable for pond culture (e.g., colder latitudes). RAS facilities produce juveniles for transfer to larger land-based farms. Outdoor ponds and climate-controlled RAS present viable opportunities to produce large numbers of fingerlings required for offshore aquaculture operations. A parallel model exists in the Atlantic salmon industry in Norway, where smolt are reared in freshwater hatcheries and nursery systems before transfer to coastal and offshore marine cages. Over the past decade, conventional flow-through hatcheries have increasingly been replaced by RAS, which offer advantages in water use efficiency, environmental control, and siting flexibility (Brown et al., 2025).

6.3 Transport and Stocking

When juvenile striped bass reach the target size, they are harvested from nursery systems and transferred to grow-out facilities. Harvesting is commonly conducted using seines or by draining ponds, after which fish are loaded into transport tanks equipped with aeration or oxygenation systems to maintain water quality during transit. Upon arrival, fish are acclimated to the receiving water before being stocked into production units.

Stocking densities in grow-out systems vary with production intensity and facility design, typically ranging from 10 to 50 kg/m³. In pond or net-pen systems, densities are generally maintained at the lower end of this range due to limited environmental control, whereas RAS can support higher densities under carefully managed conditions with systems for management of water quality, dissolved gases, and disinfection. In these open-water and pond environments, densities are also moderated by the larger volume of production systems and the space afforded allowing individuals to swim more freely.

6.4 Growout Systems

Although most U.S. production of hybrid and pure striped bass occurs in ponds, tanks, and raceways, there is increasing interest in offshore culture systems to meet growing demand for marine foodfish. Offshore aquaculture involves rearing fish in marine cages or net pens located in coastal or offshore waters. These systems offer potential advantages over land-based production, including reduced land use, lower energy requirements, and in some cases, improved economic feasibility. At the same time, offshore operations face unique challenges such as exposure to severe weather, predation, and logistical constraints associated with remote locations.

Net pens used for culture are commonly constructed of high-density polyethylene (HDPE) or steel and range in volume from 100 to 1,000 m³. Stocking densities typically range from 10 to 25 kg/m³, with fish fed commercial diets through automated feeding systems. Offshore environments are generally characterized by high water exchange, stable temperatures, and elevated dissolved oxygen, conditions that support favorable growth. However, the open nature of these systems increases risks of escapement and disease transmission to wild stocks compared with land-based facilities.

Land-based indoor systems (i.e., RAS technology) provide an alternative grow-out strategy, offering controlled culture conditions, robust biosecurity and disease management, flexible siting to enhance market access, and reduced risks to marine ecosystems (Brown et al., 2025). Despite these advantages, widespread adoption of RAS for striped bass and other marine finfish has been limited by high capital and operating costs and the challenges of maintaining stable production. Continued research is needed

to address economic feasibility, product quality, feed formulation, and control of early maturation in culture systems.

7 Offshore Aquaculture Technology

Technological innovation has made it increasingly feasible to culture marine finfish in coastal and open-ocean environments, including the U.S. EEZ. Offshore aquaculture is generally defined as taking place in open ocean waters, in highly exposed environments subject to strong currents, waves, and storm events, requiring more robust and complex infrastructure than inshore or nearshore systems (Price & Morris, 2013; Drumm, 2010; Kapetsky et al., 2013). While offshore aquaculture represents only a small fraction of U.S. production today, demonstration projects and deployments in deep water have demonstrated that innovation in gear, materials, and monitoring systems can unlock substantial potential for growth (Froehlich et al., 2017; Buck et al., 2025). This sector currently consists of an offshore fish farm in Hawaii state waters and a small number of open ocean shellfish and seaweed farms around the nation.

7.1 NOAA's Role in Offshore Aquaculture Development

As one of the federal agencies responsible for stewardship of the nation's marine resources, NOAA is fostering the growth of a robust domestic aquaculture industry while ensuring that offshore development remains consistent with its environmental stewardship mandates. These efforts include developing tools to evaluate the ecological benefits and risks of marine aquaculture, implementing science-based regulations to safeguard ecosystems, and advancing production designs and operational practices that are compatible with sustainable fisheries and ocean use (Nicolls et al., 2020; NOAA OCM, 2023; BEA, 2021). Multi-agency work groups are also developing regionally tailored permitting frameworks to improve the efficiency and transparency of decision-making while maintaining compliance with environmental law. In support of these initiatives, Feldman et al. (2025) published a *Technical Guide to Marine Aquaculture Gear*, providing detailed guidance on cage and net-pen systems, mooring and anchoring technologies, and other essential components required for offshore aquaculture. These roles ensure that technological innovation is paired with regulatory oversight to support sustainable striped bass farming.

7.2 Marine Cages and Net-Pen Systems

Marine cage and net-pen aquaculture require large, durable enclosures designed to withstand offshore wave energy and the strong swimming behavior of cultured species. Striped bass, in particular, require high water flow for oxygenation, ample space to support growth, and robust containment systems to prevent escapes or structural

damage. Successful offshore operations also depend on high-quality formulated feeds, continuous monitoring of fish health, and strict biosecurity measures to minimize the risk of disease. Site selection is critical to avoid harmful algal blooms, ensure dispersal of organic waste, and maintain thermal regimes within the species' tolerance limits.

For striped bass, offshore production would likely use large-volume submersible or semi-submersible cages engineered for high-energy environments. Submersible cages can be lowered below the wave zone during storm events, while semi-submersible pens and large circular HDPE cages provide surface stability with reduced wave exposure (Langan & Horton, 2003; Price et al., 2017). Cage volumes on the scale of tens of thousands of cubic meters afford fish the ability to swim freely, which not only supports welfare but also reduces effective stocking densities allowing for optimal growth and production of striped bass.

7.3 Nets and Predator Exclusion

Net design is central to containment and welfare. Offshore nets are typically constructed from abrasion-resistant, high-strength materials such as knotless nylon or high-density polyethylene (HDPE), designed to withstand constant pressure from fish and environmental forces. Mesh sizes are selected to retain the smallest stocked fish while minimizing drag and maximizing water exchange. Predator exclusion is achieved through reinforced predator nets or double-net systems that deter sharks, seals, and other large marine animals. These barriers are tensioned with spacers or standoff frames to prevent collapse into stock nets, reducing the risk of escapes or entanglement. Overhead bird nets or canopy structures are commonly installed to prevent depredation by seabirds, reducing stock stress and feed loss. Routine inspection and net cleaning are essential to maintain mesh integrity, prevent fouling that diminishes water exchange, and ensure both containment and predator deterrence. Increasingly, copper-alloy mesh is being adopted despite its higher cost, as it provides superior resistance to biofouling, reduces the frequency of net cleaning, and offers enhanced durability and predator protection relative to traditional synthetic materials.

7.4 Innovation and Future Directions

Technological advances are rapidly enhancing the sustainability and profitability of offshore aquaculture. Innovations include co-location with existing offshore infrastructure, autonomous feeding barges, ship-based aquaculture, real-time environmental monitoring platforms, and novel antifouling materials. In the U.S., there is competition for nearshore space and expansion into federal waters provides opportunities for larger sites with fewer user conflicts and greater social acceptance among commercial and recreational fishing communities (Kapetsky et al., 2013; Buck et al., 2025). With one of the largest EEZs in the world, the U.S. has significant potential to expand striped bass production offshore,

provided that engineering, logistical, and environmental stewardship challenges are addressed through continued research, innovation, and regulatory collaboration.

8 Environmental and Ecosystems

Evidence from modern offshore systems shows that environmental impacts of net pen aquaculture can be limited and manageable when best practices are applied (Price & Morris, 2013). Strong currents, deeper waters, and advanced feeds reduce risks of nutrient buildup and habitat degradation, and with appropriate siting and monitoring, offshore striped bass farming can align with ecological sustainability goals while avoiding significant long-term ecosystem harm.

Despite these opportunities, public perception and regulatory concern remain among the largest barriers to starting new offshore aquaculture ventures in the U.S., particularly given the large ocean areas that could support development and the potential number of farms. The environmental effects of marine aquaculture vary widely depending on species selection, production methods, siting, and scale of operations (Belle & Nash, 2008; Price & Morris, 2013). Modern production technologies, standardized operating procedures, and best management practices (BMPs) reduce risks to water quality, benthic habitats, and marine life. Offshore farming, in particular, provides opportunities to minimize impacts due to deeper waters, stronger currents, and greater dilution potential compared to nearshore settings (Buck et al., 2025). At the same time, offshore development requires careful evaluation of ecological interactions, cumulative effects, and regulatory safeguards to ensure sustainable growth.

In the context of striped bass aquaculture, potential environmental effects can be grouped into several categories: (1) water quality, (2) benthic and sedimentary processes, (3) interactions with marine life and habitats, (4) cumulative and landscape-scale effects, and (5) mitigation strategies, including novel approaches such as integrated multi-trophic aquaculture (IMTA). This section synthesizes current knowledge, with a focus on offshore relevance, and highlights management and monitoring frameworks that can safeguard essential fish habitats (EFH) while supporting the expansion of a domestic striped bass aquaculture industry.

8.1 Water Quality and Nutrient Enrichment

Discharges such as solid wastes, nutrients, ammonia, fish waste, feed waste, pharmaceuticals, and chemicals from aquaculture operations are primarily governed by the implementing regulations of the Clean Water Act (CWA) Sections 402 and 403 (EPA, 2021). Section 402 requires that a National Pollution Discharge Elimination System (NPDES) permit for discharge into federal waters be issued in compliance with the U.S. Environmental Protection Agency's (EPA) ocean discharge criteria under Section 403,

which aim to prevent unreasonable degradation of receiving waters (NOAA, 2022; EPA, 2025). In preparation of an NPDES permit, EPA generally applies water quality models to characterize interactions between effluent and the receiving environment. These models can address effluent dispersion within the water column and particulate deposition in near- and far-field zones, thereby informing monitoring plans to ensure environmental compliance and performance (Cromey et al., 2002; Stucchi et al., 2005).

Three-dimensional (3D) modeling tools have been developed to refine these assessments by predicting the transport and fate of aquaculture-derived wastes under site-specific conditions. By incorporating hydrodynamics, bathymetry, stocking densities, and feed inputs, these models simulate the dispersion of dissolved nutrients and the deposition of solid wastes, enabling forecasts of benthic organic enrichment, nutrient concentrations, and dissolved oxygen dynamics (Cromey et al., 2002; OSPAR, 2005; Newell & Richardson, 2014). Their predictive capability provides a science-based framework to evaluate farm-scale and cumulative impacts, guide siting decisions, establish thresholds for sustainable production, and reduce ecological risks. When integrated into regulatory processes, such modeling approaches strengthen the environmental safeguards of aquaculture permitting while supporting industry growth in a precautionary and adaptive management framework.

Organic Loading

The primary water quality concerns from finfish cage culture are nutrient enrichment (nitrogen and phosphorus), suspended particulates, lipids, and fluctuations in dissolved oxygen (Belle & Nash, 2008; Holmer, 2010). Waste from feed and fish excretion contributes organic matter and nutrients to surrounding waters. In offshore environments, strong currents and high flushing rates typically enhance dispersal, reducing localized benthic accumulation compared to nearshore systems (Chamberlain & Stucchi, 2007). Nonetheless, large-scale striped bass production could elevate nitrogen and phosphorus inputs, particularly if stocking densities are not matched with site-specific hydrodynamics.

Studies across the U.S. and Europe indicate that when farms are sited in deep, well-circulated waters, measurable nutrient effects are typically limited to within 30 m of cages, and persistent long-term impacts are rare (Price & Morris, 2013). Improvements in feed formulation, feeding efficiency, and digestibility have also substantially reduced nutrient loading compared to historical operations (Naylor et al., 2009). Nutrient spikes and transient oxygen declines may occur during feeding events but generally recover quickly in offshore sites with strong flushing (Troell et al., 2009).

In contrast, farms located in shallow or semi-enclosed nearshore systems are at higher risk of causing localized eutrophication. Here, aquaculture impacts may be difficult to distinguish from terrestrial nutrient inputs or municipal discharges (Shumway, 2011). For striped bass offshore culture, siting in high-energy environments such as off the

continental shelf of North Carolina or Florida may reduce these risks. Maintaining high water exchange rates and adopting BMPs such as optimized feeding regimes, precision monitoring of feed delivery, and selection of formulated diets are critical for protecting water quality.

Dissolved Oxygen Dynamics

Respiration of fish and decomposition of organic waste can reduce dissolved oxygen (DO) levels, potentially affecting both cultured stocks and wild organisms. Offshore siting criteria, particularly depth (>50 m) and current speed (>5 cm s⁻¹), help mitigate these risks by ensuring sufficient oxygen replenishment. Seasonal stratification along the Atlantic coast, particularly in the mid- and south-Atlantic Bight, may constrain vertical mixing and should be carefully considered in site selection and hydrodynamic models (Friedland et al., 2025).

Hydrodynamics and Waste Dispersal

Modeling current velocities, flushing rates, and vertical mixing is central to evaluating carrying capacity. Offshore aquaculture has an advantage of greater dispersion compared to coastal farms, but cumulative impacts across multiple farms could overwhelm assimilative capacity if not spatially managed. Advanced models such as coupled hydrodynamic-biogeochemical frameworks (e.g., FVCOM, HYCOM, ROMS) can predict dispersal of nutrients and organic matter.

8.2 Benthic Habitats

Sedimentation Impacts

Deposition of waste feed and fecal matter can alter benthic community structure beneath cages. In coastal salmon farms, shifts toward opportunistic polychaetes and hypoxia-sensitive taxa have been observed (Hargrave, 2010). The extent of benthic impact offshore is expected to be more diffuse due to deeper water and higher energy conditions, though localized organic enrichment remains possible. For example, at well-managed offshore farms, these effects are typically confined to within 100 m of cages and benthic recovery between harvest and re-stocking is often rapid (Keeley et al., 2014). Anaerobic conditions may develop under heavily impacted sites, particularly in depositional environments with limited flushing or soft sediments (Kutti et al., 2007). To minimize risk, site selection should prioritize erosional seafloors, adequate depth, and high current velocity to disperse organic matter (Belle & Nash, 2008).

Emerging monitoring tools, including stable isotope tracers, acoustic imaging, and automated image analysis, provide cost-effective methods for assessing benthic impacts and far-field dispersal (Callier et al., 2018). Regulatory protocols often require sediment

monitoring of indicator parameters such as redox potential, total organic carbon, and sulfide concentrations. Adaptive management frameworks, wherein farm management practices are modified in response to monitoring outcomes, represent a best practice for ensuring benthic protection.

Essential Fish Habitat

Offshore aquaculture operations may occur within or adjacent to designated Essential Fish Habitat (EFH). To the extent practicable, siting should minimize interactions with sensitive benthic features, including deep-water corals and hard-bottom reef systems. Along the Atlantic coast, these habitats are frequently associated with shelf breaks and submarine canyon systems (NOAA, 2021). Early consultation with relevant management agencies, combined with baseline environmental surveys, can inform site selection and help reduce the risk of habitat disturbance or degradation.

In the South Atlantic region, proposed offshore aquaculture sites may also overlap with habitats that support diadromous fish species, coral reef systems, and estuarine waters that are hydrologically connected to EFH (SAFMC, 2014). Mandatory consultation processes and site-specific environmental review can help identify these sensitivities and guide placement decisions. While poorly sited operations have the potential to affect benthic communities and water quality, locating facilities in deeper, well-flushed offshore waters is generally associated with a lower likelihood of significant environmental impacts.

The NOAA NCCOS has ongoing collaborations with the EPA to provide depositional and water quality modeling products (see Figure 2) and science advice to support agency permitting and associated environmental reviews and consultations for finfish aquaculture projects proposed for U.S. federal waters.



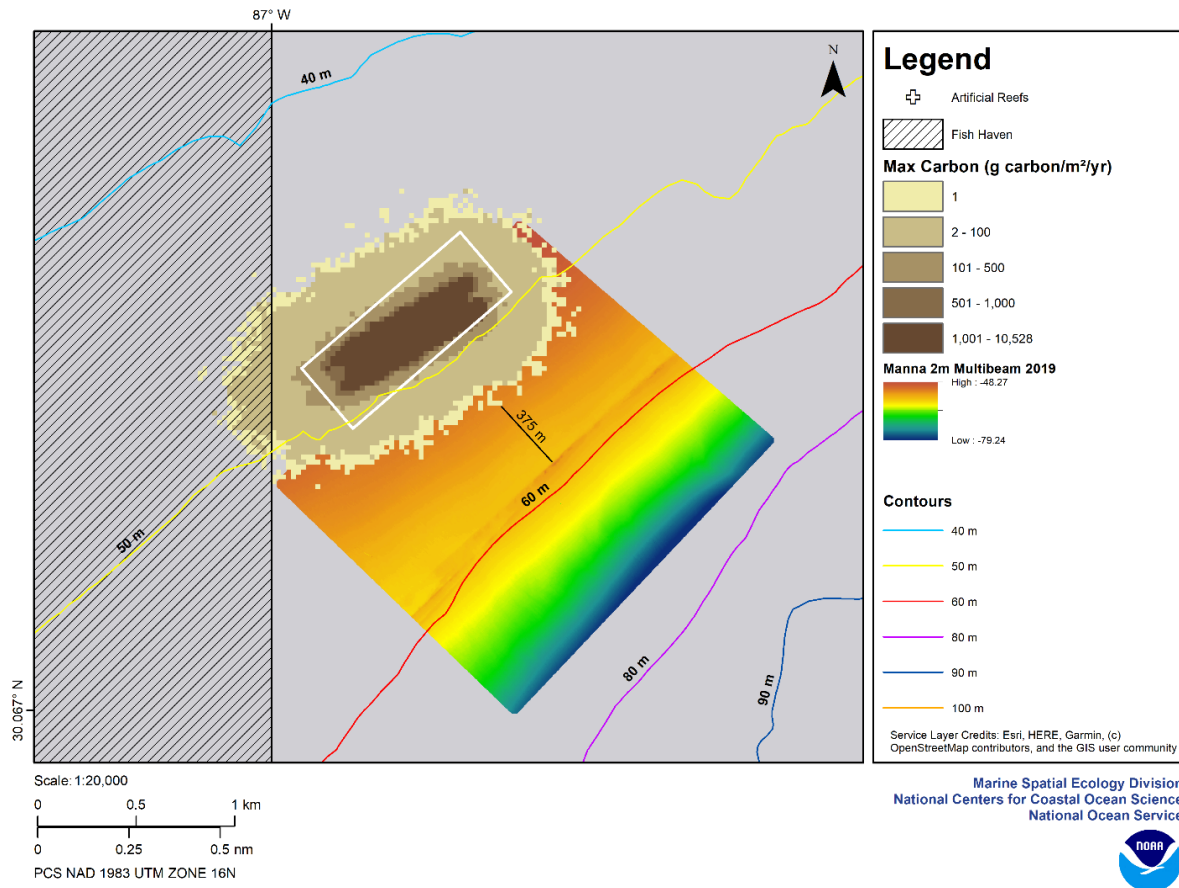


Figure 2. NOAA's National Centers for Coastal Ocean Science applied high-resolution depositional modeling to estimate maximum carbon deposition from a commercial-scale offshore finfish farm in the Gulf of America. Bathymetric data were collected during the baseline environmental survey and are represented at 2-m spatial resolution. The depositional model was run over a five-year period under maximum biomass conditions for an 18-cage configuration. Hydrodynamic forcing was derived from 2018 current fields produced by the Gulf of America HYCOM model. Model results demonstrate the importance of precision siting in identifying locations where solid waste and carbon deposition are sufficiently dispersed, thereby minimizing localized accumulation and supporting environmentally appropriate farm placement.

8.3 Protected Species and Habitat Interactions

The introduction of offshore aquaculture structures into Atlantic waters requires careful evaluation of potential interactions with protected resources, including marine mammals governed by the Marine Mammal Protection Act (MMPA) and species and habitats protected under the Endangered Species Act (ESA) (NOAA Fisheries, 2023a; NOAA

Fisheries, 2023b). Interactions between aquaculture gear and marine mammals, sea turtles, and seabirds remain an active concern but have been well documented both globally and domestically (Price & Morris 2013; NMFS 2015; Price et al. 2016; NMFS 2019; Bath et al. 2023). Recently, the NOAA Technical Guide to Offshore Aquaculture Gear and Protected Species Interactions indicates that entanglement risk is generally low for most offshore cage designs but not negligible, particularly for large whale species and protected turtles (Feldman et al., 2025). Gear modifications such as tensioned mooring lines, weak links, minimized slack, and the use of stiff or coated materials are essential to reduce entanglement hazards. In addition, strategic siting that avoids migratory corridors and ecologically sensitive habitats further lowers the likelihood of interactions.

Adequate risk assessment requires a baseline understanding of offshore aquaculture system design, mooring and net-pen configurations, feed inputs, and operational practices proposed for striped bass culture (Price & Morris, 2013). Potential pathways of interaction include entanglement with nets or mooring lines, attraction of predators such as seals and dolphins to farm sites, displacement or alteration of migratory routes, and changes in prey availability for ESA-listed fish, sea turtles, and marine mammals (Nelson et al., 2021; Read, 2008). The proximity of farms to designated critical habitats requires precautionary siting to avoid overlap (NOAA Fisheries, 2016; NMFS, 2021a; 2021b).

Emerging best management practices and technological innovations provide pathways to further reduce risks. These include predator-resistant and tensioned netting, siting analyses that explicitly exclude sensitive habitats and migratory routes, and adaptive monitoring programs that integrate acoustic, visual, and satellite data (Rust et al., 2014). Taken together, these measures highlight the importance of coupling aquaculture science with regulatory frameworks to ensure that striped bass offshore aquaculture develops in a manner consistent with the long-term protection and recovery goals of the MMPA and ESA.

NOAA's NCCOS is advancing a physics-based 3-D entanglement simulator in collaboration with partners (Bureau of Ocean Energy Management and BelleQuant Engineering) to support risk assessments for marine mammal entanglements with new and existing ocean industries including aquaculture. The simulator combines digital models of large whales and other protected species and underwater structures (moorings, rope, chain, and other structures) to mathematically and physically characterize the interactions between animal and gear. Potential entanglement scenarios, gear re-design can be tested to better understand risk and likelihood of adverse interactions between the gear and animal. This tool supports science-based risk assessments for regulators and industry, helping to inform engineering design, siting decisions, and mitigation strategies, thereby reducing one of the principal environmental concerns associated with offshore aquaculture expansion and facilitating efficient permitting and consultations for commercial-scale farms. By enabling proactive evaluation of entanglement risk and alternative design solutions, the entanglement simulator is intended to lower ecological

impact uncertainty around offshore farm operations, support environmental compliance, and ultimately de-risk farm deployment in federal waters as part of broader marine spatial planning and protected species interaction research.

8.4 Ecosystem-Level Considerations

Food Web Dynamics

Offshore striped bass aquaculture introduces an artificial biomass of piscivores into marine ecosystems. While contained, the farms may act as fish aggregating devices, altering local species distributions. Evidence from salmon and tuna net pens suggests farms attract pelagic species, including forage fish, invertebrates, and predators (Dempster et al., 2002). Such aggregations may increase predation pressure or alter trophic pathways, though they can also enhance foraging opportunities for wild species (Callier et al., 2018).

Harmful Algal Blooms

Naturally occurring harmful algal blooms (HABs) pose a direct risk to striped bass aquaculture through mechanisms including gill irritation and damage, toxin exposure, hypoxia, and acute mortality events. As a result, understanding whether offshore cage culture contributes to HAB dynamics is a critical consideration for siting and management in the EEZ. Synthesis of the global literature indicates that marine net pen aquaculture does not exhibit a consistent or causal relationship with HABs when farms are appropriately sited and managed (Price & Morris, 2013). While dissolved nutrient releases from cage culture can produce localized and transient increases in phytoplankton biomass, particularly within tens to hundreds of meters of net pens, these responses have not been linked to the initiation or persistence of toxic or nuisance algal blooms (Price et al., 2015). In offshore and well-flushed environments characteristic of the EEZ, hydrodynamic dispersion and biological assimilation rapidly dilute dissolved nutrients, rendering aquaculture-derived inputs minor relative to background nutrient variability and watershed-driven sources. Evidence suggests that HAB risk is primarily governed by site-specific factors such as flushing, stratification, and existing nutrient loads rather than cage culture itself. Consequently, precision siting in dispersive offshore waters, combined with modern feed formulations and efficient feeding practices, is expected to minimize eutrophication risk and decouple offshore striped bass aquaculture from HAB dynamics in the EEZ.

9 Escapement Risks and Genetic Considerations for Offshore Striped Bass Aquaculture

Escape events pose real risks for genetic introgression, but decades of selective breeding, coupled with new genomic tools, provide safeguards to manage those risks. Domesticated strains, sterility technologies, and rigorous monitoring can ensure that aquaculture operations do not compromise wild population integrity. When paired with robust containment systems, striped bass aquaculture can proceed without undermining the genetic resilience of wild stocks.

For offshore operations, it is useful to distinguish between chronic, low-level seepage of escapees and rare, high magnitude catastrophic releases, because these pathways differ in detectability, dispersal potential, and the timing of exposure that drives genetic risk. Seepage most often results from small holes, net abrasion, predator related tearing, and routine activities such as handling and lifting, creating a persistent trickle of escapees that can be difficult to detect directly yet still sustain contact with wild conspecifics (Jensen et al., 2010; Holmen et al., 2021). Catastrophic events are more commonly linked to structural failure or mooring failure, collisions, and extreme weather, and they can release large numbers of fish over short periods, overwhelming recapture capacity and increasing the likelihood that mature escapees enter migratory corridors or spawning habitats during sensitive windows (Jackson et al., 2015; Thorvaldsen et al., 2015).

Escape events are among the most widely recognized ecological risks associated with marine finfish aquaculture, with outcomes shaped by species behavior, farm design and durability, siting and hydrodynamic conditions, operational practices, and interactions with predators such as sharks, marine mammals, and seabirds. Ecological consequences have been well documented across freshwater, estuarine, and marine systems, including competition with wild conspecifics, habitat displacement, disease and parasite transmission, and genetic introgression (Naylor et al., 2005; Hutchings & Fraser, 2008). Although domesticated fish often show reduced individual fitness and survival compared to wild stocks (Glover et al., 2017), even limited interbreeding can erode local adaptation, homogenize genetic structure, and reduce the long-term resilience of wild populations (Bourret et al., 2011).

For offshore aquaculture of native striped bass, these risks warrant particular attention. Striped bass are highly mobile and migratory, with populations ranging from the Gulf of St. Lawrence (Canada) to the St. John's River (Florida) (Waldman et al., 2012). Resident populations occur in southern systems such as Albemarle Sound, North Carolina, while northern populations migrate extensively along the Atlantic coast (Boreman & Lewis, 1987; Overton et al., 2008). Escaped individuals could therefore disperse widely, interact with multiple genetically distinct subpopulations, and introduce risks of maladaptation or loss of genetic structure. Given the cultural, recreational, and commercial importance of

striped bass, and their complex genetic composition, safeguarding wild populations is a priority for both fisheries and aquaculture management (ASMFC, 2019).

9.1 Historical Stocking and Genetic Legacy

The striped bass has a long history of hatchery propagation and stock enhancement. Beginning in 1884, striped bass from the Roanoke River were widely distributed for research and restoration purposes (Geddings, 1971). By the mid-20th century, federal and state hatcheries were producing and transporting striped bass throughout the U.S. and abroad. These efforts expanded during the 1970s and 1980s, when more than 20 hatcheries collectively released millions of fish annually to support restoration following severe population declines caused by overfishing, habitat degradation, and recruitment failure (Boreman & Austin, 1985; Rulifson & Laney, 1999). Although stocking programs contributed to recovery, widespread “cross-stocking” introduced non-native genetic material into multiple watersheds, altering natural genetic structure and raising long-term conservation concerns (Waldman et al., 2012). For example, while remnant native Gulf populations persist in the Apalachicola–Chattahoochee–Flint (ACF) river system in Florida, genetic analyses reveal substantial introgression (52%) from Atlantic stocks used in enhancement programs across the Gulf (Wirgin et al., 1997; Wirgin et al., 2010; GSMFC, 2006). The legacy of these programs underscores the importance of preventing further anthropogenic genetic alteration through aquaculture escapes.

9.2 Advances in Genomic Tools

Modern genomic approaches now allow high-resolution monitoring of striped bass population structure. Methods such as RADseq and genome-wide SNP genotyping enable the detection of fine-scale differentiation, even among weakly structured marine populations (Vendrami et al., 2017; Drinan et al., 2018; Jenkins et al., 2019). Analytical advances, including identification of outlier loci, provide insights into adaptive divergence and improve assignment accuracy in mixed-stock analyses (Gagnaire et al., 2015). These tools have been applied to striped bass, where they have clarified stock composition and informed management (LeBlanc et al., 2020; Wojtusik et al., 2023, 2025). Applications extend to monitoring genetic introgression, detecting illegal harvest, and assessing risks associated with aquaculture escapes (Ackerman et al., 2011; Martinsohn & Ogden, 2009).

9.3 Domesticated Strains and Aquaculture Applications

In parallel with restoration programs, a domesticated striped bass broodstock line has been developed through more than 30 years of selective breeding for aquaculture performance. The National Program for Genetic Improvement and Selective Breeding, based at North Carolina State University’s Pamlico Aquaculture Field Laboratory, created

this line from multiple founder strains including the Roanoke River, Chesapeake Bay, Santee-Cooper Reservoir, Florida–Gulf of America, Canadian, and Pacific populations (Harrell et al., 1990; Kenter et al., 2018; 2023). Selection has emphasized growth, stress tolerance, and disease resistance, resulting in a strain phenotypically and genetically divergent from wild populations. This divergence may reduce the likelihood that escapees would survive or reproduce successfully in the wild, potentially lowering ecological risk compared to more recently domesticated or wild-derived stocks. However, if interbreeding occurs, maladaptive traits from the cultured line could still introgress into wild populations, compromising local adaptation and resilience (Ignatz et al., 2024; San Roman et al., 2025).

9.4 Risk Assessment and Mitigation

Effective escape risk management for offshore striped bass aquaculture requires a precautionary, multi-layered approach. Risk assessments incorporated into siting and permitting typically evaluate both the probability of escape and the ecological consequences of farm–wild interactions. Engineering strategies including robust mooring systems, regular inspection of nets and cages, predator deterrence, and contingency planning are critical for preventing escapes (Jackson et al., 2015). Genetic management measures such as broodstock traceability, use of sterile lines, and long-term genomic monitoring of both farmed and wild populations provide complementary safeguards (Glover et al., 2017; Karlsson et al., 2011).

Life-history traits of striped bass further inform risk analysis. For example, escaped males should reach maturity earlier and thus are more likely to contribute to wild spawning than females, which typically require two additional years to mature (Waldman et al., 2012). This suggests a moderate but non-negligible risk of introgression.

9.5 Reproductive Control and Genetic Containment

A practical operational safeguard is mandatory harvest before maturation, implemented through production schedules and, where appropriate, permit conditions that require complete cohort removal before fish are capable of spawning. This approach is widely treated in the aquaculture escape literature as a risk reduction measure because it limits the chance that escapees can contribute to reproduction, including scenarios where spawning can occur in or near net pens, or where mature escapees reach spawning habitats following an escape (Baskett et al., 2013).

One of the most effective strategies to minimize ecological and genetic risks from aquaculture escape events is the use of reproductively sterile fish. By eliminating or reducing the potential for interbreeding with wild populations, reproductive control technologies provide a biological safeguard that complements physical containment

measures. Several approaches are currently available or under development in finfish aquaculture and could be applied to striped bass (Xu et al., 2023).

NOAA has developed the Offshore Mariculture Escape Genetic Assessment (OMEGA) model to evaluate genetic and ecological risks associated with aquaculture escape events. OMEGA simulates the probability of fish escaping from offshore farm systems, their survival and dispersal in the marine environment, and the likelihood of encountering and interacting with wild conspecifics. The model is intended to support risk-based assessments of offshore aquaculture operations and to inform the development of management and engineering strategies that reduce the potential adverse effects of escape events on wild populations (Purcell et al., 2025).

Triploidy

Induction of triploidy, producing fish with three sets of chromosomes, has been successfully applied in numerous aquaculture species, including salmonids, carp, and catfish, to create sterile or functionally sterile individuals (Piferrer et al., 2009; Benfey, 2016). While triploid performance varies by species, triploid striped bass have been produced experimentally and show promise for use in commercial systems (Okomoda et al., 2020). Incorporation of triploid technology into offshore striped bass culture could provide a near-term strategy for genetic containment, though further research is required to ensure consistent induction rates, animal welfare, and commercial performance.

Genetic Knockdown Approaches

Emerging biotechnologies offer more targeted methods of inducing sterility through gene knockdown or knockout of key reproductive pathways (Houston & Macqueen, 2019; Gutasi et al., 2023; Xu et al., 2023). For example, suppression of genes involved in germ cell development or meiosis can yield sterile phenotypes without altering somatic growth. While these methods are not yet commercially applied in striped bass, they are commercially available technologies for other marine fish species and the technology represents a potential long-term avenue for highly reliable reproductive control.

Monosex or Sex-ratio Control

Manipulation of sex ratios, such as producing all-male or all-female populations, can reduce reproductive capacity if only one sex is cultured. For striped bass, male fish reach sexual maturity earlier and could present a higher risk of genetic introgression following escapes, whereas all-female populations may reduce this risk (Waldman et al., 2012). Sex control has been applied in other aquaculture species through hormonal or genetic methods (Beardmore et al., 2001; Luckenbach et al., 2017; Berlinsky et al., 2020), but further research is needed to assess its feasibility in striped bass.

Research and Development

Development of sterility induction methods for striped bass aquaculture remains a critical research need. While the domesticated broodstock line developed at North Carolina State University provides a stable genetic foundation for offshore farming, it has not yet been systematically adapted for sterility. Developing robust and commercially viable sterility methods, whether through triploidy, gene knockdown, or sex-ratio control, would likely require 4–5 years of focused research to optimize protocols compatible with domesticated strains and evaluate fish performance in a commercial setting. Investment in this research would provide regulators and producers with a powerful tool to minimize ecological risk and ensure the sustainability of offshore striped bass aquaculture.

10 Aquatic Animal Health Considerations for Offshore Aquaculture

Disease is a primary operational risk for striped bass aquaculture and a recurring constraint on economic performance. Offshore net pens can support healthy production, but only when farms prevent pathogen introduction, detect problems early, and respond quickly under a regulated framework (Rhodes et al., 2023).

Open water pens continuously exchange water with surrounding ecosystems. That exchange improves flushing, but it also allows microbes and parasites to move between cultured fish and wild fish. Stocking densities needed for commercial production can amplify outbreaks and increase losses if farms do not maintain strong health controls (Rhodes et al., 2023).

Offshore striped bass aquaculture can maintain high animal health standards when farms treat disease as an operational risk that must be managed continuously. The priority is prevention, early detection, and targeted response. Site selection, biosecurity, surveillance, and compliance with therapeutic regulations together reduce disease incidence and limit potential effects on nearby wild fish populations (Rhodes et al., 2023).

10.1 Main pathways for disease and parasite pressure

Several conditions elevate risk in offshore culture, and each point to a specific management response.

1. **Proximity to wild fish**

Pens located near migratory or resident striped bass can support two-way

movement of pathogens, which raises concerns for both farmed and wild fish (Rhodes et al., 2023).

2. High connectivity through water exchange

Pathogens and parasites can disperse beyond farm boundaries, so surveillance and response planning must account for the broader site area, not only the cage footprint (Rhodes et al., 2023).

3. Stress and suppressed immune function

Handling, fluctuating environmental conditions, and periods of suboptimal water quality can increase susceptibility to infection (Virginia Cooperative Extension, 2023).

4. Biofouling and infrastructure condition

Fouling can reduce water circulation and degrade local water quality inside and around cages. Farms can reduce this risk through routine cleaning and appropriate materials, including copper alloy mesh where feasible (Rhodes et al., 2023).

Once aquatic pathogens establish in natural systems, eradication becomes difficult. Experience and modeling show that farms can increase pathogen abundance in surrounding waters if controls fail, which can affect farm productivity and nearby wild populations (Rhodes et al., 2023).

10.2 Striped bass pathogens and treatment considerations

Striped bass culture faces a recognizable set of bacterial and parasitic hazards, with risk shaped by environment, husbandry, and baseline pathogen presence.

In the Chesapeake Bay, mycobacteriosis caused by *Mycobacterium shottsii* and *M. pseudoshottsii* is endemic among juvenile wild striped bass, particularly in nutrient enriched estuaries. Mycobacteria also occur in cultured striped bass and hybrid striped bass, most often in recirculating systems, broodstock settings, or facilities experiencing chronic stress and poor water quality. Relative to other bacterial diseases, mycobacteriosis is not typically a leading driver of commercial losses. Columnaris disease, caused by *Flavobacterium covaе*, remains a concern for net pen production. Additional pathogens and parasites documented for striped bass include the following (Paperna and Zwerner, 1976; Rhodes et al., 2023; MD DNR, 2024).

- *Ichthyophthirius multifiliis*, a protozoan that causes ich, or white spot disease, in freshwater fish (Rhodes et al., 2023).

- *Edwardsiella tarda*, which can cause systemic infection and mortality (Lee Herman and Bullock, 1986).
- *Streptococcus iniae*, documented in hybrid striped bass with systemic impacts (Evans et al., 2006).

Parasites can cause meaningful health impacts when infestation intensity is high, increasing stress and weakening fish condition (Rhodes et al., 2023).

10.3 Prevention focused management

For striped bass aquaculture, prevention carries the most weight. Farms typically rely on vaccination where available, strict biosecurity, careful water quality management, and structured health monitoring to detect emerging problems before mortalities escalate (Evans et al., 2006).

Several actions consistently support better health outcomes:

Area of Focus	Key Practice/Goal
Optimal Water Quality	Maintaining stable, high-quality water conditions to reduce stress and disease susceptibility.
Nutrition	Proper nutrition is critical for supporting the immune system and overall health of cultured striped bass.
Robust Biosecurity	Preventing pathogen introduction through controlled stock movements, disinfection protocols, and equipment sanitation.
Appropriate Stocking Densities	Avoiding overcrowding to limit stress and disease transmission.
Regular Health Monitoring	Early detection of pathogens or parasites through systematic surveillance, diagnostics, and record keeping.
Strategic Site Selection	Well-sited net pens in areas with adequate current flow help disperse waste, excess nutrients, and potential pathogens. Good water exchange reduces the concentration of organic matter and microbial loads, limiting the accumulation of disease agents. Sites must also allow for practical access and regular monitoring.

10.4 Therapeutants, antibiotics, and U.S. regulatory oversight

Even well managed farms sometimes require therapeutic intervention to address mortalities, infestations, or infections (FDA, 2022). In U.S. marine aquaculture, the set of approved options remains limited compared to other animal production sectors (FDA, 2022). Therapeutant use is governed by a regulatory system designed to protect animal health, the environment, and food safety (FDA, 2020). Treatments, including extra label use where applicable, require veterinary supervision and must follow federal rules. Current constraints include the lack of therapeutants explicitly approved for offshore marine aquaculture systems in the United States, which increases the importance of prevention and careful case management (FDA, 2020).

FDA provides central oversight for aquaculture therapeutics, and this oversight helps limit ecological risk associated with medication use (Scott, 2004). Management approaches that reduce parasite pressure, such as adjusting stocking densities and timing stocking events, can reduce reliance on drugs. Antibiotic use has declined substantially in salmon aquaculture, including a reported drop of roughly 90 percent around the turn of the century with continued reductions thereafter (Tveterås 2002). In Maine, antimicrobial medicated feeds such as oxytetracycline were reported in 8 percent of salmon production cycles from 2003 to 2017, with no reported use from 2009 to 2017 (Love et al. 2020). Despite declining use, antibiotic persistence in sediments can range from days to years depending on light, oxygen, pH, temperature, and sediment characteristics (Adenaya et al. 2023; Coyne et al. 2001; Rigos and Troisi 2005). This persistence can contribute to selection for antibiotic resistant bacteria near aquaculture sites, so any use should remain limited and carefully controlled.

At present, no antibiotics are approved for striped bass and other marine aquatic species. Some broad-spectrum antibiotics and feed additives, including florfenicol and oxytetracycline, may be available under the National Investigational New Animal Drug Program as permitted by the U.S. Fish and Wildlife Service. Use should remain sparing, under veterinary oversight, and consistent with approved protocols to limit environmental accumulation and ecological disruption.

10.5 Vaccines and alternatives

Vaccines have been under development in aquaculture for more than 50 years and now represent a rapidly expanding disease prevention tool. Adoption varies because cultured species, production conditions, and delivery methods differ widely across aquaculture systems. Even so, vaccine development and use increasingly supports production practices that reduce antibiotic dependence while improving fish welfare.

11 Resource Use and Operational Efficiency in Offshore Striped Bass Aquaculture

Striped bass aquaculture is resource-intensive, but innovations in feed efficiency, automation, and renewable energy offer pathways to reduce costs and environmental impacts. Studies suggest offshore production can be profitable when efficiency is prioritized at scale. With continued improvements, striped bass farms could achieve both economic competitiveness and operational sustainability in U.S. waters.

11.1 Feeds and Feed Efficiency

Feed represents the single largest input cost in striped bass aquaculture and is the most significant driver of environmental performance. Research has focused on reducing reliance on fishmeal and fish oil while maintaining growth and health outcomes. Alternative ingredients such as soybean meal, corn gluten meal, and poultry by-product meal show promise, though digestibility and nutrient availability remain ongoing challenges (Fujita et al., 2023). Novel sources, including insect meals, bacterial biomass, fish silage, and single-cell proteins, are also being tested as viable replacements for traditional marine-derived proteins (Turchini et al., 2019; Glencross et al., 2007). Advances in formulation now allow diets to be tailored to species-specific needs, improving feed conversion ratios (FCR) and nutrient retention (Price & Beck-Stimpert, 2014; Hua et al., 2019).

Aquaculture has historically relied on forage fish (e.g., anchovy, sardine, menhaden) due to their high-quality protein and omega-3 fatty acids, with roughly 20 million metric tons ($\approx 20\%$ of the global marine harvest) processed annually for fishmeal and oil (FAO, 2018). However, supply has plateaued, and their proportional use in aquafeeds has declined for two decades (Naylor et al., 2021). Despite these trends, fishmeal and fish oil remain critical for some marine species requiring highly digestible proteins and long-chain polyunsaturated fatty acids (Hua et al., 2019). Studies have shown that alternative protein sources can replace much of the fishmeal in aquaculture diets without compromising performance (Rust et al., 2011; Gatlin et al., 2007). Plant proteins (soy, corn, algae, seaweed) and microbial or insect meals offer scalable solutions, with ongoing USDA and NOAA-supported research aimed at reducing environmental impacts and improving adoption (Rexroad et al., 2021).

Striped bass have demonstrated efficient feed conversion and can grow well on formulated diets with reduced reliance on fishmeal and fish oil (Rexroad et al., 2021; Andersen et al., 2021). This flexibility distinguishes them from other marine carnivorous species and helps limit pressure on forage fish resources. Continued refinement of striped bass-specific feeds will further strengthen the species' sustainability profile while supporting offshore aquaculture development.

11.2 Energy Use

Energy use is a major determinant of both cost and environmental footprint in offshore striped bass farming. Operations require energy for feeding, monitoring, cage maintenance, harvesting, and transport (Price & Beck-Stimpert, 2014). Lacking grid connectivity, farms rely on fossil fuels or renewable systems to power infrastructure (Fujita et al., 2023).

Harvesting is especially energy-intensive, with vessels consuming fuel for propulsion, refrigeration, and lifting equipment. Long-distance logistics amplify these demands, raising operational costs and carbon emissions (Sardar et al., 2025; Basurko et al. 2013). Optimizing vessel routing and adopting hybrid or alternative-fuel vessels can reduce energy use.

Renewable energy technologies such as floating solar, wave, and hybrid wind-solar systems are increasingly evaluated as alternatives for offshore aquaculture infrastructure (Rubino, 2008; Soto & Wurmman, 2019). Coupled with energy storage, these systems can provide reliable low-carbon power for feeding, sensors, and communications (Haider et al., 2024). Strategic siting also plays a role: proximity to shore reduces vessel fuel use and enables more efficient logistics (FAO, 2024).

As offshore aquaculture expands, energy management will become central to economic viability and environmental performance. Reducing fossil fuel dependence and integrating renewables will support both industry competitiveness and broader carbon-reduction goals. Integrating renewable energy and efficiency technologies can lower operating costs while reinforcing the sustainability profile of offshore striped bass aquaculture, strengthening its alignment with U.S. climate and seafood goals.

12 Historical Review of Research Initiatives and Commercial Projects

Past research and pilot projects in the U.S. and abroad show that striped bass aquaculture is biologically feasible but historically hampered by regulatory uncertainty, infrastructure challenges, and limited market development. Recent advances in genetics,

production systems, and consumer demand now address many of these barriers. These lessons confirm that the current moment offers the strongest opportunity yet for offshore striped bass aquaculture to succeed.

12.1 Research Initiatives

StriperHub, a coordinated NOAA Sea Grant initiative led by North Carolina Sea Grant and North Carolina State University, is advancing striped bass aquaculture in the U.S. by integrating genetics, production research, and industry outreach. Long-term selective breeding programs at NC State's Pamlico Aquaculture Field Laboratory have produced domesticated lines with improved growth, feed efficiency, stress tolerance, and disease resistance, now capable of reaching 1.8 kg within 18 months. By coupling these advances with seed production, grow-out demonstrations, and market development, StriperHub is positioning pure-line striped bass to compete directly in both premium and commodity markets, creating new opportunities for expansion of U.S. aquaculture.

The USDA has played a pivotal role in advancing striped bass and hybrid striped bass aquaculture through strategic research funding and breeding programs. Notably, USDA-supported initiatives, such as the National Research Support Project 8 (NRSP-8), NIFA projects, and Agricultural Research Service (ARS) collaborations, have fostered genetic improvement and selective breeding efforts, enabling enhanced growth, disease resistance, and performance in RAS and pond systems. These investments, combined with targeted SBIR grants focused on pedigree tracking, semen preservation, and broodstock development, have strengthened the industry's capacity for commercial diffusion of superior striped bass genetics

12.2 Marine Cage Culture

United States

Over the past five decades, several experimental and pilot-scale commercial attempts have been made to culture striped bass in marine net pens or cages, particularly in New York waters. These projects demonstrated the biological feasibility of cage culture but also underscored the environmental and operational challenges. The earliest documented trial occurred in 1974–1975, when researchers deployed floating cages in a seawater lagoon off Shelter Island, New York. Fingerlings stocked in the fall suffered from mortality events when water temperatures dropped to 1 °C, necessitating onshore overwintering. Restocked fish grew during the following summer, but survival and retention were poor due to escapes, and only 14% were harvestable by fall (Harrell et al., 1976). A second pilot project in 2011 stocked 15,000–20,000 striped bass into net pens in New York State waters (University of Vermont Sea Grant, 2022). This effort was short-lived after a vessel strike damaged infrastructure and Hurricane Sandy further disrupted

operations, ultimately forcing removal of the pens. Finally, in 2012, a private venture launched in Gardiners Bay at the northern end of Long Island. Striped bass raised in net pens exhibited strong growth and survived the impacts of Hurricane Sandy. Fish were later transferred to an onshore facility and marketed through restaurants and seafood retailers in Long Island and Manhattan, demonstrating small-scale biological and commercial feasibility. However, broader challenges related to permitting, scalability, and storm resilience remain unresolved (Multi Aquaculture Systems, 2012).

Collectively, these U.S. case studies highlight both the opportunities and risks of striped bass aquaculture in marine cages. While growth performance can be strong, success depends heavily on site selection, infrastructure resilience, and regulatory clarity. Despite these challenges, multiple offshore aquaculture initiatives have identified striped bass as a promising candidate for the U.S. EEZ in recent years. These include Pacific Ocean AquaFarms, with proposed sites off San Diego and Long Beach, California, and Manna Fish Farms, with proposed sites off Pensacola, Florida, and Long Island, New York.

International

Pacifico Aquaculture, founded in 2010 in Ensenada, Baja California, was the first and only commercial-scale offshore striped bass farm in North America. Situated 8 miles offshore near Isla Todos Santos, the operation utilized marine net pens supported by a hatchery and nursery RAS at Playa Tres Emes, where juveniles were reared to approximately 80 g before transfer offshore. The company achieved four-star Best Aquaculture Practices (BAP) certification, encompassing hatchery, grow-out, processing, and feed, and was recognized by Monterey Bay Aquarium's Seafood Watch with a "Good Alternative" rating. At its peak, Pacifico consistently produced up to 3,200 metric tons annually, with ambitions to scale toward 20,000 metric tons per year. Their product was marketed to "conscientious consumers" and premium channels across North America. Its striped bass entered retail and foodservice markets through distribution partnerships with Whole Foods, Amazon Fresh, Fresh Direct, Earth Fare, and through Santa Monica Seafood in California and the U.S. Southwest. Nationwide distribution extended through wholesalers such as Profish, Seattle Fish Company's Chef's Fresh Fish, Samuels Seafood, and Wulf's Fish, while restaurant chains including Pacific Catch prominently featured the product. Pacifico was also a regular exhibitor at the Seafood Expo North America, where it promoted its brand and product lines to domestic and international buyers.

For more than a decade, Pacifico represented the sole commercial example of offshore striped bass aquaculture in the region. In June 2025, the company ceased operations, marking the closure of North America's only offshore striped bass producer and concluding a pioneering commercial effort (Fiorillo, 2025; Mayer, 2025).

Several co-authors of this report conducted site visits to the Pacifico operation during commercial development, peak production, hatchery construction, and following its

closure, providing important lessons for future striped bass aquaculture development. Despite strong market demand, the operation experienced persistent production challenges, largely attributed to suboptimal siting relative to suitable thermal regimes. Temperature variability negatively affected growth rates and feed conversion efficiency, resulting in inconsistent production performance and difficulty in reliably supplying product to market. These observations underscore the critical importance of precision siting to ensure thermal suitability, production reliability, and long-term commercial viability for offshore striped bass aquaculture.

12.3 Recirculating Aquaculture Systems

Feasibility of land-based culture has been researched in depth for pure striped bass (Engle et al., 2024), but commercial scale comparables only exist for their hybrids in the U.S. and Asia. The U.S. companies included AquaFuture Inc., founded in 1990 (Turners Falls, Massachusetts) and Kent SeaTech founded in 1972 (Mecca, California). Both operations experienced years of technical successes with the species but economic challenges (e.g., feed cost, energy demand, stagnant fish prices) caused them to pivot to barramundi (*Lates calcarifer*) and biofuel respectively. Operations in China continue to demonstrate successful production in RAS for their domestic premium markets. Although the biological and technical potential exists to produce pure striped bass at scale in RAS, concerns about operating costs and market price remain when raising fish to marketable size.

12.4 Pond Aquaculture

Most commercial striped bass and hybrid striped bass production occurs in the southeastern and midwestern states (notably North Carolina, Arkansas, Mississippi, and Texas) where earthen ponds are used for fingerling and grow-out phases. Hybrid striped bass have historically been preferred due to superior hardiness and growth. The typical production system is a two-phase model: fry are first reared in hatcheries, then stocked into fertilized ponds to grow into fingerlings or market-size fish. Pond culture benefits from relatively low infrastructure costs and established feed-based management, though it requires substantial land, warm water, and aeration. The 2023 USDA Census of Aquaculture reports there were 57 farms producing hybrid striped bass in the U.S., with 32 of those marketing food-size fish.

13 Conclusions

Striped bass is among the most iconic and economically valuable fishes of the U.S. Atlantic coast. Decades of hatchery propagation, hybrid striped bass aquaculture development, and scientific advances have laid the foundation for farming pure striped

bass in offshore environments. This report demonstrates that offshore striped bass aquaculture is biologically feasible, economically competitive, and aligned with national goals of expanding domestic seafood production. Yet, current federal rulemaking prohibits possession of striped bass in the EEZ, creating a de facto ban on offshore striped bass farming along the eastern Atlantic. To advance sustainable aquaculture, this prohibition could be reconsidered. Updating federal and state regulations to explicitly allow striped bass aquaculture in the EEZ would unlock opportunities for economic growth, seafood security, and coastal community development while safeguarding wild stocks through modern genetic, ecological, and regulatory safeguards.

The pathway forward requires targeted investment in science and deliberate policy reform. Offshore striped bass aquaculture should proceed within a precautionary, adaptive management framework that emphasizes ecological compatibility, environmental responsibility, and stakeholder trust. With appropriate research, policy innovation, and regulatory clarity, the U.S. can establish a robust offshore striped bass aquaculture sector that complements conservation of wild fisheries and strengthens the resilience of the seafood supply chain.

13.1 Priority Research Needs

- Offshore production trials: Conduct large-scale demonstration farms to test performance under high-energy offshore conditions.
- Broodstock improvement: Expand selective breeding programs to enhance growth, feed efficiency, and disease resistance in domesticated lines.
- Feeds and nutrition: Optimize sustainable diets using alternative proteins, oils, and functional ingredients tailored to striped bass.
- Genetic containment tools: Develop and validate methods to ensure reproductive sterility of farmed striped bass.
- Fish health management: Advance vaccines and biosecurity protocols for aquatic animal health management in offshore settings.
- Farm economics: Model the production costs and business feasibility of striped bass aquaculture to determine profitability timelines and financial risk.
- Market research: Assess consumer preferences, willingness to pay, and branding strategies for farmed pure-strain striped bass.
- Reproductive control for striped bass aquaculture remains a critical research need.

13.2 Policy and Management Needs

- Regulatory reform: Amend 50 C.F.R. §697.7 to permit aquaculture of striped bass in the EEZ, while maintaining the ban on wild harvest.
- Permitting frameworks: Develop clear, streamlined, and science-based offshore aquaculture permitting pathways that integrate NOAA, EPA, and USACE authority.
- Traceability and labeling: Establish traceability standards to distinguish cultured striped bass from wild harvest, ensuring market integrity.
- Compliance and enforcement: Implement monitoring systems to verify containment, environmental compliance, and genetic safeguards.
- Biosecurity regulations: Update aquatic animal health frameworks to address offshore net-pen systems, including rapid response protocols for disease events.
- Stakeholder engagement: Facilitate public and industry input into striped bass aquaculture planning to build social license and reduce conflict.
- Workforce development: Support training programs to transition maritime workers into skilled aquaculture careers.

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DRAFT



Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • asmfc.org

MEMORANDUM

June 2, 2026

To: Atlantic Striped Bass Management Board
From: Tina Berger, Director of Communications
RE: Advisory Panel Nomination

Please find attached a new nomination to the Atlantic Striped Bass Advisory Panel – Mike Waine, with the American Sportfishing Association, as a North Carolina representative. Mike replaces Jon Worthington.

Please review this nomination 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: Toni Kerns/Emilie Franke

M26-57

Atlantic Striped Bass Advisory Panel

Maine

Peter Fallon (charterboat)
824 Main Road
Phippsburg, ME 04562
Phone: 207.522.9900
pfallon@mainestripers.com
Appt. Confirmed 2/4/25

Bob Humphrey (for-hire)
727 Poland Range Road
Pownal, ME 04069
Phone (day): 207.688.4966
Phone (eve): 207.688.4854
bob@bobhumphrey.com
Appt. Confirmed 2/18/20

New Hampshire

Peter Whelan (rec)
100 Gates Street
Portsmouth, NH 03801
Phone (o): (603) 205-5318
Phone (h): (603) 427-0401
pawhelan@comcast.net
Appt. Confirmed 2/24/03
Appt Reconfirmed 5/10

Massachusetts

Patrick Paquette (rec/for-hire/comm)
61 Maple Street
Hyannis, MA 02601
Phone: (781)771.8374
Email: basicpatrick@aol.com
Appt. Confirmed 8/16

Craig Poosikian (comm. rod & reel)
19 Giddah Hill Road
PO Box 1878
Orleans, MA 02653
Phone: 508.240.2345
bhge@gmail.com
Appt. Confirmed 11/22

Rhode Island

Andrew J. Dangelo (for-hire)
1035 Liberty Lane
West Kingston, RI 02892
Phone: 401.788.6012
Maridee2@gmail.com

Appt. Confirmed 2/3/21

Peter Jenkins (rec)
36 Third Street
Newport, RI 02840
Phone: (508)735-7350
peter@saltwateredge.com
Appt. Confirmed 5/1/24

Connecticut

Kyle Douton (rec/tackle shop owner)
5 Rockwell Street
Niantic, CT 06357
Phone (day): (860)739-7419
Phone (eve): (860)739-8899
FAX: (860)739-9208
kyle@jbtackle.com
Appt. Confirmed 5/13/14

Toby Lapinski (rec/freelance writer)
10 Dogwood Drive
Old Lyme, CT 06371
Phone: 860.227.1872
toby.lapinski@gmail.com
Appt Confirmed 1/24/24

New York

Bob Danielson (rec)
86 Balin Avenue
South Setauket, NY 11720
Phone: 631.974.8774
Bdan93@optonline.net
Appt. Confirmed 10/22/20

Captain Julie Evans (comm)
43 South Dewey Place
Montauk, NY 11954-5056
Phone (day): 305.747.0604
Phone (eve): 631.668.5070
jevansmtk@gmail.com
Appt Confirmed 1/24/24

New Jersey

Tom Fote (rec)
22 Cruiser Court
Toms River, NJ 08753
Phone: (908) 270-9102
tfote@jcaa.org

Atlantic Striped Bass Advisory Panel

Appt. Confirmed 8/6/24

Eleanor A. Bochenek, Chair (retired fisheries scientist with experience in Mid-Atlantic rec. and comm fisheries)
117 Alexander Avenue
Villas, NJ 08251
Phone: (609) 425.0686
eboch@hsrl.rutgers.edu
Appt. Confirmed 11/5/21

Pennsylvania

Vacancy (rec)

Delaware

Leonard Voss, Jr. (com)
2854 Big Oak Road
Smyrna, DE 19977
Phone: (302) 653-7999
Appt. Confirmed 4/21/94
Appt. Reconfirmed 7/27/99; 7/03 and 7/07

Steven Smith (rec)
59 Burnham Lane
Dover, DE 19901
Phone (day): (302)744-9140
Phone (eve): (302)674-5186
smithbait@verizon.net
Appt. Confirmed 10/23/18

Maryland

Charles E. Green Jr. (for-hire)
7327 Woodshire Avenue
Chesapeake Beach, MD 20732
Phone: 301.233.0377
greeneddie@verizon.net
Appt. Confirmed 8/3/21

Vacancy (rec)

Virginia

Chair - Kelly Place (comm; reappted chair 10/2010)
213 Waller Mill Road
Williamsburg, VA 23185
Phone (h): (757) 220-8801
Phone (c): (757) 897-1009
FAX: (757) 259-9669

kelltron@aol.com

Appt. Confirmed 5/23/02
Appt Reconfirmed 5/06 and 5/10

William Edward Hall Jr. (rec)
PO Box 235
26367 Shoremain Drive
Bloxom, VA 23308
Phone (day): (757)854-1519
Phone (eve): (757)894-0416
FAX: (757)854-0698
esangler@verizon.net
Appt. Confirmed 5/13/14

North Carolina

Jamie Lane (estuarine and ocean gillnetter)
602 South Main Street
Robersonville, NC 27871
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Jlwinsl3@ncsu.edu
Appt Confirmed 5/4/22

Mike Waine (rec)

American Sportfishing Association
712 Arendell Street
Morehead City, NC 28557
Phone: (508)221-5508
mwaine@asafishing.org

District of Columbia

Will Poston
1712 17th Street, NW
Washington, DC
Phone: 202.577.8990
will@saltwaterguidesassociation.org
Appt. Confirmed 8/6/24

Potomac Fisheries River Comm.

Dennis Fleming (fishing guide; seafood processor/dealer)
P.O. Box 283
Newburg, MD 20664
Phone: 240.538.1260
captaindennisf@gmail.com
Appt. Confirmed 2/3/21



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: Chris Batsavage State: NC
(your name)

Name of Nominee: Mike Waine

Address: 712 Arendell St

City, State, Zip: Morehead City, NC 28557

Please provide the appropriate numbers where the nominee can be reached:

Phone (day): 508-221-5508 Phone (evening): _____

FAX: _____ Email: mwaine@asafishing.org

FOR ALL NOMINEES:

1. Please list, in order of preference, the Advisory Panel for which you are nominating the above person.

1. Striped Bass
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?

striped bass

fluke

bluefish

red drum

black sea bass

spotted seatrout

5. What kinds (species) of fish and/or shellfish has the nominee fished for in the past?

cobia

atlantic bonito

tuna

spanish mackerel

false albacore

FOR COMMERCIAL FISHERMEN:

1. How many years has the nominee been the commercial fishing business? _____ years

2. Is the nominee employed only in commercial fishing? yes _____ no _____

3. What is the predominant gear type used by the nominee? _____

4. What is the predominant geographic area fished by the nominee (i.e., inshore, offshore)? _____

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? 30+ years

2. Is the nominee working, or has the nominee ever worked in any area related to the fishing industry? yes x no _____

If "yes," please explain.

Atlantic Fisheries Policy Director at the American Sportfishing Association since 2018.

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:

Name: **Michael Waine**

(please print)

COMMISSIONERS SIGN-OFF (not required for non-traditional stakeholders)

Chris Batsavage (Proxy for Kathy Rawls)

State Director

State Legislator

Governor's Appointee

Written Comment on Atlantic Striped Bass Recruitment and Management Response

The Board is well aware that, over the past several years, striped bass management has relied heavily on progressively tighter harvest controls. Since 2019, management actions have included Addendum VI, restrictive slot limits, Amendment 7, the 2023 Emergency Action, and Addendum II.

These actions collectively represent one of the most sustained periods of striped bass regulatory tightening since the 1980s moratorium era.

Despite those restrictions, young-of-year production has remained weak in major spawning and nursery areas. Maryland's 2025 juvenile striped bass survey recorded a young-of-year index of 4.0, marking the seventh consecutive below-average spawn in the Chesapeake Bay. Maryland DNR also noted that recent management actions have resulted in a healthy population of spawning-age striped bass, yet recruitment remains low.

That raises the central concern: if fishing mortality has been reduced, adult fish have been better protected, and recruitment still has not responded, then the current rebuilding challenge may not be primarily a harvest-control problem.

Harvest restrictions may continue to protect adults, but they cannot by themselves create strong year classes if recruitment is being limited by any or all of these factors: spawning-river conditions, nursery habitat, forage availability, predation, climate-related timing changes, or other ecosystem factors.

Recent work on Hudson River striped bass spawning behavior also suggests that recruitment dynamics may be changing. Pan et al. (2025) found long-term shifts in spawning behavior, including a narrower range of optimal spawning temperatures and reduced diversity in spatial and temporal spawning behavior. Those kinds of changes may help explain why recruitment can remain weak even when fishing mortality has been reduced.

This comment is not an argument for deregulation. It is a request for accurate problem identification. If the limiting factor has shifted, then weak rebuilding progress should not automatically be treated as evidence that more harvest restriction is the only appropriate response.

Given the evidence, management emphasis should rebalance away from a primarily harvest-control response and toward closer evaluation of forage dynamics, including menhaden availability, predation, environmental and habitat conditions, spawning-run conditions, nursery-habitat function, and climate-driven recruitment variability.

If the Board is not already doing so, these factors should be kept central in future rebuilding discussions, particularly when evaluating whether additional harvest restrictions are likely to address the underlying causes of weak recruitment.

Specifically, the Board should consider whether recruitment, spawning-river conditions, nursery habitat, forage availability, predation, and broader ecosystem changes are being adequately evaluated alongside fishing mortality when assessing rebuilding progress and future management responses.

Sources cited: ASMFC Atlantic Striped Bass Addendum VI, Amendment 7, 2023 Emergency Action, and Addendum II management documents; Maryland DNR 2025 YOY Survey, reported October 15, 2025; Pan et al. (2025), *Ecological Indicators*, 173, 113410.

Respectfully submitted,
Joseph Beneventine
Mamaroneck, NY
Recreational stakeholder

Toni Kerns

From: David Peterson <davidlawrencepeterson@gmail.com>
Sent: Thursday, June 4, 2026 8:02 AM
To: Toni Kerns
Subject: [New] [External] Striper Mortality

Given the poor handling of many over-slot stripers, perhaps it is time to enact some stricter measures. Short of a moratorium on targeting Stripers, perhaps the next step is that they can not be taken out of the water and must be released immediately in the water. No glory shots . This might only work with a moratorium and if the YOY for 2026 is another bust, time to clamp down.

Respectfully,

Dave Peterson<°))))><

The Brewster Flats

PO Box 38

Brewster MA 02631

508 237 4508

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Atlantic States Marine Fisheries Commission

ISFMP Policy Board

August 6, 2026
9:45 – 11:45 a.m.

Draft Agenda

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

1. Welcome/Call to Order (<i>D. McKiernan</i>)	9:45 a.m.
2. Board Consent	9:45 a.m.
• Approval of Agenda	
• Approval of Proceedings from May 2026	
3. Public Comment	9:50 a.m.
4. Executive Committee Report (<i>D. McKiernan</i>)	10:00 a.m.
5. Discuss <i>De Minimis</i> Policy Guidance (<i>T. Kerns</i>) Possible Action	10:10 a.m.
6. Discuss Sector Separation Amendment Timeline and Stakeholder Workshop Process Possible Action (<i>T. Kerns</i>)	10:25 a.m.
7. Committee Reports Action	10:45 a.m.
• Committee on Economics and Social Sciences (<i>J. Patel</i>)	
• Assessment Science Committee (<i>J. Patel</i>) Action	
8. Fisheries Compensation Fund for Atlantic Coast Offshore Wind Program Overview and Recent Work (<i>D. Boelke</i>)	11:05 a.m.
9. Update on Recreational Angler Partnership Improvement Directive (<i>A. DiJohnson</i>)	11:15 a.m.
10. Stock Assessment Updates (<i>K. Drew</i>)	11:30 a.m.
11. Review Noncompliance, If Necessary Action	11:35 a.m.
12. Other Business/Adjourn	11:45 a.m.

The meeting will be held at The Westin Crystal City, 1800 Richmond Highway, Arlington, VA; 703.486.1111, and via webinar; click for details.

MEETING OVERVIEW

ISFMP Policy Board
Thursday August 6, 2026
9:45 – 11:45 a.m.

Chair: Dan McKiernan (MA) Assumed Chairmanship: 10/25	Vice Chair: Doug Haymens (GA)	Previous Board Meetings: May 6, 2026
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, DC, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from May 2026

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. Executive Committee Report (10:00 -10:10 a.m.)
Background • The Executive Committee will meet on May 6, 2026
Presentations • D. McKiernan will provide an update of the Executive Committee’s work
Board action for consideration at this meeting • None

5. Discuss <i>De Minimis</i> Policy Guidance (10:10 – 10:25 a.m.) Possible Action
Background • The Sciaenids Management Board discussed a memo (Meeting Materials) from its PRT related to <i>de minimis</i> threshold percentages and if there were alternate ways to evaluate whether a state is <i>de minimis</i>. During their discussion, a point was raised regarding whether or not any recommendations of them memo warrant a Policy Board Review of the Commission’s De Minimis Guidelines (Meeting Materials).
Presentations • Staff will present general recommendations from the Sciaenids PRT Memo

Board action for consideration at this meeting

- Provide staff with direction to draft changes to the *De Minimis* Policy Guidance, if necessary

6. Discuss Sector Separation Amendment Timeline and Stakeholder Workshop Process (10:25 – 10:45 a.m.) Possible Action**Background**

- The Sector Separation Stakeholder Workshop is in September 2026. This workshop will provide feedback to the Board and MAFMC on development of management objectives and options for the Sector Separation Amendment that is ongoing with the MAFMC.

Presentations

- Staff will present the Stakeholder Workshop process; and the current and a recommended revised timeline and next steps for the Amendment process

Board action for consideration at this meeting

- Provided Feedback to the MAFMC on the Sector Separation Timeline Process and the process for receiving and incorporating recommendations from the stakeholder workshop into the Draft Amendment

6. Committee Reports (10:45 – 11:05 a.m.) Action**Background**

- The Committee on Economics and Social Sciences (CESS) will meet on August 4 and 5, 2026
- The Assessment Science Committee met on May 28, 2026. The Committee reviewed a request by the Policy Board to move up the next Tautog Benchmark Stock Assessment.

Presentations

- J. Patel will present the work of the CESS
- J. Patel will present the ASC's review of the Commission's Assessment Schedule and the impacts to the schedule if the next Tautog Benchmark Assessment were earlier.
- J. Patel will highlight the StoryMap of on the newly revised Guide to Fisheries Science and Stock Assessments on the Commission's webpage

Board action for consideration at this meeting

- Consider changes to the Commission's Stock Assessment Schedule, if necessary

7. Fisheries Compensation Fund for Atlantic Coast Offshore Wind Program Overview and Recent Work (11:05 – 11:15 a.m.)**Background**

- The Fisheries Compensation Program for Atlantic Coast Offshore Wind will be a regional program established to compensate affected commercial and recreational for-hire fishing businesses, through a fair and equitable claims process, for potential impacts caused by offshore wind development along the Atlantic Seaboard.

Presentations

- D. Boelke will present an overview of the program and its recent work

Board action for consideration at this meeting

- | |
|--|
| <ul style="list-style-type: none">• None |
|--|

8. Update on Recreational Angler Partnership Improvement Directive (RAPID) Initiative (11:15 – 11:30 a.m.)

Background

- | |
|---|
| <ul style="list-style-type: none">• In April 2026, NOAA Fisheries introduced RAPID as a core component of its updated National Saltwater Recreational Fisheries Policy. RAPID is designed to modernize the way saltwater recreational fishing data is collected and managed by transforming the existing Marine Recreational Information Program (MRIP) |
|---|

Presentations

- | |
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| <ul style="list-style-type: none">• A. DiJohnson will present an update on the progress of the initiative |
|---|

Board action for consideration at this meeting

- | |
|--|
| <ul style="list-style-type: none">• None |
|--|

9. Stock Assessment Updates (11:30 – 11:35 a.m.)

Background

- | |
|---|
| <ul style="list-style-type: none">• The Atlantic croaker and Atlantic sturgeon stock assessment are on-going. |
|---|

Presentations

- | |
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| <ul style="list-style-type: none">• K. Drew will present an update on species assessment whose management board did not meeting during summer meeting (Atlantic croaker and Atlantic sturgeon) |
|--|

Board action for consideration at this meeting

- | |
|--|
| <ul style="list-style-type: none">• None |
|--|

10. Review Non-Compliance Findings, if Necessary Action

11. Other Business

12. Adjourn

DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
INTERSTATE FISHERIES MANAGEMENT PROGRAM POLICY BOARD

The Westin Crystal City
Arlington, Virginia
Hybrid Meeting

May 6, 2026

These minutes are draft and subject to approval by the ISFMP Policy Board.
The Board will review the minutes during its next meeting.

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Discuss Proposed Changes to Monterey Bay Aquarium Seafood Watch’s Standards for Fisheries	27
Adjournment	32

INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Move to start the process to change the declared interest section of the rules and regulations** (Page 10). Motion by John Clark; second by David Borden. Motion passes with no objections (Page 12).
3. **Move to accept the voluntary guidance for voting that's in the document for Sections 1-5** (Page 18). Motion by Bill Hyatt; second by Marty Gary. Motion fails (5, 11, 1 abstention, 1 null) (Page 20).
4. **Move to task the Commission Chair, under Article IV Section 4 of the Rules and Regulations to formally establish the Legislative and Governor Appointee (and proxies) Sections as a Committee** (Page 22). Motion by Eric Reid; second by Joe Grist (Page 23). Motion passes by unanimous consent.
5. **Move to adjourn** by consent (Page 31).

ATTENDANCE

Board Members

Carl Wilson, ME (AA)	Loren Lustig, PA (GA)
Rep. Allison Hepler, ME (LA)	John Clark, DE (AA)
Renee Zobel, NH (AA)	Roy Miller, DE (GA)
Dan McKiernan, ME (AA)	Michael Luisi, MD, proxy for K. Charbonnaeu (AA)
Ray Kane, MA (GA)	Joe Grist, VA (Acting AA)
Jason McNamee, RI (AA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
David Borden, RI (GA)	Ben Dyar, SC, proxy for B. Keppler (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Malcolm Rhodes, SC (GA)
Shanna Madsen, CT (AA)	Chris McDonough, SC, proxy for Sen. Cromer (LA)
Bill Hyatt, CT (GA)	Doug Haymans, GA (AA)
Robert LaFrance, CT proxy for Rep. Gresko, CT (LA)	Spud Woodward, GA (GA)
Marty Gary, NY (AA)	Erika Burgess, FL, proxy for J. McCawley (AA)
Joe Cimino, NJ (AA)	Gary Jennings, FL (GA)
Adam Nowalsky, NJ, proxy for Sen. Gopal (LA)	Ronald Owens, PRFC
Kris Kuhn, PA, proxy for T. Schaeffer (AA)	Mike Ruccio, NMFS

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

Staff

Bob Beal	Tracey Bauer	Samara Nehemiah
Toni Kerns	James Boyle	Pat Campfield
Tina Berger		Kurt Blanchard
Madeline Musante	Chelsea Tuohy	
Caitlin Starks	Jeff Kipp	

The Interstate Fisheries Management Program Policy Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Wednesday, May 6, 2026, and was called to order at 1:05 p.m. by Chair Daniel McKiernan.

CALL TO ORDER

CHAIR DANIEL MCKIERNAN: Good afternoon, everyone. This is the start of the ISFMP Policy Board meeting. I'm Dan McKiernan from Massachusetts I'm the Chair.

APPROVAL OF AGENDA

CHAIR MCKIERNAN: First thing I would like to do is approve the agenda. I do have some requested agenda changes. I'll bring this forward.

The first agenda change is to move the Habitat Committee Report after Number 4; The Executive Committee Report. The second change that has been requested is a brief stock assessment report under 6 for Committee Reports; and finally, an LGA Legislative and Governor's Appointees Report as well, from yesterday.

That would all be under Number 6. Toni, do we need a motion to approve the agenda as amended? Can anyone make that motion for me? I've got Eric Reid; seconded by Joe. Do you have other comments, Joe or is that just a second?

MR. JOE CIMINO: I just wanted a heads up. I have a request under new business that should only take a second.

CHAIR MCKIERNAN: Okay. Eric.

MR. ERIC REID: I have a tasking motion for after that LGA.

CHAIR MCKIERNAN: That will come as part of your report?

MR. REID: Yes, sir, it will.

CHAIR MCKIERNAN: All right, very good. I have a motion by Eric, I have a second from Joe, to approve the agenda as amended.

PUBLIC COMMENT

CHAIR MCKIERNAN: Under public comment, is there anyone in the room or online that would like to speak to any of the items that are not on this agenda?

MS. TONI KERNS: I don't have any hands, but I just wanted to note that we have Doug Haymans from Georgia, Mike Ruccio from NOAA Fisheries, Adam Nowalsky from New Jersey online, and I think I've got everybody; but if I missed someone, let me know.

EXECUTIVE COMMITTEE REPORT

CHAIR MCKIERNAN: Next on the agenda is mine, it's the Executive Committee Report. We met this morning. We had a short meeting. We received the budget from the Commission staff, and we approved it. Some of the notable parts of the budget were reports that the Commission is in excellent financial shape, with enough reserve funds to cover, at this point, a lot of the extra costs that have been coming in this year, especially involving litigation.

We did not do any update on the Declared Interest and Voting Privileges Work Group, because we're going to focus on that during this meeting. I am doing my best to parse Executive Committee business from Policy Board business. On the Legislative Update, it was given by Bob, but primarily focusing on budgets.

One thing to note is, and I brought this up, is that at the National Directors Meeting there was a Power Point given by NOAA Fisheries CFO, and it's really quite revealing. It explains a lot, in terms of the machinations over the last ten years of the

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President's budget, the House budget, the Senate budget and the final numbers.

I would urge anyone interested in that topic to reach out to Bob and receive a copy of that. We got a CARES update, and then finally we got an annual meeting update. I think everybody knows, Rhode Island in the fall, and then South Carolina the year after, along with Massachusetts in 2028. Then finally, we went into Executive Session and we reviewed the Executive Director's Annual Performance.

I am pleased to report there was unanimous praise for Bob Beal. Folks noted his accessibility to members, his diligence, working on Capitol Hill, especially with his staff. Regarding staff, an incredible staff retention. It is really noteworthy among Commission members that so many of the excellent staff perform so well and continue to work here. We know it must be a pretty good work environment.

Also, Bob's attention to detail and his attention to the mission. Joe Cimino, who is the former Chair expressed some regrets that he doesn't get to call Bob every Monday morning, so he kind of misses him. Bob, if you could call Joe on occasion, I think it would help. Anyway, congratulations, Bob, you're doing a great job and we are all pleased that you are in the position.

CHAIR McKIERNAN: Next on the agenda is a Review Report from the Declared Interest and Voting Privileges Work Group. Oh, sorry.

COMMITTEE REPORTS

CHAIR McKIERNAN: Kate Wilke, Habitat Committee. You'll have to wait with baited breath on the other one, sorry, Kate.

HABITAT COMMITTEE REPORT

MS. KATE WILKE: Thank you for squeezing me in before the next session, I appreciate it. Hi, everyone, I am Kate Wilke. I am the Chair of the Habitat Committee. I am here to give a

quick report on the activities of the Committee. I just have two things to report out on. The Committee is considering doing a habitat mapping project. Habitat maps for Commission managed species don't really exist in an acceptable format for everyone. Recently the Councils have done a really fantastic work to update their EFH and HAPCs and the Habitat Committee is exploring ideas for mapping Commission managed species using similar techniques and methods. The benefit for doing this would be to provide a common spatial reference for identifying where habitats for Commission managed species exist, and where they are most vulnerable.

This type of visualization could support state agency permit consultations and restoration planning and any number of activities. The Habitat Committee is just starting to talk about this idea as a follow on to the fish habitat of concern descriptions that the Policy Board passed in January '24, and we're talking with contractors from Monmouth University and MARCO to pull together a scope of working cost, and we're going to bring that back to this Board later this year.

Secondly, the Habitat Committee is taking on a Commissioner Outreach Project in 2026. It's to help us identify priority topics for the Habitat Committee to focus on. The Habitat Committee supports Commission management by providing expertise and information about habitats that might affect fish production.

The Committee has generated a variety of products over the years. Those are some images of some of the products. We do documents or reports on timely topics such as acoustic impacts to fish and fish habitat; aquaculture impacts to fish habitat. We recently did a Practitioner's Guide for starting shell recycling programs in states.

In those photos you can see there is a story map. We also support the species fact sheets, which describe habitat needs for Commission managed species. Annually, we publish a Habitat Hotline, which is a newsletter that reports out on all variety of state restoration work that goes on, on the Atlantic Coast.

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The Committee would like to better understand what habitat related questions, concerns, priorities that the Atlantic Coast states have, in order to inform our work over the next 1 to 3 years. We're doing a Commissioner Outreach Project, and we've developed a short survey that you all will see in your e-mail inboxes from Toni next week.

We ask that you please complete that survey. You can speak with your staff or anybody else to sort out what your habitat related priorities are. Then we're also going to ask the Habitat Committee members to reach out to Commissioners and have a conversation, to try to understand what habitat priorities you might have too. That's it, thank you.

CHAIR McKIERNAN: Any questions on the report? Rob.

MR. ROB LaFRANCE: Not really a question, but a comment. I would really encourage everybody; I sit on the Habitat Committee as well. I'm hoping all the Commissioners will give us some feedback, it's really helpful for us to understand what your needs are, what you think is important. There is a lot of new data, new information, a lot of new mapping tools. Anything you can give us back will be really helpful, and Kate, I think you are doing a wonderful job as the Chair.

MS. WILKE: Thanks, Rob.

CHAIR McKIERNAN: Any other comments or questions? All right, seeing none; thank you very much for the report. Now we can do it.

REVIEW REPORT FROM THE DECLARED INTERESTS AND VOTING PRIVILEGES WORK GROUP

CHAIR McKIERNAN: We are going to Review the Report from the Declared Interest and Voting Privileges Work Group. Toni, I assume you have a presentation. Oh, Bob, good.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Thank you and to the Executive Committee for the kind words, really appreciate it. Joe, look forward to talking to you on Monday morning, so it's going to be great. The Declared Interest and Voting Privileges has been a long ongoing conversation at the Commission.

It's been chatted about at the Executive Committee a number of times, and at the Policy Board briefly a number of times. As those discussions went on, it became clear that some sort of working group, or something where we could have a group that had the ability to go into longer conversations, and not try to squeeze it into a Policy Board or Executive Committee meeting would be needed.

The Policy Board formed a working group to tackle this issue, and the members of that working group were David Borden, Nichola Meserve, Erika Burgess, Chris Batsavage, Ben Dyar, Mike Luisi, and Joe Grist. We hired on a facilitator, Pat Field, who many of you know, to help that group work through these issues; and Toni and I kind of staffed it.

That group met, I don't know 6 or 8 or 9 times, a lot, a lot. They had individual small group meetings, they had one-on-one meetings with the facilitator, staff conversations. They put a lot of time into this. Toni is going to go into the details, but the details are here, were not sort of scribbled on a napkin at a bar one evening.

There has been a lot of thought put into this. It seems to be a good product with a lot of thought. There are some areas that Toni will present that need some decision and some conversation here at the Policy Board. But they seem to be heading in generally a favorable direction that folks are supporting within the Working Group.

This is a big issue, and voting privileges on management boards and de minimis states and stock units. There are a lot of variables and a lot of dimensions that can be woven into this conversation, and the working group, I think did a pretty good job of boiling those down to some relatively simple concepts anyway.

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With that, I think Toni will jump into the details. David Borden and Nichola, I think all the other members of the working group are in the room, but David Borden and Nichola are online, and if they have comments as this conversation moves forward, we ask them to chime in, raise their hand. But with that I think we can turn it over to Toni, and she can go through the specifics of what is included in the report.

MS. KERNS: Thanks, Bob. There are three areas of topics. The first topic is thinking about declared interest. Declared interests are approved by the Policy Board. The Policy Board has generally accepted those requests for declared interest if the state provides states with evidence to support the request to join the species management board. Some concerns were raised that the criteria listed in the rules and regulations are not specific enough to help guide the Policy Board in evaluating a state's declared interest request.

The Work Group is recommending the Rules and Regulations be revised with the language that is on the slide. I'm just going to note that for the entire presentation a state refers to all states jurisdictions and jurisdictions include The Commonwealth, District of Colombia, and Potomac River Fisheries Commission for the document in discussion.

We used to have three criteria that you looked at. You only needed to meet one of the three criteria. We still would only need to meet one of these two criteria in the bullets that are underlined here. The change that we've done is put a timeframe around it, so that species need to be found under the state jurisdiction in at least 2 of the past 5 years, and it can be documented with fishery independent, dependent or other credible sources of information.

The other criteria are that the state fishery participants are recorded to having at least 1% of the commercial or recreational landings of that species in at least 3 of the last 5 years, as

documented by state or federal statistics. In addition, there previously was not a process to review declared interest on a regular timeframe.

When states seek to be added to a board the Policy Board would, so we put together a process for us to review a state's ability to stay on a species board, as well as the process to change how we declare into a species board. The reviews would be conducted by the Plan Review Team as a part of the FMP reviews.

They would occur at least every two years, but always within a year of a benchmark stock assessment. The PRT advises the Board of any changes in the states eligibility to meet the criteria that are in the Rules and Regulations. The Board makes a recommendation to the Policy Board regarding that state's eligibility. Then the Policy Board would make the decision of whether the state stays on or does not stay on the species board, and would notify that state.

A state can petition a Policy Board change at any time. The next subject matter is voting by a de minimis state. The Work Group talked about this a bit, but decided not to make any changes to the current board voting practices on this one, and all states with a declared interest would be able to vote on issues at the Board, regardless of their de minimis status.

Then looking at next subject matter is voting guidelines. I'm going to go over a set of voluntary voting guidelines, you know why did this Work Group decide to put forward a set of voting guidelines. They felt that limiting voting in various ways might impinge on the general charter of the Commission, and the Commissioner's responsibility to be voting members.

Voting restrictions could unduly constrain a state's interest in participation in ways that are undesirable or difficult to predict, and determining a state's voting eligibility on a vote-by-vote basis would probably be a bit controversial, maybe get contested at time, potentially creating the need for some sort of arbitrator and would be highly time consuming. The voting requirements would require

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a much more detailed set of rules, which would take an extensive amount of time to develop, leading to a lack of resolution to the problem at hand at the time, and the group determined it would be better to craft and implement guidelines to review them within a reasonable time period, to see whether they are sufficient to address the concerns.

The group also noted that the recommended changes to the declared interest criteria and regulatory review process may diminish some of the debate over the voting privileges. The Work Group developed these set of draft guidelines for states to consider when voting at a species management board.

The intent of the guidelines is to assist a state in navigating voting scenarios while allowing for flexibility based on the individual cases, as they are not binding rules for voting privileges. Staff and Board Chairs would not provide guidance to the state on whether to vote or not on the pending action, based on these guidelines, given the complexities of doing so and the importance of maintaining each state's independence in making decisions as members of the Commission.

There are 7 guidelines that were listed, or 7 issues within the guidelines. The first, I think four are labeled to consider voting. Those are pending actions will directly affect the allocation, species abundance or fishery in your state, be that biological or economic, suggest that you vote. The pending action would indirectly affect your state by impacting the achievement of an FMP goal or objective for the stock that occurs in your state waters. It is suggested that you vote.

The pending action would indirectly affect your allocation or species abundance in your state, because you are at the edge of a discreet management unit, or the discreet management unit is based on more social or jurisdictional elements rather than ecosystem and natural

system considerations. It's suggested that you vote.

The pending action will indirectly affect your state by shifting effort or demand the species of interest within your state, suggested to vote. The next ones are suggestions to consider abstaining. The pending action does not directly or indirectly affect your fishery in any discernable way, the biological or economic, consider abstaining.

The next two options or issues are the two where the Work Group did not come to consensus. I am going to go over them, and then go over the different perspectives that were brought forward by the Work Group. The first is, the pending action would have minimal direct or indirect effects on your state, be it biological or economic, it would be consider abstaining.

The last one is the pending action will have a minimal direct or indirect effect on your state, and at least one or more states would be directly affected by the decision have requested a discreet decision making, given the impact to them and the limited to no impact to others, consider abstaining.

There were some members of the Work Group that did not agree with Number 6, and they suggested that this guideline be deleted. They felt that the states have a default responsibility to vote when there are affects, even if they are minimal. For those that wanted to keep Option 6, or if Option 6 got deleted, they recommended to change Option 7 slightly and they felt that was important, because clear guidance either to vote or abstain was needed, for when there was minimal direct or indirect impact to a state. The last part is, for those that wanted to delete Option 6, they did not want to see the alternation to 7. There are 2 different camps there in the Work Group.

For the next steps today as we go through is to potentially consider the recommended changes to the Rules and Regulations for the declared interest in making changes to the Rules and Regulations. They must be posted for a minimum of 30 days, so we would not be able to make those changes until August. Then we could consider approval of the

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voluntary voting guidelines today if it is the will of the Board. I can take any questions.

CHAIR McKIERNAN: Any questions for Toni? Oh, we've got a lot of questions, hold on. I've got Bill Hyatt followed by Shanna, anyone else, Joe, Doug. It's Chris McDonough and Renee. All right, let's go, Bill Hyatt.

MR. WILLIAM HYATT: Toni, I'm wondering if you could share with us a little bit more of the detail of the discussion that surrounded discreet decision making and that request. You know quite honestly, I read through this and Number 7 and that part was the only thing that I found particularly objectionable in it. But I also feel that I don't have a full understanding of the debate and the discussion. I'm sure it involved how that process is used in other organizations and institutions similar to ours. I just have a void on the detail behind it.

CHAIR McKIERNAN: Bob Beal.

EXECUTIVE DIRECTOR BEAL: Yes, I'll give it a try and then some of the Work Group members can chime in if I don't characterize it completely. But there was a lot of conversation about certain decisions only affect a subset of states, so what is the best way to handle those types of decisions when a Board is coastwide, or whatever it might be?

The members of the Working Group suggested that if a group of states or an individual state says, this issue that is before the Board right now is a really big deal to us, it is really important, we don't think it really affects anyone else, so if you're okay abstaining the rest of the coast, we'll vote on this ourselves.

There is no like, when it says request discreet decision making, there is not like a formal request. It goes to the Policy Board and voting privileges within that Board are modified. It's just sort of during the course of Board deliberations, the state or a group of state says hey, this one is really important to us, and we

think it only affects our group of states. If the other states are comfortable abstaining, that would be great.

It's kind of as far as they were comfortable taking that. Under this voluntary approach that is being proposed, you know even if a group of states or a state says, this is an issue we hope we can have discreet sort of just handle it ourselves here at the Board. It is still voluntary. All these provisions are voluntary, where states can or cannot vote. But these 7 criteria as they are now, 7 criteria give the states something to think about as they are considering voting or not. Is that helpful, Bill?

MR. HYATT: Yes, if I could follow. But the intent is for that request for discreet decision making to be made in open forum, correct? It's not a conversation in the hallway. In essence, that would put a state that has a declared interest that has been accepted by this group on the defensive.

In essence, they would be put in a position where they at least feel, maybe not technically, but at least feel they've got to defend their right to participate in the discussion for which they've been granted full access to. That is how I'm reading this, even with your explanation. Am I on track?

EXECUTIVE DIRECTOR BEAL: Yes, I think you are on track. I don't want to push in any direction. If that is how you read it, that is fair. These are voluntary and there is room for interpretation here.

MR. HYATT: But the part about the request for discreet decision-making being in open forum, I'm accurate in that respect, right?

EXECUTIVE DIRECTOR BEAL: Yes, correct, yes.

CHAIR McKIERNAN: All right, Shanna.

MS. SHANNA MADSEN: Mr. Hyatt already took quite a bit of my questioning, but I did want to get a little bit of clarification from Toni. Toni, I was a little confused with your explanation between 6 and 7. Can you kind of reiterate like where, those who wanted 6 didn't want 7, or those who wanted 7

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didn't want 6? I'm trying to reconcile. Like one just seems to have a little bit more direction, I guess I would call it. I'm trying to like determine which part was problematic, et cetera.

MS. KERNS: Those who wanted 6 deleted, they did not want to see the alteration to 7, because they felt that the alteration to 7 was just repeating 6. Those that wanted to keep 6 then would keep 7 as is. But if we deleted 6, then they wanted to alter 7 to read as on the screen here. Does that help?

CHAIR MCKIERNAN: Joe Cimino.

MR. CIMINO: As much as I miss my Monday morning calls with Bob, I do not miss trying to chair these discussions. I have two questions, one maybe Toni. Was there any discussion on declared interest that it would be, if you were found to meet one of those criteria, you are in, not whether or not you petition in, but in fact you would have to petition out?

MS. KERNS: We did not discuss it in that way. We still kept it as, you petition in and you provide that information. If you're getting at sort of some of the conversation that we had, or I think you were leading to this morning in the Sciaenids Board. Staff does reach out to states when we start to see landings consistently that we think would, to say hey, we think you might need to be a part of these discussions. We're not going to force you, but we may keep asking you over and over again. I don't know if that's where you're going.

MR. CIMINO: No, I'm not going anywhere, it was just a question. But I did pat Marty on the shoulder. But I did have one other question, and that is, was this followed out to Policy Board? This always kind of confused me. I think you had an instance where people are asked to sit on their hands, because it really doesn't affect them, and then maybe 45 minutes later the same people are voting at the Policy Board, or are they abstaining at the Policy Board, if say it was final action into an FMP,

because Policy Board would have to approve it later?

MS. KERNS: Do you mean when somebody is suggested that they no longer meet the requirements?

MR. CIMINO: No, sorry, totally different question, Toni. Outside of the declared interest now, going to some of the recommendations to abstain. If you abstain at that Board level and it's an action that the Policy Board then needs to approve afterwards. Are you expected to abstain again, or then at the Policy Board can you now vote on something that you should have abstained on before?

MS. KERNS: These guidelines, and sorry if I did not say this in my presentation, I meant to, don't apply to the Business Session or the Policy Board, nor do they apply to the federal agencies and the Executive Committee.

CHAIR MCKIERNAN: Are you good, Joe? Doug Haymans online.

MR. DOUG HAYMANS: Again, apologies for not being there. Keeping it into the declared interest realm. I find Number 4A at least to be a very, very low bar. Just curious as to the discussion. What led to this was cobia and 6 states, 3 of which had landings in 1 year out of 5. Was there discussion on 1 criterion for declared interest, and that is that you have landings in at least 3 of 5 years, no matter the level, less than 1 greater than 1, it doesn't matter, so long as you had landings in at least 3 out of 5 years. Was that a topic discussed at all?

MS. KERNS: I don't know. Look to the Work Group members. We generally talked about it, Doug. It previously did not have a percentage around it and then we added the percentage to it. Bob, I don't know if you have additional or other Work Group members.

EXECUTIVE DIRECTOR BEAL: The group has a little bit of discussion on it, Doug, and the hard part was the resolution of the recreational data collection. States thought that 3 out of 5 might be hard to

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justify, because maybe MRIP missed cobia, for example. That's a good example, I think, up north.

But there are social media postings and all sorts of other things that people have caught cobia. They struggled with, how do you determine that the catch stream and the data that shows in reality what the catch is in that state, was kind of the hang up that the group had, based on my recollection.

CHAIR McKIERNAN: Doug, you good. Chris McDonough.

MR. CHRIS McDONOUGH: Actually, my question, similar vein to Doug's on the declared interest. Seems like a low bar, particular for me was the use of eDNA. I would be fine with that if it's used in combination with some other things. But in and of itself it sets a very low bar for declaring interest.

CHAIR McKIERNAN: Renee.

MS. RENEE ZOBEL: Sticking with the Declared Interest kind of section of this. I'm just wondering if the Work Group had any discussion. Maybe this is to Toni, maybe this is to a Work Group member on episodic species and fisheries moratorium species. For example, the menhaden in the Northeast, right. We had nothing and then now it is a fishery we heavily rely on, and brings in incredible amount of economics to kind of the most northern states.

I just didn't know if there was discussion or you know we have shrimp and sturgeon that are moratorium species. Some you may be able to meet that kind of low bar that people are talking about, about having species presence, and others you may not. Just curiosity question, neither of those were really addressed, so I was just curious.

CHAIR McKIERNAN: Those are good questions. My take on this is it says consider, and so when you talk about a protected species like

sturgeon, you know I think it is not typical, like in terms of looking at landings, because obviously you can't find landings. But I'll let Toni speak to that.

MS. KERNS: We did not talk about moratorium species specific because of the declared interest. I think I guess it depends on how you want to look at it, and that was the purpose of reviewing, to make sure that it's states that really are have these fish in their waters, are on the board when they do, and if they don't then they come off the board when they don't have them in their waters. There is the 2 out of 5 years, so it doesn't have to be all the time, so that potentially could work with some of the episodic species.

There is no amount that is specific to the first bullet, so it could be 5 fish. I mean that is up to the Policy Board to decide if they are willing to accept 5 fish, but you know there is no amount listed. I don't think that there is a bar that you have to achieve. I don't know if that was deliberative or not. I would ask the Work Group members if that was deliberative or not.

CHAIR McKIERNAN: Do any of the Work Group members want to weigh in? No hands. David Borden.

MR. DAVID V.D. BORDEN: Just a follow up on Renee's comment and some others. One of the problems with making this much more specific is that you get into the reality that some of you raised about the sampling program that determines the qualifying criteria. Take an example where in one particular year MRIP does a great job of sampling a particular species that is a rare visitor to your state.

Then the next benchmark comes along and it's using the updated information that has done a poor job. Then a state could conceivably find itself qualifying to participate and develop the regulations and then be out of that whole process. I think you have to leave this, at least my own view, you have to leave this somewhat general. If you make it too specific, there are lots of different circumstances I think that will come back and haunt us. You don't want states, think of it from a

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minimal state participation, someone like for instance, New Hampshire is the example on black sea bass, where they are a rare visitor in the area.

They are just starting to get hip and then the state delegation participation management of that species, then all of a sudden you do the benchmark and the benchmark doesn't meet the criteria and they are out. Then actions may take place that disadvantage that state.

I recognize the concerns about making it more specific, but I really think you need to have it be this general, at least initially, if it's tied in with a review process. We review this policy every few years, which is what I would recommend.

CHAIR McKIERNAN: Ben Dyar.

MR. BEN DYAR: To kind of add on David's comments. Not to speak for the entire Work Group, but there was a back and forth. I think there was a desire to try to look into making something quantitative, if possible, you know that is more specific and you could lean on it and it's equal for everybody.

But when you start looking at it, and David hinted to this, you know we started thinking about all of the different scenarios, the what if this and what if that and what about this species and what about this Board. It came quite clear that the Work Group didn't want to be the one to determine or try to pre-think about every different possible scenario that could possibly ever happen.

Also, fearful that that would limit discretion towards the Board as well, to hear any kind of petitions for declared interest. I think there is a lot of interest in having discretion for the Board and for states to be able to implement that. In regards to specifically to moratorium species, we did not directly bring that word up or discuss it, but there was in that first bullet some, I think points in there that made for independent data and documentation provided.

At the very last parentheses is says, or others, and I think I remember, please correct me other members, but I think it was very open to whatever the states could possibly think of that might somehow be able to determine this. Again, this was up to the states to think if it was justifiable, and up to the Policy Board to determine if it was justifiable, again, leaving that discretion in place.

CHAIR McKIERNAN: I have a question for Bob and Toni. One scenario is we take out, if the group can agree on new declared interest criteria, then we leave here with a vote and that gets posted for the public to understand that ASMFC is amending their rules and regulations. Do we have to come back in August and revote that? Okay. Then the voting privileges would be not put into that scenario, instead it would just be something that we could adopt as guidelines.

EXECUTIVE DIRECTOR BEAL: Yes, correct. The group would have to take another vote in August on the pending changes to the Rules and Regulations. Relative to the voting guidelines, those guidelines are nonbinding, nonpolicy, and they would just become a standalone document that I think we would attach that to the briefing materials before the quarterly meetings.

Probably any meetings of the Mid-Atlantic Council and the joint meetings and so on. Just to have those in front of everybody to remind them, here are some things to consider as you're moving forward with these votes on management boards, but no other approval process would be needed.

CHAIR McKIERNAN: I will consider some motions at this point. We've given folks opportunities to weigh in. We have the Work Group members here, as well as online. Do we have a motion to consider on the declared interest or the voting guidelines? Toni would like you to start with declared interest. Start with declared interest, which would be posted until the August meeting for a final vote, but it is what this group would like to vote on today to send out to the public. Do I see Spud?

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MR. SPUD WOODWARD: Not to make a motion and not to belabor this, but I'm still trying to understand how this would actually work in practical application. Let me just take a minute and walk us through a scenario. You have species A, it shows up in a new jurisdiction in Year 1, and was documented appropriately. It doesn't show up in Year 2, doesn't show up in Year 3, doesn't show up in Year 4, but it shows up in Year 5.

Now you've tripped the bridge hole of 2 and 5, so now you are able to have declared interest in the management of that species. Well, now another 5-year block starts. It doesn't show up in Year 1, doesn't show up in Year 2, doesn't show up in Year 3, because a review in Year 2. But doesn't that jurisdiction have 5 years before they could be removed by the absence of that species in their jurisdiction?

Again, just trying to think how this would work, because we're talking about a review period intersecting with the way we're establishing this declared interest criteria. I'm just trying to make sure I understand what the ramifications of this will be when we execute it.

CHAIR McKIERNAN: Toni.

MS. KERNS: The review period is every 2 years, so the PRT would look at the data, whatever they have on the books. If for the last 5 years from that year backwards, I think that is how they would look at it. They don't see any landings they may make a recommendation to the Board that it be removed.

But I think it is the Board's discretion to evaluate whether or not, if the inconsistency of seeing fish in a state water is consistent, that you don't see them for extended period of time, that might be telling to a Board. But if a state is, you know on the threshold of coming in and coming out, that can be, I think the prerogative of the Board to say, we're going to allow them to stay in for a little while and see what happens. There isn't a set of guidelines to say

when someone has to be removed, it's just a review of the PRT. The PRT makes a recommendation to the state. The state shares that recommendation with the Policy Board, and the Policy Board makes the decision.

CHAIR McKIERNAN: It's a moving 5-year period, it continues to slide.

MS. KERNS: You're right, constantly. But the reviews are every 2 years, so at the beginning they may not, if they show up in the first 2 years, they don't even have a whole 5 years to look at, right.

CHAIR McKIERNAN: Anymore discussion? John Clark.

MR. JOHN CLARK: You want a motion?

CHAIR McKIERNAN: I would love a motion.

MR. CLARK: Do you have a motion?

MS. KERNS: No, because I didn't think we needed a motion for this part.

MR. CLARK: Well, I can improvise. I **move to accept the definition of declared interest** as modified today.

CHAIR McKIERNAN: That would be for purposes of putting it out for public comment and a final action in August.

MR. CLARK: Beautiful.

CHAIR McKIERNAN: No, Toni says no again.

MS. KERNS: I think, John, it would be maybe just to move to start the process to change the declared interest section of the Rules and Regulations.

MR. CLARK: That works great for me, I'm fine with that.

CHAIR McKIERNAN: That process is well defined in the manual.

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MS. KERNS: And was listed today, and David Borden has his hand up.

CHAIR McKIERNAN: David Borden, online.

MR. BORDEN: I'll second that, Mr. Chairman.

MS. KERNS: David, don't forget to re-mute yourself.

CHAIR McKIERNAN: Any discussion on this motion? Marty Gary.

MR. MARTIN GARY: Yes, quick question and then comment. With that motion we would basically be accepting the way it is written here as it would appear in the document?

CHAIR McKIERNAN: Repeat the question from the beginning, please.

MR. GARY: With that motion we would basically be accepting this language, is that correct? I guess the comment would be, you know Joe tapped me on the shoulder, as he noted, and I think that is a tacit acknowledgement that New York may be the next member of the Sciaenid Board, possibly.

Maybe it's not if but when, as we see increasing numbers of croaker, spot and red drum in our waters. It seems like that first bullet is a pretty easy threshold for us to cross. I'm not saying one way or another, I'm just saying that is a pretty open door, in my opinion.

CHAIR McKIERNAN: Bob, comment.

EXECUTIVE DIRECTOR BEAL: Yes, just a little bit on process. The notification that the Commission is considering, changing Rules and Regulations is a little bit different than taking out a Draft Addendum for public comment. It's really just saying, heads up, at a meeting in the future, more than 30 days out, the Commission is considering doing something. If this motion were to pass, the Board still has the ability to

make changes to these two criteria at the August meeting.

If Chris McDonough is successful in saying, hey this eDNA thing, maybe we should strike that. You can still make changes at the August meeting and not have to go back out and notify again. It's really just allowing the public to be aware that meeting is going to happen and participate and make comment if they would like to. You are not as boxed in as you would be on draft management issues.

CHAIR McKIERNAN: That is helpful, Bob, thank you. All right, Rob LaFrance.

MR. ROBERT LaFRANCE: Just a question on that, Bob. You're just going to go out to notice saying that the Atlantic States Marine Fisheries regulations are going to be changed in this area. You don't actually have to provide a draft of the changes, or do you?

EXECUTIVE DIRECTOR BEAL: We will provide a draft with a description that these changes are going to be considered at the next meeting and modifications may be made to the text that is provided here.

MR. LaFRANCE: That helped me very much.

CHAIR McKIERNAN: Is there any other discussion? Carl Wilson.

MR. CARL WILSON: Let me just take this back a little bit in the conversation, so my apologies. But when you have a species such as menhaden, that is episodic by nature, especially in the Northeast, is there, and potentially a state might not have triggered A or B, but it has a history of being an episodic by definition. Is there any conversation within the Working Group or around the Board today about just calling out such species as that, whether it be menhaden or shrimp or maybe others?

MS. KERNS: We didn't specifically talk about episodic directly as a Work Group. But I will go to

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the Work Group members to see. It was based on the suggestion from the Policy Board to add a timeframe to this option, that first bullet. I will bring it back to you all as to, was there a reason why you wanted to put the timeframe in there?

If so, would there be an exception for episodic, or would you want a species to be on a Board and then you give the consideration to its episodic nature once a state is on a Board? I don't know, I bring that question back to you all to try to help Carl.

CHAIR McKIERNAN: Chris and then Ben.

MR. CHRIS BATSAVAGE: Make sure I understand this correctly. In terms of the time period, I think we wanted to look at what was happening most recently. Noone has really talked about episodic events as much as just what species are in which states waters currently, because we know things are changing quite a bit, in terms of where fish are found.

Carl, I think that is what you're asking, in terms of like looking back in history saying, well you know every X number of years the species shows up in our waters and we don't know when they are going to show up again. I think we were trying to look at a more discreet recent time for what is there, and whether a state should declare interest at that time, based on what we're seeing currently, as opposed to too far in the past.

CHAIR McKIERNAN: Ben.

MR. DYAR: Yes, just to reiterate Chris's point. I think it was coming from the recommendation from the Policy Board to put some type of timeframe on it, because if you remove that then it's basically any fish, any time at any point, which although these are fairly easy to hit marks, as Marty mentioned. That would leave it quite quite open. I think there was some interest, because Chris mentioned to have some type of timeframe on it. That was 2 out of 3, 1

out of 5. That was belabored for a little bit about that timeframe.

CHAIR McKIERNAN: I think we have David Borden online.

MR. BORDEN: Ben made the point. The only point I would add to it is that states have the right to appeal. We get into a situation where something happens that they don't like what is going on, they can appeal directly to the Policy Board. That is one of the provisions of the plan.

CHAIR McKIERNAN: All right, so Bob, to reiterate your point. If we adopt those now than they are draft. The public is notified, and then we come back in August, and we can make sub amendments to them, based either on the comments, or just based on the extra 3 months of thinking.

EXECUTIVE DIRECTOR BEAL: Yes, exactly.

CHAIR McKIERNAN: Well, we're enacting them as draft.

EXECUTIVE DIRECTOR BEAL: Yes, yes, exactly, and they can be modified in August if public comment and/or just conversations around the next 3 months as you said, warrant that.

CHAIR McKIERNAN: As the conversation wains, is there any objection to us going forward with these as drafted? I will lead it into the record. Move to start the process to change the declared interest section of the Rules and Regulations as modified today. Motion by Mr. Clark, seconded by Mr. Borden. We have struck the phrase, as modified today. **Motion carries without objection.** Now, the second half of this conversation that concerns voting privileges.

MS. KERNS: For the voting privileges we have these 7, I'll call them criteria, I don't know what to call them, options, issues, guidelines. The last two were the ones where the group could not come to consensus, so as we discuss these it will be helpful to get direction from the group on if we are going to

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move forward with them, how we would want to address these last two.

CHAIR MCKIERNAN: Marty Gary.

MR. GARY: I'll try to bring forward some productive comment for the group. I'm looking at 6 and 7 and I'm thinking about, I've been on both the giving and the receiving end of a state that has the species, and in this case it was black sea bass. The jurisdictions where my voting privileges are PRFC and now in New York.

In the Potomac River there are plenty of black sea bass in the lower third of that river. They are there all the time and there is a real need for regulations for minimum size, because you would have a ton of poaching if you didn't have it. Those animals are in level waters of the Potomac.

But as I look at these two Numbers 6 and 7, I think back to when I joined PRFC, and there were a couple of votes where it came down to 1 vote. By all values I cast the deciding vote. They were the southern region over the northern region. There wasn't this criterion in place. I was continuing participation in that Board that had been in place with my predecessor, so it was just Board continuity.

But 6 and 7 would have formalized and given me some pause, as to whether or not it had given me an option for abstaining. I think retrospectively, if I had seen, I think especially Number 7 in place where 4 is in there inserted. Minimal effect on your state, minimal effect on PRFC. It would have been directly affecting Northern states. I think I would have abstained.

Maybe I should have abstained at that time, I don't know. It's easy to reflect back. That is my thoughts, that is a real-life example that I've sat in both seats. I'm thinking that my gut reaction to this is that 7 is a preferred path forward, so maybe that helps.

CHAIR MCKIERNAN: Erika.

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MS. ERIKA BURGESS: There are 7 guidelines in the document, and I see them covering a spectrum of situations. That is why you would want to include both 6 and 7, to cover the full spectrum. I understand there might not be agreement on what the guidelines should be with 6. But if you leave 6 out there is a hole that doesn't give that guidance to a state who might wonder, what should I do if there are minimal effects? I'll give an example between Georgia and Florida. It's a hypothetical scenario.

This week Georgia presented options that they are proposing for recommendations for red drum regulations in the state of Florida. They included bag limits that were higher than in Florida. Now, someone may choose to go fishing for red drum in Georgia, and forego a trip in Florida because of that bag limit.

But the conservation of that action by Georgia would be the same regardless, but all the options met for criteria. That might be a minimal effect on my state. I should not necessarily vote down Georgia's proposal because of that minimal effect on my state, I might abstain because it is not going to impact Florida and it is not going to hurt the conservation of the species.

That is a rough example, but an example you might want to consider and why that guidance might be helpful. Another situation might be where Florida is geographically removed from a lot of the more northern states, and there may be a particular species issue that is very localized to the northern part of the coast or the Mid-Atlantic.

It is something that I do not have expertise on. The resulting decision may not have a conservation impact on the stock or an economic effect on Florida. I don't feel like it should be my default mode to vote on that. If I'm not fully educated enough to see, I think the states and members of the Board were informed on that hyper localized issue.

As long as the outcome is not going to affect the conservation of the stock, should be the ones voting

on that, and I should feel comfortable abstaining, and not feel like I am forced to vote on an issue I am not fully educated on. It's impossible for all of us to know everything about all these species, and all along the coast at all times. I think that including a guidance for the scrip of 6, regardless of what the ultimate guideline is. It is important that we have that full continuum of guidelines.

CHAIR McKIERNAN: Erika, are you suggesting keep 6 and 7?

MS. BURGESS: As provided in the document.

CHAIR McKIERNAN: All right, I'll go with Bill Hyatt and then Shanna.

MR. HYATT: I actually agree with everything that was just said. The difference being that I feel that it is covered with the conditions 1 through 5. I think that does provide the guidance, Number 5 does provide the guidance. It says a pending action does not directly or indirectly affect your fishery in any discernable way, be that biological or economic, and it says consider abstaining. I think that carries forth the message that was just made. I think my concern is more with that being presented in a more forceful way to states that under the criteria that we just discussed, has a declared interest.

CHAIR McKIERNAN: Shanna.

MS. MADSEN: I'm going to do a little bit of a history here on myself, just because I feel like I feel very intimately tied to this in some ways. Like 15 years ago I joined ASMFC as the Fishery Science Coordinator. I was right out of graduate school, and I was still trying to figure out exactly what I wanted to do in this marine science world.

What I did know then is that I wanted to do something that impacted change and contributed meaningful to the marine science realm. Seeing this Commission in action was,

and watching the Boards like wrestle with all of these difficult decisions in service of both their fisheries and the resources that are dependent on, showed me exactly the kind of work that I had been hoping to do.

Everyone that I've met through these boards and technical committees has brought a level of commitment, expertise and integrity that I think makes the process a lot stronger. All of our shared dedication is what makes the Commission effective as a cooperative, deliberative body, which is why these guidelines should be really careful, considerably, I think in light of our mission.

For me the voting rights section of this document as presented in the report feels difficult for me to reconcile with the spirit of the Commission that I saw built on collaboration, fairness, transparency, and kind of long-term stewardship of our resources. As I was kind of contemplating this document, for me the heart of the issue was kind of simple.

The Commission works because all of you bring your knowledge, your expertise and your perspective to the table in good faith. I can't imagine, especially with point number 7 asking a colleague who has devoted years to education, service and professional judgment to this work to not vote.

Every time I listen to the expertise around the table, I am reminded how much I learned from all of you, and that collective wisdom really matters. The way we share that collective wisdom is through voting. I think that one of a really good examples I heard this week is during striped bass, and I hope Megan doesn't mind me bringing up her comment.

She spoke saying that Maine was kind of on the fringe of striped bass, and it really signals to them when the stock condenses an unhealthy stock, and that signals a problem with that stock. I can't imagine asking Maine, because the stock was in poor health, not to vote. They are there, they have the expertise, they should be able to do that.

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I think that asking someone to vote is completely against the heart of what this Commission is. For that reason, I kind of think this voting should remain broadly inclusive. I don't think that the section of this document is necessary at all, but at the least I would remove 6 and 7 from it.

CHAIR McKIERNAN: Jason.

DR. JASON McNAMEE: The way Shanna kind of characterized this is generally the way that I feel about it. I wanted to start by saying, I think the Working Group did a nice job in particular. I was highly suspicious at even being able to pull off something reasonable for the declared interest.

But I looked at those and kind of applied some different scenarios to it. I think they did a nice job with that piece of it. I think this piece is also, you know they did a lot of work, tried to kind of shoot the middle on this stuff. But in the end, I don't know, and even some of the discussion earlier.

Like a lot of this stuff, it doesn't always have to be transactional, like it doesn't always have to. There was a paragraph in there about different philosophies that people had, and I found that part really interesting. I definitely fall into one of those philosophical camps and not the other. You know I guess when I think about this stuff I think about Rhode Island, but I also think about the stock and I think about all sorts of things.

Like Shanna just said, I want to offer those insights or whatever, however people feel about them, to the group. Just kind of going back. You know Marty's comments earlier were really interesting, because it wasn't where I thought he was going initially. But you know I appreciated those comments and also Erika's comments and the example that she gave.

I guess I'll offer, I appreciate those. I think I agree with the discussion or the kind of thinking that they had around them. I think we can do

all that now, like I don't think we need this stuff. I don't think it's needed. I think we all have discretion to, maybe you still vote but you abstain or you vote in a certain way.

If you're not comfortable for whatever reason, you don't think you're contributing, like we can do that now. I don't see a lot of value in adding this, because I see a lot of risk in that now somebody gets mad that somebody voted and these, we're calling them guidelines, but I've seen the other instances and I'll use the assessment guidelines that were developed a couple years back with.

I was on the group that developed the guidelines, not the requirements, and guess what they became? Immediately they were the requirements, no you can't do a new survey and a management track, you can't do this, you can't do that. They were guidelines, they were meant to be guidelines, but they became more than guidelines really quickly.

I think there is a risk with that here. I think it can muddle what are already complicated and challenging discussions that we have around this table. I just don't think we need this part of the work that the working group did.

CHAIR McKIERNAN: Joe and then Mike Luisi.

MR. CIMINO: I'm glad I'm going after Jay, because it will make it pretty easy. I agree with everything he just said. Spending eight years in a state that sits on every board except Northern Shrimp, I guess I have seen a lot of examples. You know I think of horseshoe crab and the ideas of abstaining.

I mean there is a species where probably 90% of the meetings in the past decade have only been about the Delaware Bay stock. But it would be very different discussions if the pressure was not to vote. I think you would have constituents who might not think the quality species management issues would require everybody to be speaking, regardless of the impact of that fishery in their state.

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There are other implications, obviously for menhaden, for horseshoe crab of course. I don't really see the value in this, although I fully supported the exploration and I agree that I think it's even a better outcome than I could have expected. But I still have more concern than support.

CHAIR McKIERNAN: Mike.

MR. MICHAEL LUISI: I'll try to be quick. I was on the working group and a lot of the comments that I was planning on, the discussions that we had were already captured through what Toni presented. But I do want to say something that just came to me, a couple things.

Erika, I thought your description, what you just went through, kind of the example that you provided. I fully, fully support what you said and the thought that goes into the process for determining whether or not you're either informed enough or prepared or feel as if you have. The impact of the decision is either going to fall on your state or not.

I absolutely agree, as did Bill with you. But I also agree with Bill, that I think that the process and the thought that we need to give to voting could stop at Number 5. The first 5 examples provide a very black and white example for what you need to consider in the guidance. When you get into 6 and 7, you start seeing words like minimal.

Minimal is a word that would be debated around this table for hours if Chairman would allow it to happen. We could go back and forth trying to determine what the word minimal is. I understand this is all guidance, but something that really strikes me with Number 7. This has to do a little bit more about the philosophy that we work under.

Maybe this is just me, but as I've sat here now for a decade and a half or more, I have found that the challenges that I face within my state. I

would prefer to garner support for the issue than ask a state not to get involved. The reason that is the way I like to do things, is because I learn from the conversations that I have with my colleagues. When I'm trying to propose something, as I did last year, when we had our Striped Bass Board discussing actions that the state of Maryland wanted to take for recreational fishing in Maryland. I wasn't going around to other states that are on the fringes, asking them to just stay out of the picture. I was trying to convince the states that the actions we were taking were appropriate, and they would benefit some of the users in our state. It also helped me when I got back after all of those discussions to say that the Board, the full Board supported this action, rather than a discreet, only Virginia and Potomac River were on, the three of us decided that this was going to be the action that we would take. I find that there are some serious challenges with 6 and 7. I think at this point I could support the document staying intact through Number 5, and we'll see where it goes from there. But that is kind of what I'm thinking as I'm listening through the discussion around the table.

CHAIR McKIERNAN: I've got Eric and then Erika. Spud, was your hand up? No, okay so Eric and then Erika.

MR. REID: I'm looking at these.

CHAIR McKIERNAN: Could you come close to your mic?

MR. REID: Sure, you may not want me to do that. I understand, well I guess the first thing I should say is getting outvoted sucks. But it's on a couple different levels. This is where I'm struggling with this a little bit. I mean if you're in the thick of the biomass, I mean you're in, and that means all three of you are in.

If you're on the fringe, well, I just envision us having a vote and then Mr. Borden, myself and Mr. McNamee have to decide what the state will be. Maybe David says, well maybe we should abstain, but I think we're in this fishery, whatever it is. Now

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all of a sudden, your caucus is going to be 25 minutes, and I have some concern with that.

As far as asking somebody to abstain, I don't think that that is appropriate. I think it's more talking to the people in this room and trying to get your point across, and having a discussion about where you're coming from and why you're coming from there. Then everybody can make up their own mind.

I don't think that the guidance of considering abstaining really applies here. I mean you're here all the time anyway, you've got to think about it. I would tend to lean to accepting the first 5 and eliminating 6 and 7, but I'm really kind of conflicted about what Jay said about guidance becomes fact, or whatever you want to call it.

I mean that is not why we're here. We're here to make up our own minds and inform each other and inform yourself, on how to behave when it comes to voting. I'm not all that comfortable with having guidance. I would rather have conversations about what is the right thing to do with my peers. That's kind of where I'm at.

CHAIR McKIERNAN: Erika, and then I'm going to look for a motion.

MS. BURGESS: Thank you for another opportunity to speak on this. A lot of the conversation that I've heard around this table has really been mainly about single stock multiple state issues. But when we have a Board that has the same species, multiple stocks; we'll use red fish as an example. It's not as if a southern stock issue is going to affect the northern states, necessarily. They are distinct stocks, they are separate and the states may have different philosophies on how they would like those to be seen and were here. I disagree fundamentally that because we are all professionals we have this Kumbaya approach, everyone's voice should be equal. We are also here to represent the people in our state, their

interests and when they conflict, yet there is no true impact to a northern state or southern state.

We are not giving the people that we represent a fair seat at the table, when those philosophies are different and there is really no overlap. I think we're trying to find something here to protect the interest of the public, when it is their fishery from folks who it's not their fishery getting to weigh in on policy.

That is why it is so important to Florida and that is why we're advocating for these things. I understand like usual; Florida will probably be outvoted. But fundamentally there is a discrepancy between approaches of states in this body, and I would like to see some recognition of that. I would argue for keeping this, and that is my last statement, Mr. Chair.

CHAIR McKIERNAN: Okay, can I ask for a motion to get this decision-making process launched? I'm looking at John Clark.

MR. CLARK: Rather than a motion, considering all the discussion we've had, can we just postpone further discussion of this until the next meeting? Give people more of a chance to consider this. I mean we've heard a lot of people want to eliminate 6 and 7, others want to keep them in there. It doesn't seem like we can come to a consensus on a motion right now, plus we're cutting into nap time.

CHAIR McKIERNAN: Bob Beal.

EXECUTIVE DIRECTOR BEAL: Yes, there is no urgency to approve these. The Policy Board is not a timeline to approve anything here. Obviously, the declared interest provisions that will be in the Rules and Regulations or will be considered to be changed in the Rules and Regulations are coming back at the August meeting.

CHAIR McKIERNAN: Okay, we've got some hands up, Bill and Shanna. Bill first.

MR. HYATT: I would like to put forward a motion. I do believe that there is some level of consent that is

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around the table, and I do believe that if what is put forward is accepted, that it could always be readdressed in the future. But I would like to put forward a **motion to accept the detailed guidance for voting or abstaining that is in the document for Conditions 1 through 5.**

CHAIR McKIERNAN: Is there a second? I have a second from Marty Gary. Discussion on the motion, would you like to testify further, or have you done enough?

MR. HYATT: I don't think I need to add anything more, I think we've had a great discussion so far.

CHAIR McKIERNAN: Further discussion on the motion, Eric.

MR. REID: Your motion is to move forward 1 through 5, but that doesn't preclude us from having a discussion on 6 and 7 at or prior to the August meeting, is that correct?

CHAIR McKIERNAN: Go ahead, Bob.

EXECUTIVE DIRECTOR BEAL: I think that is correct, Eric. I think if this motion were to pass, criteria or considerations 1 through 5 would be approved. This motion doesn't include a disposition of 6 and 7, so they are still in limbo and uncertain what would happen to those two criteria or considerations.

CHAIR McKIERNAN: There would need to be an initiative to bring back 6 and 7 at a future Policy Board meeting.

EXECUTIVE DIRECTOR BEAL: Or later within this meeting, either way, yes.

CHAIR McKIERNAN: But if we're rejecting 6 and 7 as part of a motion, you have to reconsider the whole motion.

EXECUTIVE DIRECTOR BEAL: I don't think this motion necessarily rejects 6 and 7, I think it

says, we approve 1 through 5, 6 and 7 are in limbo.

CHAIR McKIERNAN: That is a good way to put it, Mr. diplomat. All right, where are we? Do you want to come back, Bill, it's your motion.

MR. HYATT: Yes, I would just like to clarify that the intent here is exactly as Bob said, to approve 1 through 5. Even though I am opposed to 6 and 7, the intent here is not to take them out of future discussion.

CHAIR McKIERNAN: Thank you, I'm too binomial. How about you, Joe, do you have your hand up? Go ahead.

MR. CIMINO: I'm against moving the guidance forward. To Erika's question, I know I've said it in the past, but it is those smaller stocks that I keep thinking about. A lot of the tog regions are two-state units, and if those two states don't agree, I don't know where anybody goes with that. You know there are other times when I think there are going to be similar situations, where I think that really could lead to a lot more in fighting if a smaller group has some serious issues. I can't support it.

CHAIR McKIERNAN: Toni has got a comment, and then I'll get to you, Roy.

MS. KERNS: Two things. Bill, we did slightly modify what you said, so I just want to make sure you're okay. We just used the terminology that is in the document and just called it the Voluntary Guidance for Voting, if that is all right. Then the other part is, I just want to reiterate if I didn't iterate it will enough at the beginning. The Working Group recommended that the guidance be reviewed in roughly 3 years' time, to make sure that it is actually working the way that the Policy Board intended it to be working, if not working maybe just adjust it or something. But that it does get reviewed roughly every three years.

CHAIR McKIERNAN: Roy Miller.

MR. ROY W. MILLER: I was going to remain silent on this for the time being, but Erika stimulated me

to request clarification. Are we, did the working group, which I did not participate in, consider the, I'll call it the subspecies level voting privileges. The specific example that Erika gave is appropriate.

I think the northern and southern red drum stock; we can make the same argument to the tautog stocks that have been identified. Was that beyond their assignment to consider the subspecies level, and if so, will we be dealing with that at some future point?

CHAIR McKIERNAN: Bob Beal.

EXECUTIVE DIRECTOR BEAL: Yes, this is my recollection, and members of the Working Group can correct me if I'm wrong. But the group talked about that and used some of these examples with tautog and horseshoe crab and red drum, obviously, and felt that getting that down to that granular level would be difficult.

That became very prescriptive, saying who could or could not vote on species issues, and it got really blurry on mixing zones between stocks and other things. Then as they continued to talk, they ended up at these sorts of general guidelines that don't really comment specifically about stock units.

But the idea of how much those impact what is going on in your backyard is whether you should or should not abstain. They sort of backed away from that granular level of small stock units and went sort of bigger picture, philosophical guidelines kind of in 1 through 5 and 1 through 7, whatever it ends up being.

CHAIR McKIERNAN: I've got Erika and I've got Jason.

MS. BURGESS: Bob represented it well. That is what led to the development of Option 6 and 7. Not calling it out specifically to deal with discreet units, but you might fit into that category if you're thinking about discreet units, but it wouldn't necessarily preclude a

neighboring state and immediately adjacent state who has an interest in voting on that other unit from making a vote if they wanted to.

CHAIR McKIERNAN: Jason.

DR. McNAMEE: It's not that I have really an issue with the things that are kind of stated in 1 through 5. I don't know what Rhode Island is going to do, but I personally am not in favor of this motion. It comes down to what I said earlier, and that is, so now you have these very explicit things where you can consider voting. Then it's silent on the other things, so does that mean you should never, if it doesn't fall into one of these 5 categories. I'm uncomfortable with that, and that's why I just wanted to offer that for the record. Then one tangential discussion of something that has been discussed here. You know we have these units of management are management constructs. By and large these are not genetically distinct groups of species. Even if the management in one stock management area might not have apparent impacts.

There are population dynamics within this species where there is flow of genes between these different stock units. I don't agree with that part of the discussion either. I think it is hard to know when somebody has a vested interest and when they don't. They can make that decision for themselves.

CHAIR McKIERNAN: Jason, could you clarify your position on this motion for me.

DR. McNAMEE: Yes, I don't know where Rhode Island is going to be, but I am not in support of this motion.

CHAIR McKIERNAN: Because you would like to not see any of the 5 adopted, you want to just keep it status quo.

DR. McNAMEE: Correct.

CHAIR McKIERNAN: All right, should we caucus? Take a vote, what do you think? One minute

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caucus. Two-minute caucus, says the Executive Director. Do folks need more time? No, I am not seeing any requests for more time. All right, all in favor of the motion on the Board, shall I read the motion? Motion is to move to accept the voluntary guidance for voting that is in the document for Sections 1-5. Motion by Mr. Hyatt, seconded by Mr. Gary. **All in favor.**

MS. KERNS: Florida, Georgia, South Carolina, North Carolina, Virginia.

CHAIR McKIERNAN: All opposed.

MS. KERNS: Rhode Island, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Potomac River Fisheries Commission, Maryland, Delaware, Maine, New Hampshire.

CHAIR McKIERNAN: Any abstentions?

MS. KERNS: NOAA Fisheries.

CHAIR McKIERNAN: Any null votes? The tally is, motion fails 5 in favor, 11 in opposition and 1 abstention. Is there anything else to discuss or to deal with on this issue? Bob.

EXECUTIVE DIRECTOR BEAL: You know Item 6 and 7 are still sort of in limbo, but I don't know if there is any interest around the table to discuss those any more, given that the first 5 weren't approved. But it is up to the group.

CHAIR McKIERNAN: Okay, well, I think we should probably maybe see if we want to take that up at the next meeting, given all the other business we have today. You know this is something that we can reconsider. We can continue our internal discussions among the delegations. I recommend everybody do that. Thank you to the Committee that worked on the document, and to the facilitator that did the work as well.

COMMITTEE REPORTS

CHAIR McKIERNAN: Toni, next on the agenda.

MS. KERNS: I'm going to swing our Committee Reports around a little bit, because I think Kurt is still going and I have Katie with the supplement stuff, and then go to the LGAs if that works, and then we'll have Kurt last.

CHAIR McKIERNAN: All right, Katie Drew.

STOCK ASSESSMENT REPORT

DR. KATIE DREW: I just have a few updates on ongoing assessments and a heads up for the Board about the potential future assessment schedule. Cobia recently completed their Data Workshop. They used a process of several virtual data workshop webinars and then an in-person meeting.

The methods workshop will be in September with an assessment workshop at the end of the year, so that it can go to a SEDAR Peer Review in May, 2027, and come to this Board in August of next year. That is fairly well on track, and obviously there are certain data challenges, but they are going to do the best that they can.

Sturgeon has started their process with a data workshop in late July. We will be using a similar approach to the Cobia Workshop with a series of webinars for the Technical Committee and any external data providers, and then an in-person workshop in August for the SAS.

We have put out our request for data, both to our Technical Committee members and also the sort of press release that ASMFC does to external data providers, and we encourage anyone who is aware of research on sturgeon that maybe is not done through the states, to encourage them to provide data, or anyone listening to this webinar to provide data reach out to us, ideally by July 1st, so that we can incorporate that into our data workshop, which will be in late July.

This is aimed to have peer review done by the end of 2028. The last thing I wanted to bring to the

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Board's attention is the Tautog Board requested that the tautog benchmark assessment be expedited. Right now, tautog is currently on schedule for a peer review in 2029, meaning we would start work probably sometime early next year on that process. If we wanted to move that up, that would require probably bumping another species back.

The ASC will discuss this on their call coming up at the end of this month, and come back to the Policy Board with sort of a recommendation or some options for the Board to consider going forward, in terms of what are the tradeoffs of moving tautog up versus keeping it where it is, and allowing another species to continue in its place. That's all I have, and I'm happy to take any questions.

CHAIR McKIERNAN: Thank you, Dr. Drew, any questions? Don't see any, thank you so much.

LEGISLATIVE AND GOVERNOR'S APPOINTEE REPORT

CHAIR McKIERNAN: Next on the agenda we are going to go to the Legislative and Governors Appointees Section Report. We're going to start with Roy.

MR. MILLER: I'll go through our deliberations at the luncheon yesterday and I'll do it very briefly. Our primary responsibility at this particular meeting was to have an election of new Chairs and Vice-Chairs. We did not formally have Vice-Chairs before, so this is a new addition to our operating procedures. The elections went as follows.

For the Legislative Appointees, Eric Reid was voted in as the new Chair and for the Vice-Chair of the Legislative Appointees, Adam Nowalsky was voted in, even in his absence as the Vice-Chair. For the Governor's Appointees, I will be continuing on for another year, Dennis Abbott stepped down after a long and productive tenure as a Legislative Appointee Chair.

We had a choice between Steve Train and Gary Jennings, and Steve elected to defer for consideration for at least a year, so that we would have more of a north/south split among our Chairs and Vice-Chairs. Gary Jennings will be taking over for the next year as the Vice-Chair of the Governor's Appointees.

Let me explain, the Vice-Chair does not necessarily ascend to the Chairmanship when the two-year term of appointment is over, and instead, if the Vice-Chair was interested in running for the position of Chair they would have to be so nominated. Also, a Chair or Vice-Chair that assumes the position would hold that position for two years, unless so nominated to continue beyond two years. That person could select to stay on as Chair if so nominated and approved for that process.

Then finally, we talked a bit about something that is within our purview as LGAs that may not be available to the State Administrative Folks, and that is our ability to perhaps influence our legislators and/or governors, administration in Washington, both at the state level and the federal level on trying to avoid interference with our approved state/federal actions.

We've identified that as a problem in the past. It may become more abundant, it may not. But anyway, we recognize that as LGAs we have kind of a unique ability to address these issues, when perhaps the Administrative Commissioners might not have that ability. Thank you, Mr. Chair, if there is nothing else, you might want to consider, Eric has a suggestion.

CHAIR McKIERNAN: Just say it's an interesting section, because it represents two-thirds of the Commission, and each of you are either a Legislature Appointee or Governor's Appointee, and each of you has its own Chair, so you are essentially Co-Chairs. Now I'm going to turn to the new Co-Chair, Eric Reid.

MR. REID: Thank you, Mr. Chair, and thank you, Mr. Miller for your report. Just to follow on Roy's discussion about what we talked about, about

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political pressure. We had really good discussion. But what I took away from that was it's better to be proactive when it comes to dealing with your Legislators, than it is to have to go to them and talk to them when something is about to hit the fan. There were several examples from people in the room about how to engage with your legislators, you're elected officials, so you become a resource to them. When these issues come up, they are going to call you and say hey, what do you think? I thought that was a really productive conversation and I would like to have more of those conversations, you know. It's similar to the Law Enforcement Committee, it's an open meeting.

It's a nice informal conversation, and I want to continue that and I think that is great, and we have pretty good participation from everybody, including new members and old members. But the LGA Group is actually two sections. In our regulations they are referred to as Sections. It is not a committee.

I would like to, I have a motion that I would like to make to change that, and turn that group into a committee. It is really a technicality. I don't intend, at least in my tenure for the next two years to change the way that committee behaves. I talked to Mr. Beal, and it doesn't require any extra effort on the part of the Commission.

We're still going to have our meeting; we do have an agenda. We do a report. My motion, if it's okay with you, Mr. Chair. The motion is, **move to task the Commission Chair, under Article IV, Section 4 of the Rules and Regulations to formally establish the Legislative and Governor Appointee (and proxies) Sections as a Committee.** That is not a committee motion, because we're not a committee, so I'm going to need a second.

CHAIR McKIERNAN: Right, I've got Joe Grist seconding. Bob, do you want to speak to the mechanics of this?

EXECUTIVE DIRECTOR BEAL: Yes, happy to do it, thank you. Yes, as Eric said, this is a bit of a technicality, but I think it is important to formalize the structure of this group a little bit more. They've taken a number of steps forward in how they develop their election process over the last six months or so. The Commission Chair has the authority to form committees. I guess the only question I would have is, it will be a single committee with Co-Chairs, is that the idea, Mr. Reid?

MR. REID: Yes, thanks Bob for the question. Actually, in the Rules and Regulations it is Article 4, I think it is Section 3, already lays out what that group is. It's in two sections, each has its own elections and we now have a structure for the elections. We're going to have them every two years, stagger between one side and the other for every two years.

We do have regulations for that. It is also, you know we also know who is going to be on that committee. There is no need to appoint people to the committee, because it says in that section that Legislative and Governor's Appointees are on that committee. We have the who, we have the where. We're going to meet every meeting except for the annual meeting.

We have all these regulations in place already, it's just a matter in my mind, you know we have made in my 12 years on that committee, I think we've made one or two recommendations to this Board. A bunch of people having lunch making a recommendation. They haven't done it a lot, but I really think it's important to really develop this committee a little bit more, and maybe provide some advice to the Commission as a whole. But I would like it to have the authority of coming from a committee, a committee motion to me is something that is a little bit more powerful than a bunch of people having lunch and coming up with some ideas. That is my intention.

CHAIR McKIERNAN: To address this question, are you comfortable having Co-Chairs?

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MR. REID: The Co-Chairs is in the section that talks about what this group is. It's already in there, so I am very comfortable with that.

CHAIR McKIERNAN: Okay, so that can be done by me working with you through correspondence to the Commission as a whole.

EXECUTIVE DIRECTOR BEAL: Yes, the only thing that just popped into my mind is, if we're ultimately going to change the Rules and Regulations, we may fall into the exact same category that we talked about in the declared interest, where we have to notice a change to the Rules and Regulations.

I need to go back and reread those with this in mind, but we can do that. If that is necessary when we notice about the change in the declared interest criteria, we'll notice this and do it all at once in August. After the meeting you and I can get back together and pedal up on the process.

CHAIR McKIERNAN: All right, I have a motion on the board, is there any more discussion? **Is there any objection to the motion as written? Seeing none; passed by unanimous consent.** Thank you, Eric.

LAW ENFORCEMENT COMMITTEE REPORT

CHAIR McKIERNAN: Next on the agenda is the Law Enforcement Committee Report, Kurt Blanchard. Welcome, Kurt.

MR. KURT BLANCHARD: We just finished up, a day and a half meeting. The Law Enforcement Committee conducted a hybrid meeting in a joint session with the Gulf States Marine Fisheries Commission LEC During the 2026 spring meeting week of the Atlantic States Marine Fisheries Commission.

The Chair welcomed the new member, Major Edward Mann of North Carolina, and recognized Major Jason Walker from North Carolina for his years of participation in the LEC. The Committee discussed the following topics.

Under species discussion, Tautog Management. The Committee reviewed the Tautog Management Board's intent to advance Addendum I to Amendment 1 of the Tautog Fisheries Management Plan.

Staff provided details about a proposal that the state of New York, which requested that an addendum include an option to utilize an alternate tag type for commercially taken tautog. This request arose to persistent concerns regarding damage to fish retained in New York's live market fishery.

The LEC continues to monitor this issue closely, and is informed about the research and testing conducted by New York, as they work to identify a suitable alternate tag option. At this stage, New York EEC has not finalized specific alternative tags, although several potential options are under consideration. The LEC supports the commercial tagging program outlined in the FMP, and is open to endorsing an alternative tag. Provided it meets the established requirements of the program. The Committee requests the opportunity to review the proposed option in the draft addendum before the Board grants final approval. Under Other Business, we discussed the JEA program and updates. Bryan Landry of NOAA OLE engaged the Committee in a discussion concerning the status of the JEA program.

He shared a positive update reporting that NOAA funding for the program has been included in the Fiscal Year '26. This development is welcomed by the LEC as it supports the continuation and effectiveness of the JEA program. The LEC reviewed its shared expectations and priorities regarding the JEA program.

The Committee reaffirmed the commitment of participating states to the program's objectives and collaborative enforcement efforts. Members expressed hope that NOAA will further enhance the funding for JEA in Fiscal Year '27, strengthening the partnership and advancing fisheries enforcement initiatives.

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Our next topic was on the Guidelines for Resource Managers on the Enforceability of the Fishery Management Measures. At the request of the Gulf State partners, staff delivered a comprehensive presentation focused on the development, history and application of the guidelines document.

Key points included the documents evolution, its practical use in fisheries management and how it addresses challenges faced by managers working to ensure compliance with regulatory plans. Our next topic was the new NOAA Field Forensics Program. Again, NOAA Office of Law Enforcement has initiated pilot testing of a newly developed rapid power mist chain reaction, PCR from the COVID days.

This technology allows officers to perform genetic analysis directly in the field, delivering immediate results and eliminating the need to send samples to external laboratories. U.S. law prohibits the false labeling of important seafood products. Despite this, visual identifying fish species during port inspections is often difficult as physical characteristic alone may not be sufficient.

In the past NOAA officers collected genetic samples and sent them to forensic laboratories for confirmation, a process that could take several weeks and potentially delay the movement of seafood through U.S. ports. The introduction of the Rapid PCR technology provides enforcement personnel with the capability to swiftly identify species on sight.

This advancement helps officers collect evidence, investigate seafood fraud more efficiently, by expediting the identification process, the device helps prevent illegal seafood products from entering the U.S. marketplace, and strengthens the effectiveness of inspections and operations. Our next topic. We've covered a lot of things in the last day and a half.

Court Authorized Surveillance. Sargeant Jeffrey Kirk out of Maine's Department of Marine Resources conducted a presentation on the best practices in the use of court authorized surveillance techniques. Sargent Kirk highlighted successful case prosecutions in the state of Maine, and the process is used in supporting these cases. This presentation focused on the illegal deployment of traps in the lobster fishery. Moving on, the illegal, unreported, unregulated fishing enforcement, IUU fishing. Assistant command a game warden, Les Casterline of Texas Parks and Wildlife offered a presentation on his agency's effort in enforcement of IUU fishing. HE discussed illegal fishing activities along the Texas Mexico Border. Enforcement efforts, new initiatives to combat seafood fraud and regulations for seafood import monitoring.

The Seafood Import Monitoring, SIM is designed to regulate the entry of seafood into the United States. This program tracks the journey of seafood products from point of harvest all the way through the arrival at U.S. Borders. By monitoring this entire process, SIM helps ensure the imported seafood meets legal requirements and maintains transparency throughout the supply chain. Sim simply targets 13 priority species. Among these are red snapper, shark and blue crab. These species were selected due to their vulnerability to illegal fishing practices and a need for greater oversight in their trade. To support lawful harvesting and production, the program requires comprehensive of record keeping and data collection for each imported shipment.

Importers must provide detailed documentation that demonstrates that seafood was harvested and produced in accordance with established laws and regulations. This information is then used to verify compliance and prevent illegal, unreported, unregulated fishing for impacting U.S. markets.

These enforcement efforts have been collaboration with department agencies, including Texas Parks and Wildlife, NOAA, Customs, U.S. Fish and Wildlife and the FDA. Moving on to Case Studies. Operation Scale Deception. Lieutenant Patrick Carron from the Mississippi Department of Marine

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Resources offered a presentation on this enforcement action as it relates to the fraudulent use of trip tickets in their commercial fisheries.

This presentation detailed a multiyear investigation into illegal finfish harvesting and trafficking between Mississippi and Alabama, focusing on spotted sea trout and red drum. The investigation began in 2018 when Alabama Marine Resources noticed large quantities of spotted sea trout being sold in Alabama, without proper reporting on Mississippi trip tickets.

Mississippi has a strict regulation, including Total Allowable Catch for spotted sea trout, which was exploited by commercial fishermen, who sold unreported catches to a seafood dealer in Alabama. In 2020 complaints arose about suspiciously high quantities of red drum being harvested and sold, leading to further investigations.

Authorities discovered fraudulent reporting, hidden compartments in boats, and connections between Mississippi and Alabama fishermen. Cellular data and social media posts revealed that some fishermen were laundering illegally harvested fish from Alabama on Mississippi trip tickets.

The investigation dubbed Operation Scale Deception involved collaboration between Mississippi, Alabama and the U.S. Fish and Wildlife Service. It identified 44 participants in the scheme, resulting in 8 convictions, \$21,446.00 in fines, and a lifetime forfeiture of gillnet license for one dealer. The total amount of illegally harvested finfish was 101,673 pounds, with a retail value of roughly 1.5 million dollars. Key lessons learned include the need for better communication between agencies, the exploitation of regulatory differences between states, and the inadequacy of current fines per criminal activity.

The next case presented was Operation Atlantis out of the state of Florida. Captain Scott Pierce, also the Chair of the LEC, from FWC offered a presentation on false tagging of seafood products. This presentation discussed illegal lobster importations, mislabeling practices, enforcement actions, violations and legal proceedings related to Florida fisheries.

The FWC and NOAA investigated Florida based seafood companies for allegedly importing large quantities of Caribbean lobster, mislabeling them as U.S. origin, and reexporting them to China. Inspections revealed violations such as improper reporting, lack of notification, and breaches of spiny lobster regulations.

Federal charges, including wire fraud and conspiracy were brought against two seafood dealers, highlighting concerns about reputational harm to American fishermen and insufficient government oversight. The investigation began when officials noticed discrepancies in import documentation shipping records, which prompted a series of inspections at warehouses and facilities.

Companies failed to properly document the sources of their lobsters or notify authorities about the incoming shipments, as required under both federal and state laws regulating seafood trade. These regulatory breaches included exporting lobsters that did not meet size requirements, and failing to comply with conservation measures intended to protect the species.

Prosecutors alleged that the deliberate mislabeling was intended to circumvent tariffs and trade restrictions, contributing to unfair competition of legitimate U.S. producers. The probate determined how widespread this fraudulent practice has become, with the industry and whether additional enforcement actions or regulatory forms were needed to protect both marine resources and the integrity of the American fisheries.

This particular case brought in a little over \$500,000.00 in fines with a five-year probation on the dealers. A closed session was convened during

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our meeting to facilitate open discussions regarding new and emerging issues within law enforcement, and each agency was given the opportunity to highlight its work and shared updates on ongoing enforcement initiatives.

We would like to thank the Commission for allowing this joint session with the Gulf States LEC, that has not happened in many years. We did do it on a regular basis a number of years back. It was a really good opportunity and really good shared information, so thank you, Mr. Chair, and I'm all set.

CHAIR McKIERNAN: Any questions for Kurt? John Clark.

MR. CLARK: Just quickly, how accurate is that field forensic testing of the fish? Has it been pretty accurate so far?

MR. BLANCHARD: Still in the testing phases. Preliminary data it's been highly successful. It has identified over 100 species that can be tested with this device.

CHAIR McKIERNAN: Thanks, Kurt, great report. Sounds like a great meeting.

**UPDATE ON RECREATIONAL ANGLER
PARTNERSHIP IMPROVEMENT DIRECTIVE
(RAPID) INITIATIVE**

CHAIR McKIERNAN: Next is Bob Beal with an update on RAPID, Recreational Angler Participation Improvement Directive, coming out of NOAA Fisheries.

EXECUTIVE DIRECTOR BEAL: I will be relatively brief, Mr. Chair. For those of you that were at the ACCSP meeting at the beginning of the week, only two days ago, it feels like a week now. The NOAA representatives came in and gave an update on RAPID Initiative.

The goal is to redesign recreational data collection around the country, and it involves states, NOAA Fisheries and the Councils all

getting together and figuring out what that future recreational data collection is going to look like, sorting out everyone's role as we move forward in the future, and to improve recreational data collection around the whole country.

There is essentially two parts that are going on simultaneously right now. One is increasing sample size for the current APAIS Program. NOAA fisheries is going to move nearly 2 million dollars to ASMFC, to increase sample size for the APAIS Program that goes on up and down the coast, Maine through Georgia.

I don't believe Florida is part of that APAIS Program, I could be wrong, Erika, but I don't think Florida is part of that program. That is going to be in the short term. That part of APAIS will be coordinated through ACCSP, and Alex DiJohnson and Geoff White. They've already started reaching out to the states, talking about what capacity do the states have to increase sampling.

You can't just flip a switch and increase sampling by 40%. You've got to hire new people, you've got to determine what waves and when these sampling efforts should take place and everything else. That is one effort that is shorter to medium term. The other effort is regional workshops, talked about it at the beginning, which is figure out how the states and NOAA and the Councils all want to work together to figure out improving recreational data collection.

The model right now is anyway, 8 regional workshops based on the Council's regions. That money will come to ASMFC and we will pay for the coordination of this, and also hire a facilitator. We will not be the facilitators for those workshops. But we are going to rely heavily on the states to coordinate those workshops. Where should they be?

When should they occur within the states when people aren't out fishing, and how do we get the most people there? These 8 regional workshops are really focused on what I said, NOAA Fisheries, the states and the Councils. They are not public

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facing meetings. Like they will be open to the public, I believe. But the idea is not to bring together a lot of recreational angling public at these meetings, it's to get the agency folks all together and talk about what the future of recreational data looks like. Following those 8 regional workshops there will be one nationwide workshop that is the public facing workshop. I don't know if that would be virtual or in person, that hasn't been decided. If you get really, what is the public perspective on recreational data collection. Then the final sort of capstone tent workshop will be a group that hasn't been defined yet that will bring all of the 8 regional workshops and the public perspectives together, and synthesize all of that into what the future of recreational data looks like.

It is not going to be one-size-fits-all around the country, but one key on the east coast that has been talked about is sort of compatibility. Even if some states are doing things a little different or if there are some differences up and down the coast by region, maybe. It will be really important to be able to compare what one region does to the next and what the landings are state to state up and down the entire coast.

Maybe the methodology is a little different, maybe not. But that compatibility issue is going to be really important to support future management stock assessment decisions. NOAA wants us to move very quickly on these workshops, and we would love to have them done in this calendar year. I don't know if that is realistic.

That is a lot of planning, hiring a facilitator. We don't have access to those funds yet. It's kind of a fast-moving process, but the other premise here, a couple things. NOAA appears to want much greater state involvement in recreational data collection. They want to shift some of that responsibility from the federal government to the states, which obviously requires resources to do that, and that is part of this conversation.

The other is, NOAA doesn't want to be too sort of top heavy. They don't want, you know people are asking for more details. What is this RAPID thing, tell us what it's going to be. NOAA is reluctant to talk too much about that, or to be too heavy handed and tell the states what it is going to look like in the future.

They want these workshops to be what determines the future of update of collection rather than NOAA, sort of reconfiguring MRIP and telling the states what it's going to look like in the future. It is really designed to be collaborative and put a lot of effort and responsibility on the states to figure this out, and figure out what the recreational data in the future is going to look like. That is the quick update. I can try to answer questions; I don't have a lot more than that. But that is what the future of the program is.

CHAIR McKIERNAN: Any questions for Bob? All right, more to come, for sure.

DISCUSS PROPOSED CHANGES TO MONTEREY BAY AQUARIUM SEAFOOD WATCH'S STANDARDS FOR FISHERIES

CHAIR McKIERNAN: Toni, I think you're up next with a Monterey Bay Aquarium Seafood Watch's Standards for Fisheries and possible changes.

MS. KERNS: I was asked to provide some information on the proposed revisions to the Monterey Bay Aquarium standards for fisheries. They are proposing changes to the system, and this is the system that establishes their seafood card, so they are red, yellow and green for species around the world.

I am going to state that this is my interpretation of these, after digging around a little bit on their website. On the meeting materials I provided the one pager, but I personally did not find that that was super informative. Again, these are my interpretations and I am not an expert in their seafood cards, so we'll put that out there. I think there are a handful of changes that I think could have substantial impacts on ratings. Not necessary

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that I think that all of these things apply to the Commission species, I don't know which one of them would apply to Commission species, I did not do that much digging. But the first is the stricter, best choice, the green threshold for stock status.

A proposed new decision rule would require that a fishery has to score green for either stock abundance or management effectiveness, not just achieve a high overall numerical score to earn the best choice rating, so fisheries with poorly known stock status and management that is not highly effective and does not necessarily reflect the intent of the best choice category, even when ecosystem impacts are minimal.

This would directly downgrade some fisheries that currently squeak into the green ratings on the strength of either low bycatch or habitat scores alone. They tightened the stock rebuilding thresholds. The proposed abundance scoring would reclassify rebuilding stocks more stringently. Stocks are proposed to be classified as moderate concern if they are below the 75% of Bmsy or a similar reference point and a low concern above that point. Previously the structure was not always considered sufficiently precautionary for depleted stocks. Under the discard and date used, that can now drive a red color rating. Currently high discard rates lower a numerical score, but it doesn't change the color rating for criterion 2. The proposed change would base the color rating of criterion 2 on the final score rather than the sub-score, which allows the discard modifier to influence the color rating of criterion 2.

Then the overall recommendation in more cases than it previously did. Fisheries with discard and bait ratios at or above 100% of the landings could be pushed from yellow to red. For the revised reference points guidance, the proposed revision moves away from treating MSY as the universal benchmark

Seafood Watch is proposing to provide its guidance on the reference points to ensure that their appropriateness is judged on principals of conservation and system resilience, rather than comparison to MSY. This could alter scores for fisheries that currently use non MSY reference points to justify their management.

I think this will be more impactful on global fisheries, but we do have some species that don't use MSY or MSY proxy. Again, data poor fisheries I believe will face harsher scoring. The revisions propose that data poor quality or availability can more directly contribute to lower scores, and even in a void recommendation rather than simply noting uncertainty.

This could substantially downgrade many small-scale or develop rural fisheries that lack robust stock assessments. Again, for the most part global fisheries. But again, there are species in the United States that have poor data availability. Then there are some changes that I think have little impact on the ratings. There are streamlined fishing mortality table for bycatch species. One of the goals of the proposal is to streamline the fishing mortality factor by solely focusing on fishing mortality, combining the low and very low concern categories, just to simplify the assessment. I believe this is a clarity and efficiency change that would not change most of the fisheries actual scores. Revisions for the guidance on language on alternative reference points. The criteria have been edited to indicate that reference points that are not as conservative as Fmsy should not be considered equivalent.

What I can tell, this guidance already existed in some of the appendices, so this change is mainly about making the existing rules more difficult. In their criteria table, rather than introducing a new standard. There is the consolidation of criteria structure. The review is exploring, combining criterion 3, which is habitat, and criteria 9, which is wildlife mortalities into a single habitat and biodiversity criterion, and this is a structural reorganization.

It's unlikely to shift final ratings for most fisheries is what I gleaned. There is more explicit guidance for illegal activities and unknown impacts, then complication process proposes clear scoring language for situations where illegal activities or impacts are unknown. This is a codification of how the assessors had already handled these cases, rather than a new role.

Then lastly, there is new metric reporting's. The Seafood Watch is considering publishing metrics proposed with each assessment, to the level that corresponds to each scope within the report, potentially including a dashboard. I think this would enhance transparency, but is informational and wouldn't factor into the ratings themselves.

The question to the Board is, do we want to provide comments? If we do want to provide comments, is it each individual state wants to provide comments, or do we want to provide comments as a Commission, do we not want to provide comments at all, and if we do, I would definitely need some specific guidance from you all, as I don't know how folks would feel.

CHAIR McKIERNAN: The comments would be due by the end of the month.

MS. KERNS: Yes.

CHAIR McKIERNAN: Thank you, Toni. One of the members actually, it was Joe, who brought this to our attention. I know Monterey Bay Aquarium Sea Watch comes up often in a lot of our daily deliberations regarding seafood marketing and seafood promotion.

We thought it would be appropriate for Toni, she's done all this work to sort of summarize what's in play here, and get the Commission's collective view as to whether or not we think a Commission letter or any of our individual states might be interested in just comment. I think it's an important issue or can be an

important issue, in terms of the marketability of our seafood.

Especially for fisheries that are totally in compliance with our plans and with Magnuson, and yet they are earning a red do not purchase classification, which is frustrating. Is there any discussion around the Board, any thoughts on next steps? Go ahead, Carl.

MR. WILSON: Just a question for Toni, at this point. Did they mention any modifications on how a particular fishery relates to protected resources?

MS. KERNS: In the score card, I don't recall significant proposed changes to that, but it's been like three weeks since I've looked at these, Carl.

MR. WILSON: I mean to Dan's last point then, here we have fisheries that are doing exactly what they are supposed to be doing under the letter of the law of how we operate that are scoring red, as avoid. This came up with lobster in Maine. It was a pretty big discussion point. It just really left us with a bad taste.

CHAIR McKIERNAN: Carl, is your recommendation to leave it alone?

MR. WILSON: Each state takes up comments that would be specific to their experiences.

CHAIR McKIERNAN: I just thought it would be valuable to just bring it out in the open that there are opportunities for them, that they are amending their standards. I didn't know what those amendments were, now I do. Any other thoughts on whether we should. Erika.

MS. BURGESS: I appreciate, Mr. Chairman, your question and your comments, and also Carl's point. Have seen in Florida basically a blanket decision making. If your fishing gear in the fishery involves any vertical lines, you automatically get a bad choice, no matter how sustainably managed that fishery is.

I kind of view it as, they've opened it up for comments. If we as a collective group share the

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same comments about the decision process for how they do their rating, I would support us sending a letter to comment on that, even though it may not be exactly what they're looking for.

We do have some misalignment between what we think at the ASMFC body is a well-managed fishery, and what Monterey Bay Aquarium says is a well-managed fishery. If we have the opportunity to highlight it, we should. If we can't come to agreement on the content of the letter, I understand that. Florida will be sending their own letter on this as well.

CHAIR McKIERNAN: If any of the states decide to send letters, maybe we share those letters, blind copies or whatever to the other states, I think that might be helpful. I take your point. Yes, Eric.

MR. REID: We absolutely should send a letter, absolutely, do not fail. I don't know if any of you ever looked at the Monterey Bay Aquarium list. It's interesting reading, to the point where sometimes it's pretty comical, because of what you said, Mr. Chairman. You know fisheries that are doing great are red listed and fisheries that are not doing great are, you know eat these tomorrow and every day of the week.

My concern is data poor species. I'm in the squid business, or I was in the squid business. Our partner at the Mid-Atlantic Council manages two species of squids, which are well managed, they are sustainable. But they are data poor, and here we are with a fishery that, I mean it's a giant economic driver for the east coast, well managed, it's got quotas, you know it's got all these requirements. But that is going to get harsher treatment, which is not right. I agree that the Commission should send one and the states should send one, and perhaps if we overlap a little bit in our discussion, but absolutely you've got to tell these people something.

CHAIR McKIERNAN: In the case of squid, it's data poor because of the life history, not because people aren't collecting data. All right, so the intent is for states to send individual letters among those who desire to. But can the Commission consider some kind of a letter as well? Bob.

EXECUTIVE DIRECTOR BEAL: Absolutely, if the group wants the Commission to send a letter, we can definitely do that, and it sounds like that is what Carl, Erika and Eric are suggesting that we should do. We may need a little bit more guidance on exactly what to include in that letter. But I tend to agree, a letter from the Commission carries the weight of the 15 states, and that is pretty important.

CHAIR McKIERNAN: Sharpen the knives. Ben, please.

MR. DYAR: I just wanted to second that I would support a letter as well from the Commission. We've run into some issues specifically with some shrimp and our oyster fisheries. They were nice enough to actually reach out to us; to gain further information regarding some of our oyster fisheries and still we were not speaking the same language.

It was very difficult to get some of that through and it did not result in a positive result. That has since changed, but it was actually a lot of misunderstandings even directly talking to them. You know we would be interested in supporting a Commission letter as well.

CHAIR McKIERNAN: Your experience is a common one among the states that have engaged with that entity. Toni.

MS. KERNS: Comments close May 25. I would just need some help on what you're looking for, either today or, I don't know how close. If some of the states that are thinking about sending letters are sending a letter that has a section that is more general.

Because I think what I'm hearing us say is we don't agree with how they do the score card process, in

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terms of when a Commission or Council has a sustainably managed species, then why are you scoring us into the red. If anybody has sections like that already written, then I would love to take that from you all. But if there is any additional detail for sort of the whys behind some of that, I can pull up some information, but just strength behind it would be appreciated.

CHAIR McKIERNAN: Can we communicate that to you after this meeting and not at this moment?

MS. KERNS: Yes, that would be great.

CHAIR McKIERNAN: All right, so the Commission will write a letter and states are invited to write individual letters as well.

MS. KERNS: One more thing, Dan. Because it is due May 25, I don't know if I will have time to send it to the full Board, depending on the timing of feedback from everybody. But I definitely would work with Dan and Doug to do that, and if anybody else wanted to see the draft before I sent it, shoot me an e-mail and I'll include you on that.

CHAIR McKIERNAN: Thank you, Toni. Erika.

MS. BURGESS: I just wanted to offer that I would feel comfortable if Dan and Doug approve the Commission's letter, it going out.

CHAIR McKIERNAN: All right, Review Noncompliance Findings (If Necessary), but there are none. Therefore, go ahead, Bob.

EXECUTIVE DIRECTOR BEAL: Not a noncompliance finding. Just a quick comment here. During this meeting we talked about two potential changes, potential changes to the Rules and Regulations, and the Policy Board can start that process, but to finalize that it has to be done at the Full Commission.

In August when we get together to talk about the Committee versus Section and potential changes to the declared interest criteria. That will be done at the Full Commission rather than at the Policy Board. Almost the same group, but different enough.

CHAIR McKIERNAN: Okay, thank you, and I would like to thank the members of this Board for some really sincere and honest conversation about the issues that we brought up earlier regarding voting privileges and the like. Because some of the folks in this room have been faced with some of those questions, and I thought the dialogue was really helpful. Joe, did you have your hand up?

MR. CIMINO: Just a reminder about my other request.

CHAIR McKIERNAN: Oh, all right, under Other Business, what do we got, Joe?

MR. CIMINO: This may just be to your discretion, but the Sciaenids Board has, with the help of the PRT, looked at some non de minimis criteria for those specific FMPs that I felt at the time may be of value for a Policy Board discussion, since we have an overarching de minimis policy.

I just wanted to kind of make the request to you that if we could get that on, like the next Policy Board agenda. That way this Board has a chance to catch up to what Sciaenids Board has already been presented briefly, and then see if it's worth looking at the policy.

CHAIR McKIERNAN: Can I get Toni's blessing on that?

MS. KERNS: I think we can do it for August. I want to talk to you, depending on like what we want to bring forward, if it's more in depth then maybe the annual meeting, but no longer than that.

CHAIR McKIERNAN: Thank you for bringing that up, Joe, and we'll definitely consider that for the August meeting. Bob, what would you like to do next?

ADJOURNMENT

CHAIR McKIERNAN: Motion to adjourn and then reconvene the Business Session right away? Okay, all right, motion to adjourn this meeting from Joe Grist, second by Ben Dyar. Meeting is adjourned.

(Whereupon the meeting adjourned at 3:30 p.m. on Wednesday, May 6, 2026)



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Sciaenids Management Board

FROM: Sciaenids Plan Review Teams

DATE: April 20, 2026

SUBJECT: Discussion and recommendations on the definition of de minimis for Sciaenids Board species

Background

The Commission includes de minimis provisions in interstate fishery management plans (FMP), which are meant to reduce the regulatory burden for states whose measures would have a negligible effect on the conservation of a species. The Commission's [De Minimis Policy](#) document provides guidance on standards for de minimis, but a species board may deviate from these standards to address unique characteristics of a fishery, as long as rationale is provided.

Generally, a state can request to be de minimis if the average landings for the last three years is less than 1% of the coastwide landings. De minimis states are also exempt from any sampling requirements established in the species' FMP. Other requirements, or lack thereof, for de minimis states vary by species FMP. For example, some FMPs do not require de minimis states to implement all the regulations required for non-de minimis states. The De Minimis Policy also encourages regulatory stability for de minimis states by recommending FMPs establish a set of measures for de minimis states that provide a minimum level of species conservation, prevent regulatory loopholes, and do not need to change annually.

The De Minimis Policy did not automatically change the provisions of current FMPs. To change a species' de minimis standards, an addendum or amendment process must be completed, unless the FMP specifies a different process.

Statement of the Problem

In the last 5-10 years, several states have experienced reoccurring issues related to the current definitions of de minimis for multiple Sciaenids Management Board (Board) species. De minimis provisions and requirements vary by species, but all Sciaenids Board species currently define de minimis using a three-year threshold of landings and a 1% threshold (Table 1). Notable differences between species include consideration of de minimis separately by sector for Atlantic croaker, and separately by stock for red drum.

Several states have expressed concern that the 1% threshold for these species may no longer be appropriate. States on the edge of a species range, like New Jersey and Delaware, have hovered around the 1% threshold, or have repeatedly been barely above the threshold in recent years. For example, from 2021-2024, Delaware's three-year average recreational Atlantic croaker harvest was 1.01%, 0.97%, 1.69%, and 1.92% respectively of the coastwide recreational harvest. In addition, in 2024, Delaware's three-year average Atlantic croaker commercial harvest was 1.26% of the coastwide commercial harvest. However, even if these states have no longer been meeting the definition of de minimis for a

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species, the state's landings have continued to be relatively very low compared to the rest of the coast. In several cases, a single year of disproportionately high landings, averaged with two years of lower landings, caused a state to be just above the de minimis threshold. These experiences have led states to question how meaningful any regulations they implement would be for the stock, compared to that state's relatively low proportion of the coastwide landings and the time and effort it would take to implement those regulations.

Several states have also expressed concern about high uncertainty in some of their state's MRIP harvest estimates being used to calculate de minimis, which has been used as justification for allowing a state to remain de minimis. However, it should be noted that high uncertainty (i.e., a high percent standard error) in MRIP estimates indicates that a given harvest estimate could potentially be much lower or much higher.

Lastly, due to environmental factors that contribute to the cyclical nature of recruitment and adult abundance in some of these species and ongoing stock expansion, it is likely managers will continue to see increased variability and uncertainty in landings and changes in which states qualify for de minimis. As a result, the Board requested the Plan Review Teams (PRTs) review the current definition(s) of de minimis for the Sciaenids Board species.

Specifically, the Board tasked the PRTs to provide recommendations on:

- Whether the current 1% threshold for a state to be considered de minimis is appropriate
- Whether there may be alternate ways to evaluate whether a state is de minimis

Table 1. For all Sciaenids Board species, their respective stock(s), current de minimis threshold (the percent of coastwide total landings that a state's average landings must be less than to be considered de minimis), the current number of years of landings averaged to calculate de minimis, states which were granted de minimis based on requests from the FY2024 Compliance Reports, and whether the species' FMP has regulatory requirements for non-de minimis states. Sciaenids Board species do not have any monitoring requirements.

Species	Stock	Threshold	Number of years averaged	De minimis States (FY2024)	Regulatory requirements?
Atlantic croaker	NJ-FL	1%	3	Comm: NJ, DE, SC, and GA Rec: NJ	If TLA is triggered at 30% red threshold: Y If TLA isn't triggered: N
Black drum	NJ-FL	1%	3	none	Y
Red drum	Northern: NC-NJ Southern: SC-FL	1%	3	NJ, DE	Y
Spot	NJ-FL	1%	3	NJ, GA	If TLA is triggered: Y If TLA isn't triggered: N
Spotted Seatrout	NJ-FL	1%	3	NJ, DE	Y

PRT Discussion and Recommendations

The PRTs met four times between November 2025 and April 2026 to address the Board's tasking. The PRTs agree the current 1% threshold may not be appropriate for all the Sciaenids Board species, at least without changes to the de minimis process.

The PRTs propose several possible solutions for the Board's consideration to alleviate some of the current issues states are having. The options described below suggest either:

1. Modifications to the current definition of *de minimis* or
2. Modifications to the *de minimis* process.

The Board can choose to further explore any one option below, or multiple, on a species-by-species basis. However, the PRTs do not necessarily recommend simultaneously implementing multiple options suggested below for a single species. None of the options below would be suitable as a one-size-fits-all approach for all Sciaenids Board species. For example, the PRTs would not recommend the multiple threshold approach (1B) for spotted seatrout. The options below should be considered on a species-by-species basis, due to these species' varying life history, assessments, and other differences in the fisheries.

Overall, the PRTs caution the Board about the amount of leeway that may be allowed to states who wish to remain *de minimis* despite not qualifying for it, particularly if there are concerning trends with the stock or a negative stock status. If a state has no regulations for a particular species, there is potential risk of a stock being harmed if a state is allowed to remain *de minimis*, when in hindsight it shouldn't have been. For example, New Jersey has fairly strict regulations for red drum (1 fish at 18"–27"), so New Jersey remaining *de minimis* poses a low risk to the stock, even if all red drum moved to New Jersey waters. Conversely, since Atlantic croaker are unregulated recreationally in New Jersey, the state remaining *de minimis* carries a much greater risk to the stock because there is very little protection from potential overfishing.

Lastly, the PRTs recommend any changes to the definition of *de minimis* or the *de minimis* process should undergo review by the species' respective technical committee (TC) prior to or during the development of an addendum/amendment. The TC can provide a recommendation to the Board on the appropriateness of the changes to *de minimis* for that specific species, with the goal of ensuring the proposed change will have a negligible effect on the conservation of a species.

1. Potential modifications to the definition of *de minimis*

A. Number of years of harvest averaged

Averaging 5 years of harvest instead of the current standard of 3 years may be appropriate for longer-lived species, if landings data are highly variable, and/or where it's suspected the stock may be undergoing expansion. If the Board wishes to go this route, this option should be considered on a species-by-species basis.

B. Multiple Thresholds

Under this option, there would be multiple threshold levels, each with differing requirements. A state would need to average a greater amount of harvest (i.e., 3% as opposed to 1%) to be required to fulfill all requirements for non-*de minimis* states. The multiple thresholds would include:

- If the average landings for the most recent (3 or 5) years are less than 1%, a state would qualify for *full de minimis*. States that fall into *full de minimis* are not required to implement regulations and do not have any monitoring requirements (if applicable).
- If the average landings for the most recent (3 or 5) years are between 1 and 3%, the state would qualify for *provisional de minimis*. States that qualify for *provisional de minimis* would

not be allowed to liberalize any current regulations in place. However, they would not need to implement any FMP-required regulations for non-de minimis states.

- If the average landings for the most recent (3 or 5) years are greater than or equal to 3%, then the state would officially be *non-de minimis*. If a state meets or exceeds this upper threshold, it cannot request continuance of de minimis or provisional de minimis.

The PRTs recommend this approach only be used when there are no major concerns about the status of the stock, e.g., allowing more leeway in defining which states are de minimis when the stock is doing well. Each year, each species' FMP review summarizes information on the stock either from a recent assessment or the most recently completed TLA/indicator analysis. If the species PRT has concerns about the stock after reviewing the most up-to-date information on stock status, the PRT can recommend the use of a strict 1% threshold for de minimis in the following year, which would need to be approved by the Board. This recommendation won't be applied retroactively to the current year's de minimis requests. The PRTs discussed the importance of the states knowing the de minimis criteria ahead of the submission of compliance reports for that year.

The PRTs recognize this approach may not be appropriate for all species. For example, although spotted seatrout is assessed on a much more localized scale than the other Sciaenids Board species, de minimis for this species is calculated for the entire coast. The different spotted seatrout stocks may all have different statuses, making a general recommendation on the level of risk to take with defining de minimis difficult. Likewise, this approach may not be appropriate if a species' stock status can frequently change, which could lead to frequent recommended changes in whether to use the 1% or multiple threshold approach.

2. Potential Modifications to the De Minimis Process

A. Codify the number of years before a state can no longer request de minimis status

States have been requesting to remain de minimis despite no longer qualifying for it, particularly if the state has been de minimis for many years and would need to go through the process of implementing FMP requirements if no longer de minimis. The species PRT has typically allowed the state to remain de minimis to see if this is a consistent trend in higher landings for the state. However, the PRT also usually recommends a specific cut-off where they will no longer recommend de minimis, i.e., if the state continues to not qualify for de minimis for a consecutive number of years (usually two or three years). However, this process, including the number of years to use, is not officially established anywhere.

It may be appropriate to codify the number of years a state has before the state can no longer continue to make the request for de minimis and must begin implementing FMP requirements to be in compliance with that species' FMP. This would make the process more official, no longer just a recommendation, with the benefit that states would know expectations ahead of time. The PRTs recommend if a state does not qualify for de minimis for a number of times (non-consecutive) within a specific time frame (e.g., if a state's landings are above the threshold for de minimis in 3 out of the last 4 years), the state would no longer be able to request de minimis unless there are extenuating circumstances. Any extenuating circumstances would need to be detailed by the state in their annual compliance report for the PRT and Board to review. The PRTs recommend that the specific number of years be established by a species' PRT and TC, based on what is determined to be most appropriate for that species.

If a species' FMP is already modified to increase the landings threshold for de minimis above 1%, such as in 1B above, it may be appropriate to not allow states to request de minimis if this higher threshold is exceeded unless there are extenuating circumstances.

B. States remain non-de minimis or de minimis for X number of years

The PRTs also brainstormed ideas to improve stability in the implementation of FMP-required regulations and/or monitoring requirements if a state has a history of moving in and out of qualifying for de minimis. Once a state is officially no longer de minimis, there could be a set number of years before the state can qualify for de minimis again, regardless of their landings. The reverse could be true as well, where once a state moves from non-de minimis to approved as de minimis, they could automatically be able to remain de minimis for a set number of years. For example, if the Board no longer approves a state's de minimis or that state decides to no longer request de minimis after multiple years of higher landings, the state must begin the process of implementing FMP-required regulations and/or begin collecting samples required for non-de minimis states (if applicable) for a set number of years before they can be eligible for de minimis status again.

3. Additional Considerations

This section contains additional considerations related to de minimis discussed by the PRTs. If interested in exploring further, the Board can request the individual species PRT to investigate on a species-by-species basis. These considerations will not be appropriate for all Sciaenids Board species.

A. Splitting De Minimis by Sector

The PRTs recommend further consideration of splitting de minimis by sector, wherein the species PRT (with consultation of the TC) explore if this change would be appropriate on a species-by-species basis. As previously mentioned, de minimis status is already determined separately by sector for Atlantic croaker. It has been a longstanding recommendation by the Spot PRT to be implemented for that species as well. For species like spot, sector separation may alleviate the need of states with a small commercial fishery to make regulatory adjustments (primarily reductions) to commercial landings for a fishery that has relatively insignificant landings while retaining recreational management measures required by the FMP.

B. Splitting De Minimis by Stock

The PRTs discussed red drum's recently implemented definition of de minimis, which splits de minimis by stock. The PRTs recommend splitting de minimis by stock continue to be considered on a species-by-species basis. If a species has more than one stock, which are managed separately, de minimis should similarly be evaluated at the stock level. The PRTs note that although currently the only Sciaenids Board species with more than one stock is red drum, two separate stocks are currently under consideration for Atlantic croaker through its ongoing benchmark stock assessment.

C. Consideration of Total Removals when Determining De Minimis

The PRTs also discussed the possibility of redefining de minimis to use total removals instead of total harvest, highlighting concerns with increasing discards for several Sciaenids species. Consideration of total removals could allow for a more complete picture of each state's contribution to fishing mortality.

Currently, consideration of total removals would likely only be possible in combination with separating de minimis by sector, as state-specific commercial discard estimates are not available on

an annual basis. The impact of including recreational dead discards on which states would qualify for de minimis would need to be examined in more detail on a species-by-species basis, if the Board is interested in pursuing this idea further.

Although commercial discards cannot be incorporated into the calculation of de minimis, the PRTs briefly discussed how the lack of this information impacts our understanding of de minimis, particularly for species such as spot and Atlantic croaker that have much higher commercial discards compared to commercial harvest. Using only harvest to calculate the threshold and determine de minimis for these species may overestimate the impact on the population from states with lower commercial harvest and little to no discards, and underestimate the impact from states with higher commercial harvest and discards. In addition, the pounds of landings at the 1% de minimis threshold or 3% de minimis threshold for a species with very high commercial discards will both likely be relatively minor compared to the total removals.

APPENDIX I

The figures in this appendix illustrate whether a state's 3-year average harvest was less than 1% (i.e., qualified for de minimis; blue), greater than or equal to 1% but less than 3% (yellow), or greater than or equal to 3% (green) of the total coastwide (NJ-FL) harvest for the years 2015-2024. This information is shown for the combined recreational and commercial harvest (excluding Atlantic croaker since de minimis is already split by sector for this species), solely recreational harvest, and solely commercial harvest. Actual values are not given due to some confidential data. These tables depict what states qualified for de minimis in any given year but may differ from states that were granted de minimis status. For example, some states may have qualified for de minimis but did not request it, or were granted de minimis when they did not technically qualify for it.

Atlantic Croaker

Recreational

Year	NJ	DE	MD	VA	NC	SC	GA	FL
2015	≥3%	≥3%	≥3%	≥3%	≥3%			≥3%
2016	≥3%	≥3%	≥3%	≥3%	≥3%			≥3%
2017			≥3%	≥3%	≥3%	≥3%		≥3%
2018	<1%	<1%	≥3%	≥3%	≥3%	≥3%		≥3%
2019	<1%	<1%	≥3%	≥3%	≥3%	≥3%		≥3%
2020	<1%	<1%	≥3%	≥3%	≥3%	≥3%		≥3%
2021	<1%			≥3%	≥3%	≥3%	≥3%	≥3%
2022	<1%			≥3%	≥3%	≥3%	≥3%	≥3%
2023				≥3%	≥3%	≥3%	≥3%	≥3%
2024				≥3%	≥3%	≥3%	≥3%	≥3%

Commercial

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
2015		<1%	≥3%		≥3%	≥3%	<1%	<1%	<1%
2016		<1%	≥3%		≥3%	≥3%	<1%	<1%	<1%
2017	<1%	<1%			≥3%	≥3%	<1%	<1%	<1%
2018	<1%	<1%			≥3%	≥3%	<1%	<1%	
2019	<1%	<1%	<1%		≥3%	≥3%	<1%	<1%	
2020	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2021	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2022	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2023	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2024	≥3%			<1%	≥3%	≥3%	<1%	<1%	≥3%

Black Drum

Combined

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
2015	≥3%	<1%	<1%	<1%		≥3%	≥3%		≥3%
2016	≥3%	<1%	<1%	<1%		≥3%	≥3%	≥3%	≥3%
2017	≥3%	<1%	<1%	<1%		≥3%	≥3%		≥3%
2018	≥3%		<1%	<1%		≥3%	≥3%	≥3%	≥3%
2019	≥3%		<1%	<1%		≥3%	≥3%	≥3%	≥3%
2020	≥3%			<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2021	≥3%	<1%		<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2022	≥3%	<1%		<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2023		<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2024		<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%

Recreational

Year	NJ	DE	MD	VA	NC	SC	GA	FL
2015	≥3%	<1%	<1%		≥3%	≥3%	≥3%	≥3%
2016	≥3%	<1%	<1%		≥3%	≥3%	≥3%	≥3%
2017	≥3%	<1%	<1%		≥3%	≥3%		≥3%
2018	≥3%		<1%		≥3%	≥3%	≥3%	≥3%
2019	≥3%		<1%		≥3%	≥3%	≥3%	≥3%
2020	≥3%				≥3%	≥3%	≥3%	≥3%
2021	≥3%	<1%		≥3%	≥3%	≥3%	≥3%	≥3%
2022	≥3%	<1%		≥3%	≥3%	≥3%	≥3%	≥3%
2023		<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2024		<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%

Commercial

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
2015	≥3%	≥3%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2016		≥3%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2017	≥3%	≥3%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2018	≥3%	≥3%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2019	≥3%	≥3%		<1%	≥3%	≥3%	<1%	<1%	≥3%
2020		≥3%		<1%	≥3%	≥3%	<1%	<1%	≥3%
2021				<1%	≥3%	≥3%	<1%	<1%	≥3%
2022	<1%			<1%	≥3%	≥3%	<1%	<1%	≥3%
2023	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2024	<1%		<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%

Red Drum

Combined Northern Stock

Year	NJ	DE	MD	PRFC	VA	NC
2015	<1%	<1%	<1%	<1%	≥3%	≥3%
2016	<1%	<1%	<1%	<1%	≥3%	≥3%
2017	<1%	<1%	<1%	<1%	≥3%	≥3%
2018	<1%	<1%	<1%	<1%	≥3%	≥3%
2019	<1%	<1%	<1%	<1%	≥3%	≥3%
2020	<1%	<1%		<1%	≥3%	≥3%
2021	<1%	<1%		<1%	≥3%	≥3%
2022	<1%	<1%		<1%	≥3%	≥3%
2023	<1%	<1%	<1%	<1%	≥3%	≥3%
2024	<1%	<1%		<1%	≥3%	≥3%

Recreational Northern Stock

Year	NJ	DE	MD	VA	NC
2015	<1%	<1%	<1%	≥3%	≥3%
2016	<1%	<1%	<1%	≥3%	≥3%
2017	<1%	<1%	<1%	≥3%	≥3%
2018	<1%	<1%	<1%	≥3%	≥3%
2019	<1%	<1%	<1%	≥3%	≥3%
2020	<1%	<1%		≥3%	≥3%
2021	<1%	<1%		≥3%	≥3%
2022	<1%	<1%		≥3%	≥3%
2023	<1%	<1%		≥3%	≥3%
2024	<1%	<1%	≥3%	≥3%	≥3%

Commercial Northern Stock

Year	NJ	DE	MD	PRFC	VA	NC
2015	<1%	<1%	<1%	<1%	≥3%	≥3%
2016	<1%	<1%	<1%	<1%	≥3%	≥3%
2017	<1%	<1%	<1%	<1%		≥3%
2018	<1%	<1%	<1%	<1%		≥3%
2019	<1%	<1%	<1%	<1%		≥3%
2020	<1%	<1%	<1%	<1%		≥3%
2021	<1%	<1%	<1%	<1%	≥3%	≥3%
2022	<1%	<1%	<1%	<1%	≥3%	≥3%
2023	<1%	<1%	<1%	<1%	≥3%	≥3%
2024	<1%	<1%	<1%	<1%	≥3%	≥3%

Southern Stock (Recreational)

Year	SC	GA	FL
2015	≥3%	≥3%	≥3%
2016	≥3%	≥3%	≥3%
2017	≥3%	≥3%	≥3%
2018	≥3%	≥3%	≥3%
2019	≥3%	≥3%	≥3%
2020	≥3%	≥3%	≥3%
2021	≥3%	≥3%	≥3%
2022	≥3%	≥3%	≥3%
2023	≥3%	≥3%	≥3%
2024	≥3%	≥3%	≥3%

Spot

Combined

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
2015			≥3%	<1%	≥3%	≥3%	≥3%	<1%	≥3%
2016	<1%		≥3%	<1%	≥3%	≥3%	≥3%	<1%	≥3%
2017	<1%	<1%	≥3%	<1%	≥3%	≥3%	≥3%	<1%	≥3%
2018	<1%	<1%	≥3%	<1%	≥3%	≥3%	≥3%	<1%	≥3%
2019	<1%	<1%	≥3%	<1%	≥3%	≥3%	≥3%	<1%	≥3%
2020	<1%		≥3%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2021	<1%		≥3%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2022	<1%		≥3%	<1%	≥3%	≥3%	≥3%	<1%	<1%
2023	<1%	≥3%	≥3%	<1%	≥3%	≥3%	≥3%	<1%	<1%
2024	≥3%	≥3%	≥3%	<1%	≥3%	≥3%	≥3%	<1%	<1%

Recreational

Year	NJ	DE	MD	VA	NC	SC	GA	FL
2015			≥3%	≥3%	≥3%	≥3%	<1%	≥3%
2016	<1%		≥3%	≥3%	≥3%	≥3%	<1%	≥3%
2017	<1%	<1%	≥3%	≥3%	≥3%	≥3%	<1%	≥3%
2018	<1%	<1%	≥3%	≥3%	≥3%	≥3%	<1%	≥3%
2019	<1%	<1%	≥3%	≥3%	≥3%	≥3%	<1%	≥3%
2020	<1%	<1%	≥3%	≥3%	≥3%	≥3%	<1%	≥3%
2021	<1%	<1%	≥3%	≥3%	≥3%		<1%	≥3%
2022	<1%	<1%	≥3%	≥3%	≥3%	≥3%	<1%	
2023	<1%	≥3%	≥3%	≥3%	≥3%	≥3%	<1%	
2024	≥3%	≥3%	≥3%	≥3%	≥3%	≥3%	<1%	

Commercial

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
2015	<1%		≥3%		≥3%	≥3%	<1%	<1%	<1%
2016	<1%		≥3%	≥3%	≥3%	≥3%	<1%	<1%	
2017	<1%	<1%	≥3%		≥3%	≥3%	<1%	<1%	≥3%
2018	<1%	<1%	≥3%		≥3%	≥3%	<1%	<1%	≥3%
2019	<1%		≥3%		≥3%	≥3%	<1%	<1%	≥3%
2020			≥3%		≥3%	≥3%	<1%	<1%	≥3%
2021					≥3%	≥3%	<1%	<1%	
2022					≥3%	≥3%	<1%	<1%	
2023					≥3%	≥3%	<1%	<1%	
2024			≥3%		≥3%	≥3%	<1%	<1%	

Spotted Seatrout

Combined

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
2015	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2016	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2017	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2018	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2019	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2020	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2021	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2022	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2023	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2024	<1%	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%

Recreational

Year	NJ	DE	MD	VA	NC	SC	GA	FL
2015	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2016	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2017	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2018	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2019	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2020	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2021	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2022	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2023	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%
2024	<1%	<1%	<1%	≥3%	≥3%	≥3%	≥3%	≥3%

Commercial

Year	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
2015	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2016	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2017	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2018	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2019	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2020	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	≥3%
2021	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	
2022	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	
2023	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	
2024	<1%	<1%	<1%	<1%	≥3%	≥3%	<1%	<1%	

Atlantic States Marine Fisheries Commission

De Minimis Policy

*Approved by the ISFMP Policy Board
November 2022*

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

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

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

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

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

Minimum Standards

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

can be the same for both the commercial and recreational fishery or different measures could be set for each fishery. Boards should review the standard *de minimis* standard measures after each benchmark stock assessment to determine if they still providing a minimal level of species conservation.

***De Minimis* Fishery Designation**

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

***De Minimis* Thresholds**

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

Sampling Requirements

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



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: ISFMP Policy Board

FROM: Assessment Science Committee

DATE: July 6, 2026

SUBJECT: Tautog Benchmark Assessment Scheduling Considerations

At its meeting on May 28th, 2026, the Assessment Science Committee (ASC) discussed a request from the Tautog Management Board to advance the scheduled tautog benchmark stock assessment from its current timeline of 2029. The last tautog benchmark stock assessment was in 2015. This request to advance the current schedule was prompted by increasing retrospective patterns observed in recent tautog assessment updates, changes in stock status determinations, and the availability of new fishery-independent survey indices that may improve future assessment performance.

The ASC agreed that advancing the tautog benchmark assessment without affecting the timing of other scheduled assessments is not currently feasible. While the ASC recognized the concerns raised by the Tautog Management Board, members also acknowledged the tradeoffs associated with delaying assessments for other species.

The ASC reviewed several scheduling alternatives that could allow an earlier tautog benchmark assessment. During the discussion, members highlighted several important considerations associated with any schedule modification. Weakfish and spot assessments have already experienced delays and remain high priorities for management. In addition, spot has not yet completed a successful benchmark assessment, underscoring the importance of maintaining progress toward that assessment. The ASC also noted that there are new fishery-independent survey indices being developed for tautog, including a Maryland young-of-year survey and age-1+ ventless trap surveys in Delaware and New Jersey, and these may benefit from additional years of data collection prior to incorporation into a benchmark assessment. Additionally, ongoing recreational calibration changes introduce additional uncertainty that may affect tautog management and assessment outcomes.

The ASC provides the following scheduling considerations for Policy Board review:

- Advance the tautog benchmark assessment by exchanging schedules with weakfish. This option would allow evaluation of tautog stock status in 2028 (terminal year 2026) with

M26-62



Atlantic States Marine Fisheries Commission

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MEMORANDUM

an improved assessment. However, this would delay the weakfish benchmark assessment. This is a concern because of recent challenges with the weakfish model and the amount of time that has elapsed since the last benchmark assessment, which was conducted in 2016. In this scenario, the MD young-of-year survey would have 12 years of data (2015-2026), the DE ventless trap survey would have 9 years of data (2018-2026), and the NJ ventless trap survey would have 11 years of data (2016-2026).

- Advance the tautog benchmark assessment by delaying the spot benchmark assessment. This option would address concerns regarding tautog assessment performance and stock status determinations sooner. However, this would further delay the spot benchmark assessment, which has not yet completed a successful benchmark assessment and remains a management priority.
- Maintain the current assessment schedule. This option preserves planned timelines for weakfish and spot assessments while allowing additional years of data collection for new tautog fishery-independent survey indices. This option could also reduce uncertainty associated with ongoing recreational calibration changes. The main drawback here is that it would delay a comprehensive reevaluation of tautog stock status until 2029 (terminal year 2027). In this scenario, the MD young-of-year survey would have 13 years of data (2015-2027), the DE ventless trap survey would have 10 years of data (2018-2027), and the NJ ventless trap survey would have 12 years of data (2016-2027).

Long-Term Stock Assessment Schedule (July 2026 Not Board-Approved)

Species	2020	2021	2022	2023	2024	2025		2026	2027	2028	2029	2030
American Eel				Benchmark					Update			
American Shad	Benchmark											<i>*Benchmark</i>
American Lobster	Benchmark					Benchmark (Q4)						<i>*Benchmark</i>
Atlantic Croaker								Benchmark (Q3)				
Atlantic Menhaden			Update			Update (Q4)				Update		
Atl. Menhaden ERPs						Benchmark (Q4)						
Atlantic Sea Herring	Update		Update		Update (Q3)	Benchmark (Q2)		Update (Q3)		<i>*Update</i>		<i>*Update</i>
Atlantic Striped Bass			Update		Update (Q4)				Benchmark			
Atlantic Sturgeon					Update (Q3)					Benchmark		
Black Drum			Benchmark						Update			
Black Sea Bass		Update		Benchmark	Update (Q3)	Update (Q3)			<i>*Update</i>		<i>*Update</i>	
Bluefish		Update	Benchmark	Update		Update (Q3)			<i>*Update</i>		<i>*Update</i>	
Coastal Sharks	Benchmark			Benchmark				Benchmark				
Cobia								Update (Q4)				
Horseshoe Crab					Update (Q2)						Benchmark	
Horseshoe Crab ARM		Benchmark		Update	Update (Q4)	Update (Q4)			Update			
Jonah Crab				Benchmark						Update		
Northern Shrimp		Update				Update (Q1)						
Red Drum			Benchmark		Benchmark (Q4)							
River Herring					Benchmark (Q3)						<i>*Update</i>	
Scup		Update		Update		Update (Q3)			<i>*Update</i>	<i>*Benchmark</i>		
Spanish Mackerel			Update						Update			
Spiny Dogfish			Benchmark	Update					<i>*Update</i>			
Spot									Benchmark (Q3)			
Spotted Seatrout												
Summer Flounder		Update		Update		Update (Q3)			<i>*Update</i>		<i>*Update</i>	
Tautog		Update				Update (Q4)					Benchmark	
Weakfish						Update (Q3)				Benchmark		
Winter Flounder	Update		Update		Update (Q4)	Update (Q4)			<i>*Update</i>			

Number indicates quarter of presentation to the Board

- Q1 Winter
- Q2 Spring
- Q3 Summer
- Q4 Fall/Annual Meeting

	ASMFC Peer Review
	NRCC Peer Review (Research Track)
	SEDAR Peer Review (Research Track)
	Completed
<i>*Italics = under consideration, not officially scheduled</i>	

Notes:

Coastal Sharks Sandbar assessment in 2026
 Spotted Seatrout States conduct individual assessments



What is the Program?

The Fisheries Compensation Program for Atlantic Coast Offshore Wind will be a regional program established to compensate affected commercial and recreational for-hire fishing businesses, through a fair and equitable claims process, for potential impacts caused by offshore wind development along the Atlantic Seaboard.

This process is focused on *future* compensation programs and does *not* affect programs already in place. This process is focused on how money is distributed *out* of a regional fund, *not* on how money comes into such a fund.

What is the RFA?

The Regional Fund Administrator, or “RFA,” is the third-party administrator tasked with designing and developing a consistent, equitable, and transparent regional framework. Through a competitively bid RFP process, BrownGreer in partnership with the Carbon Trust were selected to be the RFA.

RFA Website



Which impacts are included?

The hierarchy for addressing potential impacts to fisheries and fishing industries from OSW is built on four key principles described below in order.

1. Avoid potential impacts;
2. Minimize impacts when avoidance is not possible;
3. Mitigation when impacts cannot be fully avoided or minimized; and
4. Provide financial compensation to affected entities as the final step, if other forms of mitigation cannot resolve the impact.

The RFA will design a process for the final step in this process — direct financial compensation through a fair and equitable claims process. Gear loss, environmental impacts, and other fishing community level impacts are considered in individual offshore wind projects and are *not* currently within the limited scope of this program design effort.

Guiding Program Principles for Regional Design

Consistent

Consistent in how to apply for, determine, and allocate monies

Fair

Compensation that is fair and reasonable.

Impact

Compensate those active fishing enterprises directly affected by OSW development according to degree of unrecovered individual costs/losses

Comprehensive

The Program’s rules should reflect inclusiveness of the majority of likely claim scenarios and should afford restrained flexibility for unique cases

Incentives

The Program should reinforce incentives to keep fishermen fishing

Equitable

Treat impacted fishermen equitably, regardless of fishery, home or landing port, or state affiliation

Efficient

Limit administrative burden for all relevant parties

Transparent

The Program should be clearly explainable, its methods publicly available, and its aggregated results publicly shared

Authentic

The Program should rely on an evidence-based approach and best available data and discourage manipulation that would disadvantage affected fishing businesses

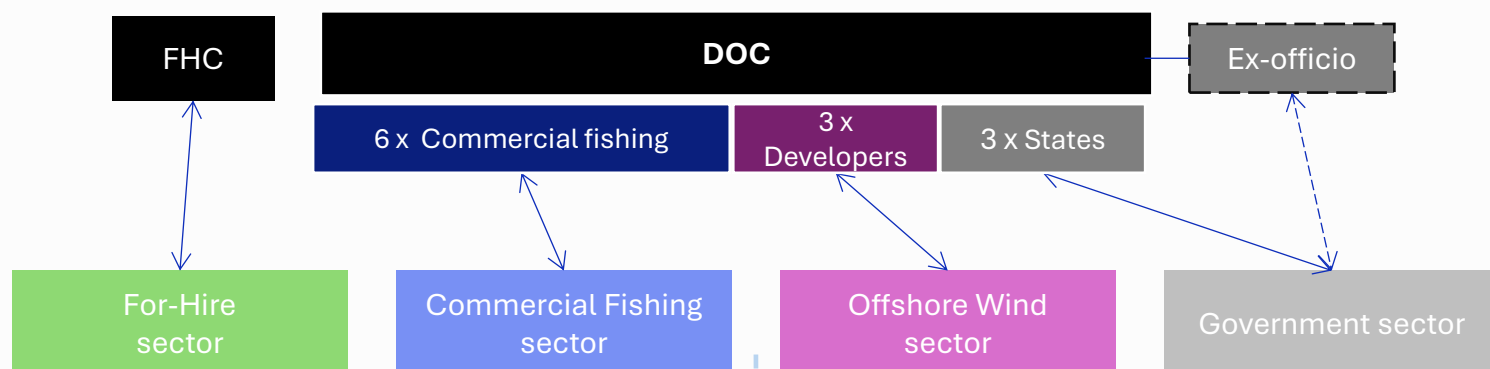
Intuitive

Easy to understand and engage the Program



Governing Committees

A Design Oversight Committee (DOC) and For-Hire Committee (FHC) have been established to provide advice and guidance from the states, fishing industry, and offshore wind developers as the RFA develops the processes, policies, and procedures. The DOC and FHC have met regularly throughout this process. Interested members of the public may attend as observers. The meeting schedule with meeting links will be posted on the homepage of the Fisheries Compensation Program website as schedules are finalized.



Design Oversight Committee (“DOC”)

Commercial Fishing Industry

- **Hank Soule, Vincent Balzano, Joe Gilbert, Roy Diehl, Jeff Kaelin**
- *Alternate Members: Beth Casoni, Bonnie Brady, Peter Hughes, Lane Johnston*

States

- **Brad Schondelmeier, Joe Cimino, Todd Janeski**
- *Alternate Members: Erin Wilkinson, Julia Socrates, Carrie Kennedy, Sebastian Velez*

Offshore Wind Industry

- **Brian Krevor, Rick Robins**
- *Alternate Members: Ross Pearsall and Elizabeth Kordowski*

For-Hire Committee (“FHC”)

Recreational Fishing Industry

- **Rick Bellavance, Bob Rush, Rom Whitaker**
- *Alternate Member: Mike Cerchio*

States

- **Renee Zobel**
- *Alternate Member: Joe Cimino*

Offshore Wind Industry

- **Brian Krevor**
- *Alternate Member: Ron Larsen*

For further information, please visit the Regional Fisheries Compensation Program website:
www.RFAInfo.com

Atlantic States Marine Fisheries Commission

Commission Business Session

*August 6, 2026
11:45 a.m. – 12:15 p.m.*

Draft Agenda

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

1. Welcome/Call to Order (*D. McKiernan*)
2. Board Consent
 - Approval of Agenda
 - Approval of Proceedings from May 2026
3. Public Comment
4. Consider Changes to the Commission Rules and Regulations (*R. Beal*) **Final Action**
5. Consider Noncompliance Recommendations, if necessary **Final Action**
6. Other Business/Adjourn

This meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details

**DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
COMMISSION BUSINESS SESSION**

**The Westin Crystal City
Arlington, Virginia
Hybrid Meeting**

May 6, 2026

These minutes are draft and subject to approval by the Commission Business Session
The Board will review the minutes during its next meeting.

TABLE OF CONTENT

Call to Order	0
Approval of Agenda	0
Approval of Proceedings	0
Public Comment	0
Consider Revisions to the 2026 Action Plan	0
Adjournment	1

INDEX OF MOTIONS

1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of October 2025** by consent (Page 1).
3. **Move to approve the revised 2026 Action Plan** (Page 2). Motion by John Clark; second by Joe Grist. Motion passes by consent (Page 2).
4. **Move to adjourn** by consent (Page 2).

These minutes are draft and subject to approval by the Commission Business Session.
The Board will review the minutes during its next meeting.

ATTENDANCE

Board Members

Carl Wilson, ME (AA)	Loren Lustig, PA (GA)
Rep. Allison Hepler, ME (LA)	John Clark, DE (AA)
Renee Zobel, NH (AA)	Roy Miller, DE (GA)
Dan McKiernan, ME (AA)	Michael Luisi, MD, proxy for K. Charbonnaeu (AA)
Ray Kane, MA (GA)	Joe Grist, VA (Acting AA)
Jason McNamee, RI (AA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
David Borden, RI (GA)	Ben Dyar, SC, proxy for B. Keppler (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Malcolm Rhodes, SC (GA)
Shanna Madsen, CT (AA)	Chris McDonough, SC, proxy for Sen. Cromer (LA)
Bill Hyatt, CT (GA)	Doug Haymans, GA (AA)
Robert LaFrance, CT proxy for Rep. Gresko, CT (LA)	Spud Woodward, GA (GA)
Marty Gary, NY (AA)	Erika Burgess, FL, proxy for J. McCawley (AA)
Joe Cimino, NJ (AA)	Gary Jennings, FL (GA)
Adam Nowalsky, NJ, proxy for Sen. Gopal (LA)	Ronald Owens, PRFC
Kris Kuhn, PA, proxy for T. Schaeffer (AA)	Mike Ruccio, NMFS

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

Staff

Bob Beal	Caitlin Starks	Chelsea Tuohy
Toni Kerns		Katie Drew
Tina Berger	Tracey Bauer	Jeff Kipp
Madeline Musante	James Boyle	Samara Nehemiah

The Business Session of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Wednesday, May 6, 2026, and was called to order at 3:30 p.m. by Chair Daniel McKiernan.

CALL TO ORDER

CHAIR DANIEL MCKIERNAN: Welcome to the Business Meeting.

APPROVAL OF AGENDA

CHAIR MCKIERNAN: Can I get approval of the agenda? John Clark, second done by Carl Wilson.

APPROVAL OF PROCEEDINGS

CHAIR MCKIERNAN: Approval of the proceedings. Are there any changes to the proceedings? This Board has not met since October 2025. I hear no changes, those are accepted.

PUBLIC COMMENT

CHAIR MCKIERNAN: Public comment. Are there any comments from anyone in the room or online regarding anything that is not on the agenda? Seeing none.

CONSIDER REVISIONS TO THE 2026 ACTION PLAN

CHAIR MCKIERNAN: We're going to now consider the bulk of the meeting, which is to revise the Action Plan. Toni, I know you sent that around so have at it.

MS. TONI KERNS: The Summer Flounder, Scup and Black Sea Bass and Bluefish Boards have had some changes in timeline and direction. There were enough changes there we just felt like we should bring these revisions to the Business Session. For the Recreational Reform Amendment, which is being done for all four species, we were hoping to finalize that document this year.

With some shifts in the timeline for a stakeholder workshop moving from the spring to the fall, we concluded that we would not be able to finish up this year and that it will hopefully be completed in 2027, so that wording changed from finalized to continue. At the December meeting, we also decided that we wanted to look at the confidence interval methodology that we used in the percent change approach for black sea bass.

The Mid-Atlantic Council has issued an RFP for work to be done on the confidence interval. We will work with them on that and then come back to the Board and the Council sometime this year, hopefully by December to get information on whether or not we should make a change or have a new policy for the confidence interval use.

The confidence interval work is for all three species that use the percent change approach. For scup, there is a framework that the Council has started, and is looking to address some issues that came up this year with the winter 1 quota period monitoring and overage paybacks. The Council needs to make changes to allow for NOAA Fisheries to project the landings, in order to close the fishery and ensure we don't exceed the winter 1 period quota. Our FMP actually already allows for projections, so we do not need to make that change. But, if we do make changes to how the overages are paid back, which is something that the Council is considering, we would need to initiate an addendum. We will not be in the same timeframe as the Council, because they are moving incredibly quickly on this issue. So there will be a little offset, but the Council has said the Summer Flounder, Scup, Black Sea Bass Board can participate in their deliberations when they are talking about the issue. I think that is all of the changes that we had. It looks like a lot of changes but several are the same changes, because show up many times because they happen in all the species. Any questions?

CHAIR MCKIERNAN: Any questions for Toni? All right; can I get a motion to amend the Action Plan?

MS. KERNS: We'll throw a motion up that someone can read.

CHAIR McKIERNAN: John Clark.

MR. JOHN CLARK: Yes, indeed. **Move to approve the revised 2026 Action Plan.**

CHAIR McKIERNAN: Second, I see, is it Ben? No, it is Joe Grist. Any discussion on the motion? **Any objections? Seeing none; passed by consent.** All right, thank you, everyone.

ADJOURNMENT

Motion to adjourn the Business Meeting. I've got John Clark and I've got Allison Hepler, thank you.

(Whereupon the meeting adjourned at 3:35 p.m. on Wednesday, May 6, 2026)

Atlantic States Marine Fisheries Commission

Vision: Sustainable and Cooperative Management of Atlantic Coastal Fisheries



Compact & Rules and Regulations

February 2016

ATLANTIC STATES MARINE FISHERIES COMPACT

Public Law 539, 77th Congress

Chapter 283, 2nd Session, 56 Stat. 267

As Amended by Public Law 721, 81st Congress

Approved August 19, 1950

AN ACT

(An Act creating the Atlantic States Marine Fisheries Commission)

Granting the consent and approval of Congress to an interstate compact relating to the better utilization of the fisheries (marine, shell and anadromous) of the Atlantic seaboard and creating the Atlantic States Marine Fisheries Commission.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the consent and approval of Congress is hereby given to an interstate compact relating to the better utilization of the fisheries (marine, shell and anadromous) of the Atlantic seaboard and creating the Atlantic States Marine Fisheries Commission, negotiated and entered into or to be entered into under the authority of Public Resolution Numbered 79, Seventy-sixth Congress, approved June 8, 1940, and now ratified by the States of Maine, New Hampshire, Massachusetts, Rhode Island, New York, New Jersey, Delaware, Maryland and Virginia, which compact reads as follows:

The contracting states solemnly agree:

ARTICLE I

The purpose of this compact is to promote the better utilization of the fisheries, marine, shell and anadromous, of the Atlantic seaboard by the development of a joint program for the promotion and protection of such fisheries, and by the prevention of the physical waste of the fisheries from any cause. It is not the purpose of this compact to authorize the states joining herein to limit the production of fish or fish products for the purpose of establishing or fixing the price thereof, or creating and perpetuating monopoly.

ARTICLE II

This agreement shall become operative immediately as to those states executing it whenever any two or more of the States of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia and Florida have executed it in the form that is in accordance with the laws of the executing state and the Congress has given its consent. Any state contiguous with any of the aforementioned state and riparian upon waters frequented by anadromous fish, flowing into waters under the jurisdiction of any of the aforementioned states, may become a party hereto as hereinafter provided.

ARTICLE III

Each state joining herein shall appoint three representatives to a Commission hereby constituted and designated as the Atlantic States Marine Fisheries Commission. One shall be the executive officer of the administrative agency of such state charged with the conservation of the fisheries resources to which this compact pertains or, if there be more than one officer or agency, the official of the state named by the governor thereof. The second shall be a member of the legislature of such state designated by the said Commission or Committee on Interstate Cooperation of such state, or if there be none, or if said Commission on Interstate Cooperation cannot constitutionally designate the said member, such legislator shall be designated by the governor thereof; provided, that if it is constitutionally impossible to appoint a legislator as a commissioner from such state, the second member shall be appointed by the governor of said state in his discretion. The third shall be a citizen who shall have knowledge of the interest in the marine fisheries problem, to be appointed by the governor. The Commission shall be a body corporate with the powers and duties set forth herein.

ARTICLE IV

The duty of the said Commission shall be to make inquiry and ascertain from time to time such methods, practices, circumstances and conditions as may be disclosed for bringing about the conservation of, the prevention of the depletion and physical waste of the fisheries, marine, shell and anadromous of the Atlantic seaboard. The Commission shall have power to recommend the coordination of the exercise of the police powers of the several states within their respective jurisdictions to promote the preservation of those fisheries and their protection against overfishing, waste, depletion or any abuse whatsoever and to assure a continuing yield from the fisheries resources of the aforementioned states.

To that end, the Commission shall draft and, after consultation with the Advisory Committee hereinafter authorized, recommend to the governors and legislatures of the various signatory states, legislation dealing with the conservation of the marine, shell and anadromous fisheries of the Atlantic seaboard. The Commission shall, more than one month prior to any regular meeting of the legislature in any signatory state, present to the governor of the state its recommendations relating to enactment to be made by the legislature of that state in furthering the intents and purposes of this Compact.

The Commission shall consult with and advise the pertinent administrative agencies in the states party hereto with regard to problems connected with the fisheries and recommend the adoption of such regulations as it deems advisable.

The Commission shall have power to recommend to the states party hereto the stocking of the waters of such states with fish and fish eggs, or joint stocking by some or all of the states party hereto, and when two or more of the states shall jointly stock waters the Commission shall act as the coordinating agency for such stocking.

ARTICLE V

The Commission shall elect from its number a Chair and a Vice Chair and shall appoint, at its pleasure, remove or discharge such officers and employees as may be required to carry the provisions of this compact into effect, and shall fix and determine their duties, qualifications and compensation. Said Commission shall adopt rules and regulations for the conduct of its business. It may establish and maintain one or more offices for the transaction of its business and may meet at any time or place but must meet at least once a year.

ARTICLE VI

No action shall be taken by the Commission in regard to its general affairs except by the affirmative vote of a majority of the whole number of compacting states present at any meeting. No recommendation shall be made by the Commission in regard to any species of fish except by the affirmative vote of a majority of the compacting states which have an interest in such species. The Commission shall define what shall be an interest.

ARTICLE VII

The Fish and Wildlife Service of the Department of the Interior of the Government of the United States shall act as the primary research agency of the Atlantic States Marine Fisheries Commission, cooperating with the research agencies in each state for that purpose. Representatives of the said Fish and Wildlife Service shall attend the meetings of the Commission.

An Advisory Committee to be representative of the commercial fishermen and the salt water anglers and such other interests of each state as the Commission deems advisable shall be established by the Commission as soon as practicable for the purpose of advising the Commission upon such recommendation as it may desire to make.

ARTICLE VIII

When any state other than those named specifically in Article II of this compact shall become a party thereto for the purpose of conserving its anadromous fish in accordance with the provisions of Article II, the participation of such state in the action of the Commission shall be limited to such species of anadromous fish.

ARTICLE IX

Nothing in this compact shall be construed to limit the powers of any signatory state or to repeal or prevent the enactment of any legislation or the enforcement of any requirement by any signatory state imposing additional conditions and restrictions to conserve its fisheries.

ARTICLE X

Continued absence of representation or of any representative on the Commission from any state party hereto shall be brought to the attention on the governor thereof.

ARTICLE XI

The states party hereto agree to make annual appropriations to the support of the Commission in proportion to the primary market value of the products of their fisheries, exclusive of cod and haddock, as recorded in the most recent published reports of the Fish and Wildlife Service of the United States Department of the Interior, provided no state shall contribute less than two hundred dollars per annum and the annual contribution of each state above the minimum shall be figured to the nearest one hundred dollars.

The compacting states agree to appropriate initially the annual amounts scheduled below, which amounts are calculated in the manner set forth herein, on the basis on the catch record of 1938. Subsequent budgets shall be recommended by a majority of the Commission and the cost thereof allocated equitably among states in accordance with their respective interests and submitted to the compacting states.

SCHEDULE OF INITIAL STATE CONTRIBUTIONS

MAINE	\$700.
NEW HAMPSHIRE	200.
MASSACHUSETTS	2300.
RHODE ISLAND	300.
CONNECTICUT	400.
NEW YORK	1200.
NEW JERSEY	800.
DELAWARE	200.
MARYLAND	700.
VIRGINIA	1300.
NORTH CAROLINA	600.
SOUTH CAROLINA	200.
GEORGIA	200.
FLORIDA	1500.

ARTICLE XII

This compact shall continue in force and remain binding upon each compacting state until renounced by it. Renunciation of this compact must be preceded by sending six months notice in writing of intention to withdraw from the compact to the other states party hereto.

SECTION 2. Without further submission of said compact, the consent and approval of Congress is hereby given to the States of Connecticut, North Carolina, South Carolina, Georgia and Florida, and for the purpose of the better utilization of their anadromous fisheries, to the

States of Vermont and Pennsylvania, to enter into said compact as signatory States and as parties thereto, in addition to the States which have now ratified the compact.

SECTION 3. The Atlantic States Marine Fisheries Commission constituted by the compact shall make an annual report to Congress not later than sixty days after the beginning of each regular session thereof. Such report shall set forth the activities of the Commission during the calendar year ending immediately prior to the beginning of such session.

SECTION 4. The right to alter, amend or repeal the provisions of Sections 1, 2, and 3 is hereby expressly reserved, (approved May 4, 1942); provided that nothing in this compact shall be construed to limit or add to the powers or the proprietary interest of any signatory state or to repeal or prevent the enactment of any legislation or the enforcement of any requirement by a signatory state imposing additional conditions and restrictions to conserve its fisheries. Added by P.L. 721, 81st Congress, 2nd Session, approved August 19, 1950.

AMENDMENT NUMBER ONE

The States consenting to this amendment agree that any two or more of them may designate the Atlantic States Marine Fisheries Commission as a joint regulatory agency with such powers as they may jointly confer from time to time for the regulation of the fishing operations of the citizens and vessels of such designating States with respect to specific fisheries in which such States have a common interest. The representatives of such States on the Atlantic States Marine Fisheries Commission shall constitute a separate section of such Commission for the exercise of the additional powers so granted provided that the States so acting shall appropriate additional funds for this purpose. The creation of such section as a joint regulatory agency shall not deprive the States participating therein of any of their privileges or powers or responsibilities in the Atlantic States Marine Fisheries Commission under the general compact. (Consented to by P.L. 721, 81st Congress, 2nd Session, approved August 19, 1950.)

RULES AND REGULATIONS

Originally adopted June 5, 1942, and amended September 18, 1942; September 24, 1943; September 30, 1949; November 15, 1955; September 28, 1962; October 18, 1967; October 6, 1971; November 1, 1972; October 8, 1976; October 4, 1984; September 29, 1988; November 14, 1990; and November 18, 1993. Complete revision adopted October 24, 1996, and amended December 18, 2003 and February 4, 2016.

FORWARD

In accordance with the provisions of Article V of the Compact entered into by and among the states of the Atlantic coast, and as assented to by Act of Congress entitled *An Act granting the consent and approval of Congress to an interstate Compact relating to the better utilization of the fisheries (marine, shell and anadromous) of the Atlantic seaboard and creating the Atlantic States Marine Fisheries Commission (Public Law 539, Seventy-Seventh Congress, approved by the President on May 4, 1942,);* and as amended by the member states, such amendment being assented to by Act of Congress (*Public Law 721, 81st Congress, approved by the President August 19, 1950*) ; the Atlantic States Marine Fisheries Commission, created by the states through that Compact hereby adopts the following rules and regulations for the conduct of its business.

Article I. NAME AND POWERS

SECTION 1. MEMBERSHIP; COMMISSIONERS. (A) The Commission is designated the *Atlantic States Marine Fisheries Commission* in accordance with the Compact and will be referred to herein as the Commission. The members of the Commission are the states that have ratified the Compact. Each member state is represented on the Commission by three Commissioners, chosen in accordance with the terms of the Compact and the State's implementing legislation. A state's Commissioners shall constitute its delegation to the Commission, which shall select one of them to act as delegation Chair. Unless a specific alternative procedure is established by the Commission, its decisions shall be made by the majority of the member states present and voting at any meeting.

(B) Code of Conduct. Commissioners appointed by the states are responsible for upholding the integrity of the Commission and its member states. No Commissioner shall engage in criminal or disgraceful conduct prejudicial to the Commission, any other Commissioner or any other State. No Commissioner shall have a direct or indirect financial interest that conflicts with the fair and impartial conduct of official duties. The Executive Committee shall have the sole authority to consider allegations of breaches of this code, including appeals from Commissioners alleged to be in violation herewith. In the case of a breach, the Executive Committee may direct the Chair to notify the appropriate appointing authority in the Commissioner's home state.

SECTION 2. POWERS AND DUTIES. The Commission is a fact finding and deliberative body with the power to make recommendations to the member states and to the Congress of the United States. The Commission conducts programs to promote cooperation and coordination among the member states as they implement their relative responsibilities under state law for protecting the public's interest in marine, estuarine and anadromous fisheries. Through the Interstate Fishery Management Program (see Article VI), the Commission provides for the coordinated conservation and management of coastal fisheries. In so doing, the Commission prepares and modifies fishery management plans and determines compliance by the participating states with regard to the mandatory recommendations contained in those plans. The Commission also actively promotes the coordinated collection, maintenance and dissemination of fishery statistics; supports the role of states in carrying out fisheries research; emphasizes the role of essential habitat in the productivity of fisheries; carries out projects to promote restoration of sport and commercial fisheries and threatened and endangered populations; develops policy on emerging fishery issues; provides an opportunity for states to coordinate law enforcement activities; partners with the federal fishery management agencies and the Regional Fishery Management Councils as appropriate to most effectively manage fishery resources; and conducts studies and other programs and activities to support state and federal marine fishery and conservation agencies.

Article II. MEETINGS

SECTION 1. MEETINGS. Annual, semi-annual and other meetings of the Commission shall be held at the call of the Chair. Upon the written request of five states, submitted to the Executive Director, the Chairman shall call a meeting of the Commission. The Commission shall also conduct meetings of committees, sections, boards, advisory panels or other groups such as are established to assist in carrying out the Commission's responsibilities. Such meetings shall be called by the Executive Director with the approval of the Commission Chair. The Executive Committee shall establish guidelines for meetings, including meetings conducted by conference call or teleconference. A public notice will be provided at least two weeks prior to all meetings of the Commission and its various bodies, and at least 48 hours notice will be provided for any meetings held by conference call or teleconference; provided exceptions to these notice requirements may be granted by the Commission Chair. In order for a board or section to take action there must be prior public meeting notification of the action. Action that occurs during quarterly meeting weeks must be notified 4 days prior to the first day of the meeting. Action that occurs outside of the quarterly meetings must be notified 48 hours prior to the meeting.

SECTION 2. ABSENCE OF COMMISSIONERS. The Commission depends upon the active participation of all of its Commissioners for the success of its programs. The Commission, through the Chair and the Executive Director, shall encourage all Commissioners to fully participate in Commission affairs and meetings. The Chair shall ask the Executive Director to notify the state's Executive Committee member of the unexplained absence of any Commissioner from two consecutive meetings of the Commission.

Article III. QUORUM, VOTING AND PROCEDURE

SECTION 1. QUORUM. The presence of Commissioners representing a majority of the state members shall constitute a quorum at a meeting of the Commission, and any state shall be recorded as present when represented by one or more of its Commissioners. A quorum for any committee, board, section or other group meeting under the authority of the Commission shall be a majority of the members of such body, provided that any such body may petition the Executive Committee in advance for approval of an alternative quorum procedure. The conduct of meetings of the Commission or any other body established under its authority shall be governed by the current edition of Robert's Rules of Order, Newly Revised, except a Board or Section will need a two-third's vote of all the voting members (i.e. entire membership) to amend or rescind any final actions regardless of prior notice. A two-thirds majority vote will be defined by the entire voting membership, however, any abstentions by the federal services will not be considered when determining the total number of votes. For this section, a final action will be defined as: setting fishery specifications (including but limited to quotas, trip limits, possession limits, size limits, season, area closures, gear requirements), allocation, final approval of FMPs/amendments/addenda, emergency actions, conservation equivalency plans, and non-compliance recommendations. Questions of procedure will be determined by the chair of the meeting upon the advice of the Executive Director or the senior Commission employee in attendance.

SECTION 2. VOTING. Voting in any meeting of the Commission, or any of its sections, shall be by states, one vote per state, with the vote of each state being determined by the majority of that state's delegation of Commissioners who are present. Voting in all other committees, boards or other groups shall be by individual members. The Executive Committee may approve any exceptions to this rule. Any time a Commissioner casts a vote on a body on behalf of a state, consultation should occur first, if practical, with the other Commissioners from that state.

SECTION 3. PROXIES. A Commissioner may designate a proxy in one of three ways. A permanent proxy will be considered to replace the Commissioner for all purposes and shall be treated as the Commissioner in all respects. An ongoing proxy will be considered to replace the Commissioner whenever the designating Commissioner is not in attendance. A board specific proxy will be considered to replace the Commissioner for only the designated boards. A meeting specific proxy will be considered to replace the Commissioner only for the specific meeting. For all members of any committee, board, section or other group meeting under the authority of the Commission who are not Commissioners, only a specific proxy may be given. No person may, by proxy, vote more than once on any issue.

Article IV. OFFICERS AND COMMITTEES

SECTION 1. OFFICERS. The officers of the Commission shall consist of a Chair and a Vice Chair as provided in Article V of the Compact; and an Executive Director as hereinafter provided. In the absence or disability of the Chair, the Vice Chair shall have all the power and authority of the Chair. The Chair and Vice Chair shall be elected at the Annual Meeting to serve until their successors have been duly elected and qualified at the next Annual Meeting. The

Chair and Vice Chair shall be eligible for reelection. If the Chair leaves office prior to the expiration of the term, the Vice Chair shall become Chair; and the Executive Committee shall select a new Vice Chair.

SECTION 2. EXECUTIVE COMMITTEE. There shall be an Executive Committee composed of the Chair; the Vice Chair; the respective chairs of the State Legislators Section, and the Governors' Appointees Section; and the chairs of the member state delegations not represented by the Chair and Vice Chair. The Executive Committee shall have full power to approve formal administrative policies of the Commission; to dismiss the Executive Director; to approve the formal position of the Commission on legislation; to provide for the orderly administration of the Commission's affairs; and generally to act in place of the Commission in the interim between meetings. The Chair and Vice Chair of the Commission shall serve respectively as the Chair and Vice Chair of the Executive Committee.

SECTION 3. LEGISLATORS AND GOVERNORS' APPOINTEES. The Commissioners who are state legislators and Governor's appointees shall organize the State Legislators' Committee and the Governors' Appointees Committee. Each of these Committees shall elect its own chair, and vice chair.. The Committees shall coordinate among its members to assure effective participation in and input to the Commission's decisions.

SECTION 4. BOARDS AND COMMITTEES. The Chair of the Commission shall establish such other boards and committees as he deems appropriate for the conduct of the Commission's affairs, and shall designate the Chair and Vice Chair of such bodies.

SECTION 5. ADVISORY COMMITTEE. The Executive Committee shall develop, and revise as it deems necessary, a charter for the Commission's Advisory Committee; giving due regard to the needs of the Commission and its state members to conduct effective public outreach consistent with program needs and available funding.

SECTION 6. EXECUTIVE DIRECTOR. There shall be an Executive Director who shall serve as the Executive Secretary of the Commission designated in the Compact that created the Commission. The Executive Director serves at the pleasure of the Commission under the terms of a contract negotiated by the Commission Chair in consultation with the Executive Committee. During the period of the employment contract, the Executive Director may be relieved of responsibilities by the Executive Committee, according to the terms of the contract. The Executive Director shall be the chief executive officer of the Commission and perform all the duties customarily performed by a secretary and a treasurer. The Executive Director shall keep all records of the Commission's business and meetings, and its finances, supervise and direct any staff, enter into contracts and agreements on behalf of the Commission, and under the guidance and control of the Chair, manage all affairs of the Commission.

SECTION 7. HONORARY COMMISSIONERS. Honorary non-voting Commissioners may be appointed to Commission membership, as deemed appropriate by the Commission. There can be Honorary Chairmen, as well as Honorary Executive Committee members.

Article V. FINANCE

SECTION 1. FISCAL YEAR. The fiscal year of the Commission shall run from July 1 through June 30.

SECTION 2. BUDGET AND APPORTIONMENT AMONG STATES. (A) The Executive Director shall estimate the cost of operating the Commission during the ensuing fiscal year and shall submit such estimates to the Commissioners. The Executive Committee shall approve the budget for expenditure of the Commission for the ensuing fiscal year, and shall determine the formula for apportioning the costs of operating the Commission among the member states. Such estimates and apportionments shall be reported each year by the Commission in its Annual Report, which shall be sent to the Governor and Commissioners of the member states.

(B) The Executive Director shall, in the name of the Commission, at least thirty days prior to the beginning of each fiscal year, make formal request of the member states to transfer to the Commission funds equal to the state's apportioned share of the expenses of the Commission for the succeeding fiscal year. Such funds when received shall be deposited by the Executive Director in such bank or banks or other financial institutions as shall be duly designated as the official depository or depositories of the Commission in accordance with SECTION 5 of this Article.

SECTION 3. EXPENSES OF COMMISSIONERS. The expenses of Commissioners to and from Commission, Section, Panel, Board or Committee meetings shall be borne by their respective states, provided that the Commission may pay such expenses upon the authorization of the Executive Committee.

SECTION 4. DISBURSEMENTS. Disbursements from the Commission's funds shall be made at the direction of the Executive Director. The Chair, Vice Chair, Executive Director, or Comptroller designated by the Executive Director, may sign and issue checks. The Executive Committee shall approve policies for the administration of the finances of the Commission.

SECTION 5. BANKS AND FINANCIAL INSTITUTIONS. The Chairs, Vice Chairs and Executive Director of this Commission shall from time to time designate such bank or banks, or other financial institutions, as shall be the official depository or depositories of the Commission and each such depository is authorized and directed to pay checks and other orders for payment of money, including those drawn to the individual order of a signer, when signed by the Chair, the Vice Chair, Executive Director or Comptroller of this Commission.

SECTION 7. BOND. The Chair, Vice Chair, Executive Director and Comptroller of this Commission shall each give a bond protecting the Commission in such form and in such amounts, respectively, as shall be approved by the Executive Committee of the Commission. The costs of such bonds shall be defrayed out of the Commission's funds.

Article VI. INTERSTATE FISHERY MANAGEMENT PROGRAM

SECTION 1. THE INTERSTATE FISHERIES MANAGEMENT PROGRAM. The Commission shall carry out a program to promote the cooperative and coordinated development and implementation of conservation programs for Atlantic coastal fisheries. This shall be known as the Interstate Fishery Management Program (ISFMP).

SECTION 2. ISFMP POLICY BOARD. The ISFMP shall be carried out through an ISFMP Policy Board, according to the terms of a written charter. The ISFMP Policy Board shall have the authority and responsibility to adopt, and from time to time, amend said charter, including establishing its own membership. In carrying out the ISFMP, the Policy Board shall be responsible directly to the Commission.

SECTION 3. CHARTER. The ISFMP Charter shall provide that fishery management plans, and any actions taken according thereto, promote conservation, use the best scientific information available, and provide adequate opportunity for public input. The Charter shall also provide that actions taken by states under Amendment One to the Compact establishing the Commission shall be carried out through the ISFMP.

SECTION 4. FISHERY MANAGEMENT PLANS. Fishery management plans, and any actions of the Commission or the ISFMP Policy Board taken according thereto, shall be considered “recommendation[s] . . . in regard to any species of fish,” according to the requirements of Article VI of the Compact establishing the Commission. Each state that is a member of the Commission shall have the opportunity to participate in the ISFMP with respect to each fishery in which it has an interest.

SECTION 5. INTEREST IN FISHERY. A state shall be deemed to have an interest in a fishery if it meets either of the following criteria:

- (a) The species is found in the waters under the state’s jurisdiction in at least two of the past five years, as documented with state or federal fishery-dependent or independent data or other credible evidence brought forth by the state (such as data from spawning migrations, peer-reviewed publications, eDNA, or other).
- (b) The state’s fishery participants are recorded as having taken at least 1% of the total Atlantic coast commercial or recreational landings of the species in at least three of the past five years, as documented by state or federal statistics.

Article VII. AMENDMENT OF RULES AND REGULATIONS

These rules and regulations may be amended at any regular meeting of the Commission by the affirmative vote of a majority of the member states, provided due notice thereof has been given in the call of the meeting.