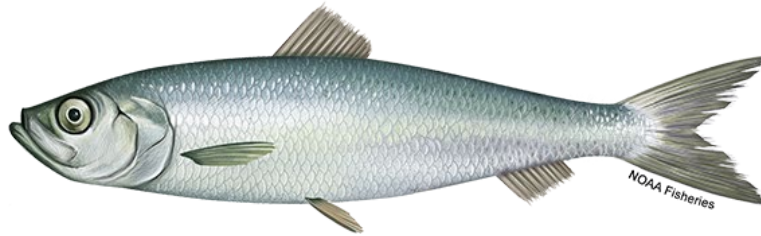


# **Atlantic Herring Fishery Management Plan**

## **2027-2031 Atlantic Herring Specifications**



### **Appendix I**

### **Supporting Reports**

**DRAFT**

**September 4, 2026**

**Prepared for the  
New England Fishery Management Council**



New England Fishery Management Council

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Daniel Salerno, *Chair* | Cate O'Keefe, PhD, *Executive Director*

## MEMORANDUM

**DATE:** August 30, 2026  
**TO:** Cate O'Keefe, Ph.D., Executive Director  
**FROM:** Scientific and Statistical Committee  
**SUBJECT:** Report on 1) discussion of Risk Policy implementation, 2) updates from the Social Sciences Subcommittee, 3) overfishing limits and acceptable biological catches for Atlantic herring for FY2027 to FY2031, and 4) follow-up from workshop on dynamic reference points

The Scientific and Statistical Committee (SSC) met in person and via webinar on August 11-12, 2026, to discuss four topics. First, the SSC received an update on the Council's implementation plan for the Risk Policy and discussed how the SSC is expected to use the policy when recommending overfishing limits and acceptable biological catches. Second, the SSC received an update from the Social Sciences Subcommittee (SSS) and provided feedback to the SSS on forwarding its workplan. Third, the SSC addressed Terms of Reference (TOR) for recommending overfishing limits (OFL) and acceptable biological catches (ABC) for Atlantic herring for FY2027 to FY2031. Fourth, the SSS addressed TORs for following up from the SSC workshop on dynamic reference points held in June 2026.

**SSC members in attendance:** Dr. Conor McManus (Chair), Dr. Edward Camp (Vice-Chair), Dr. Anna Birkenbach, Dr. Lauran Brewster, Dr. Adam Delargy, Dr. Alex Hansell, Dr. Lisa Kerr, Dr. Gareth Lawson, Dr. Kai Lorenzen, Dr. Jason McNamee, Dr. Richard Merrick, Dr. Mateja Nenadovic, Dr. Kevin St. Martin, Dr. Fred Serchuk, Dr. Michelle Staudinger, Dr. Sam Truesdell, and Dr. John Wiedenman.

### ***RISK POLICY IMPLEMENTATION***

The SSC received a presentation from Council staff on the implementation plans for the Council's Risk Policy, as approved by the Council in June 2026. Primary updates since the SSC last discussed the Risk Policy in March 2026 included the addition of risk tolerance tiers derived from Z-scores and advice regarding how the SSC should consider using the Risk Policy to inform its recommendations in the near-term (e.g., 2026 matters). No changes have been made to how the SSC will implement ABC control rules pertaining to upcoming ABC decisions; however, risk policy matrices, Z-scores, risk probabilities, and resulting risk tolerance tiers should be considered qualitatively when formulating advice. Future applications of the Risk Policy may consider quantitative applications linked directly to ABCs.

### SSC Comments on Implementation Plan

The SSC discussed some applications of qualitative risk tiers in decision-making. Tiers could impact the risk tolerance associated with out-year ABCs, inform research recommendation prioritization, or warrant recommending a stock's assessment or catch advice be revisited before other stocks. Drafters of the Policy indicated that stocks in the high or low risk tolerance categories are candidates for more frequent assessment. The NRCC's Assessment Working Group could consider the tiers assigned to each stock as an indicator of assessment priority as they develop an assessment schedule proposal. The risk tiers may have further downstream applications as well; for example, they could inform management decisions beyond specifications. The SSC specifically noted the three individual pieces of information that is now available to them through this implementation (tiers, Z-scores, and recommended probability) and can be considered moving forward.

An SSC member observed that a broad range of socioeconomic factors, some of which appear as factor scoring subcategories and some of which may not, are distilled down into a single "Commercial Fishery Characterization" factor in the risk policy matrix and it is unclear whether this factor is weighted appropriately relative to the other factors, or whether additional factors may be needed to represent the fishery. The SSC observed that one of the benefits of the functional relationship between the scoring and the recommended probability is that the number of factors could easily be adjusted in the future while still following the same methodology.

The SSC noted that the uncertainty associated with assessment quantities such as spawning stock biomass (SSB) and recruitment does not appear in the current formulation of the risk policy. The utility of the SSB and recruitment risk matrix factors depend on these metrics being well determined. The SSC should consider this and also recall that uncertainty in these quantities can vary across assessments. It was noted that although uncertainty was considered by the Risk Policy Working Group as an additional factor, it was ultimately removed for now given questions around defining uncertainty and that uncertainty is partially accounted for within the assessment (e.g., effort to avoid "double-counting" uncertainty). Incorporating uncertainty in the Risk Policy more explicitly in future iterations would be informative. Beyond the qualitative applications considered at present, a future Fishery Management Action Team could consider uncertainty in any quantitative advice that may be applied through the Risk Policy in coming years. Similarly, the Risk Policy Working Group also considered fish condition as an additional factor intended to incorporate some ecosystem conditions. However, this factor has been paused from inclusion given challenges in interpreting what changing fish condition means; future work could reconsider this or other possible indicators of ecosystem conditions.

The SSC's discussion was informed by public comment. A member of the public asked for clarification on how the Commercial Fishery Characterization factor is scored, and felt that for the Atlantic herring worked example, the fishery may be under more stress than the score indicates. NEFMC staff detailed the scoring method and noted that there will be some learning along the way as the new approaches get implemented. Another member of the public commented that scoring is backward-looking as opposed to forward-looking, noting that, for example, although Atlantic herring has not been a choke species for mackerel in the recent past, it may well constrain catch next year. This commenter also noted that in other regions, such scoring is an iterative process that multiple groups contribute to. Staff clarified that scoring is

intended to be as objective as possible, follow detailed guidelines, and the AP input component is forward-looking.

### ***SOCIAL SCIENCES SUBCOMMITTEE***

The SSC received a presentation from the SSS and the Social Science Branch (SSB) of the Northeast Fisheries Science Center (NEFSC) on updates from SSS meetings held in November 2025 and March 2026, and a workshop held in March 2026. The SSB presented updates on their work to enhance fisheries-dependent data and socioeconomic considerations for management. Key priorities include (1) standardizing fishery performance reporting into concise summaries, (2) improving socioeconomic data products used for Risk Policy evaluation, (3) improving the SSB indicators at the Fishery Management Plan (FMP) level, and (4) facilitating incorporation of social science information and Local Ecological Knowledge (LEK) into stock assessments through collaboration between industry and scientists. The workshop, supported through the Cooperative Institute for the North Atlantic Region (CINAR), focused on fishing industry generated information and highlighted that substantial industry information currently exists, but its use is constrained by inconsistent formats, its treatment is often considered as anecdotal or supplementary only, is incorporated late in the decision-making process. The workshop also noted challenges regarding mistrust and informant fatigue, institutional barriers, and reduced scientific capacity. Proposed solutions focused on standardizing existing data streams, integrating socioeconomic data directly and earlier into the process, using automated reporting and analytical tools to synthesize information, and strengthening coordination across the management system.

### ***SSC Comments on SSS Activities***

The SSC sought additional clarification regarding examples of industry-generated information, data standardization, communication, and information use in decision-making. The SSS noted that workshop participants identified several existing information sources, such as groundfish sector reports, vessel monitoring system and vessel trip report data, Study Fleet data, Advisory Panel (AP) input, and public comment, as valuable but often underutilized due to inconsistent formats, confidentiality constraints, and unclear pathways for incorporating them into the decision-making process. Participants also discussed how artificial intelligence (AI) and qualitative analysis tools could create new opportunities to extract, organize, and standardize information from heterogeneous sources, potentially enhancing their use without imposing additional burdens on industry.

The SSC further elaborated on how existing communication channels, including groundfish sectors, APs, and regular industry meetings could be strengthened through greater emphasis on communicating findings back to the industry and demonstrating how their information is being incorporated into analyses and decision-making processes. Participants also discussed continuing uncertainty regarding how socioeconomic information fits within the National Standards and broader management process. SSB's ongoing mapping effort should shed light on how National Standard 1 and FMP objectives relate to socioeconomic concepts, indicators, and metrics, which may help clarify these connections. Lastly, the Mid-Atlantic Fishery Management Council (MAFMC) use of structured AP questions was highlighted as a potentially useful model for generating consistent information over time, identifying emerging concerns, and evaluating whether and how industry observations are recognized and addressed before they become formally identified as management issues.

## ***ATLANTIC HERRING OFLs AND ABCs***

The SSC received a presentation from the NEFSC on the 2026 management track stock assessment for Atlantic herring, comments from the chair and a panelist of the assessment's peer review panel who are also SSC members, and a presentation from the Atlantic Herring Plan Development Team on the development of possible OFLs and ABCs for FY2027-FY2031. The SSC noted that the 2026 assessment was the first management track use of the Woods Hole Assessment Model (WHAM) for Atlantic herring which indicated that the stock continues to be overfished but overfishing is not occurring. Discussion focused on the substantial uncertainty in the stock projections, biological reference points, and the interaction of those quantities within the existing Atlantic herring ABC control rule. As part of their report, the peer review 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 SSC considered the management track assessment peer review conclusions, including that the projection TOR was only partially met, and that the projections and sensitivity analyses should be viewed as context for catch advice, rather than values to directly inform management.

### **Terms of Reference**

- A. Consider the information provided by the Council's Atlantic Herring Plan Development Team (PDT) and ASMFC's Technical Committee (TC) on the most recent stock assessment for Atlantic herring and its peer review, and information on stock projections.
- B. Recommend OFLs and ABCs for Atlantic herring for fishing years (FY) 2027-2031 that will prevent overfishing, are consistent with the Council's Atlantic herring ABC control rule and rebuilding plan, and consider the Council's Risk Policy Statement and Concept.

### **TOR Findings**

The SSC recommends an OFL of 13,165 mt and an ABC of 10,532 mt, held constant for FY 2027-2031, for the Atlantic herring stock. The recommended OFLs and ABCs aim to prevent overfishing, have connections to or informed by the Council's ABC control rules (though do not follow the control rule explicitly), and consider the Council's Risk Policy Statement.

For Atlantic herring TOR A, the SSC considered the 2026 WHAM assessment, the peer review findings, and projection analyses and sensitivities provided by the PDT/TC (though no recommendations were provided), and the Council's Risk Policy output. The SSC did not use the projections to directly inform catch advice due to issues associated with their estimation.

For Atlantic herring TOR B, the SSC adopted an interim constant catch approach rather than directly applying the existing herring ABC control rule. The SSC used the 2026 ABC of 13,165 mt as the OFL for FY2027-2031 and applied a 20% reduction to establish a constant ABC of 10,532 mt. Using only 80% of the OFL for the ABC provides a precautionary reduction consistent with the intent of the Risk Policy and also reflects the maximum 80% allowance embedded in the existing Atlantic herring ABC control rule, while recognizing that the current advice departs from a mechanical application of that control rule.

### **Rationale Including Significant Sources of Uncertainty**

The stock remains in poor condition with persistent low recruitment and warrants a precautionary approach. The SSC found substantial uncertainty in the ability to characterize the rebuilding trajectory using the available projections. For example, the standard WHAM

projections assume a return toward long-term mean recruitment and do not carry recent negative NAA random effects forward, resulting in a quick, overly optimistic rebound in SSB, while sensitivities using recent recruitment or recent NAA random effect conditions are substantially more pessimistic. The more pessimistic projections include scenarios in which rebuilding does not occur. The divergence among these scenarios demonstrates that rebuilding conclusions are highly dependent on assumptions of future survival and recruitment. Due to these challenges in specifying projections and consistent with the peer review advice, the SSC treated the projections as context rather than values to be used in determining catch advice.

The SSC also identified a disconnect between the existing Atlantic herring ABC control rule and the new approach to assessment using WHAM. The control rule was developed and evaluated under the previous assessment framework (ASAP) and with the transition to WHAM, the estimation of assessment quantities and biological reference points have changed substantially. Notably, reference points are estimated in a different manner with WHAM estimating a global selectivity across U.S. and Canadian fisheries whereas ASAP ignored the Canadian fleet in these estimates. The large differences in selectivity between the two fleets had a significant impact on the  $F_{MSY}$  proxy ( $F_{40\%}$  was equal to 0.45 in 2024 and 0.27 in the 2026 assessment) and was considered by members of the SSC as an inappropriate modeling choice given the  $F/F_{MSY}$  ratio is used in the ABC control rule to inform the exploitation rate of the mobile fleet only (U.S. fleet). The 2026 management track assessment cautioned that ASAP and WHAM reference points are not directly comparable due these methodological differences, and the peer review identified concerns regarding the scaling of the WHAM reference points, recruitment assumptions underlying them, and whether  $F_{40\%}$  remains the appropriate  $F_{MSY}$  proxy. Many of the same unresolved assumptions affecting the projections also affect the reference points.

Given these uncertainties, the SSC concluded that a constant interim ABC provides a reasonable bridge until an updated assessment and/or additional technical work provides greater confidence in projections, reference points, and their interaction within the control rule. The Council's Risk Policy output indicated Low Risk Tolerance, supporting a precautionary reduction in OFLs and ABCs. The SSC discussed several reduction strategies, namely 80%, 75%, and 70% of the OFL for the uncertainty buffer. The SSC also considered using an ensemble approach with the projections (i.e., averaging the outcome OFLs and ABCs from the provided projections; see minority report below). Some members preferred a reduction greater than 20%, because they did not view 80% as sufficiently conservative; however, the SSC did not identify a scientific basis for the 75% or 70% alternatives that were proposed (see Appendix I). The ensemble approach was not preferred due to the SSC's lack of confidence in the projections, and the assessment's peer reviewers cautioned against using the projections directly for advice (which was also noted in the PDT/TC's report). The SSC majority therefore agreed to an ABC equal to 80% of the proposed OFL, or 10,532 mt. The ABC recommendation of a 20% reduction from the recommended OFL (the 2026-2027 ABC value) is intended to acknowledge a level of precaution outlined in the ABC control rule limiting fishing mortality at 80% of  $F_{MSY}$  when biomass is greater than 0.5 for the ratio of  $SSB/SSB_{MSY}$ . This recommendation is not intended to suggest the current  $SSB/SSB_{MSY}$  is greater than 0.5; the use of 80% is used to inform an additional level of precaution that acknowledges the ABC control rule. In this decision, the SSC also recognized the socioeconomic challenges that this industry has been experiencing for the past several years; the recommended 20% decrease also intended to align with these raised concerns.

The SSC believes it's recommended ABCs are not likely to result in overfishing for this stock as the 10,532 mt ABC is 20% below the recommended OFL, represents a precautionary reduction from the 2026 ABC, and was judged by the SSC to provide an appropriate interim level of catch given the stock's low biomass, the Council's Low Risk Tolerance, and the uncertainty in the information available such as the projections and reference points.

The treatment of Canadian catch in the assessment and management of Atlantic herring was discussed by the SSC. Canadian catch primarily comes from Southwest New Brunswick (SWNB) coastal waters (migrant juvenile weir fisheries). The Canadian catches in this region largely consist of "migrant juveniles". Previous tagging studies demonstrate that these juvenile fish originate from the Gulf of Maine and Georges Bank spawning components, meaning they are inherently part of the U.S. stock complex. This assumption needs to be revisited to understand the degree of stock mixing occurring in Canadian and US waters. Furthermore, the current approach to US allocation takes a recent average of Canadian catch from the ABC as part of the management uncertainty deductions. This is a projection as it is not known at the time of setting catch advice how much the Canadian fishery will actually catch. This approach has a more pronounced impact on available catch under smaller stock sizes. The SSC noted that there may be opportunities for the Council to make management adjustments to the treatment of Canadian catch and proportion of ABC available to the U.S. fishery as they broadly consider the treatment of Canadian catch in assessment and management.

The SSC's discussion and recommendations were informed by public comment (written and comments made during the meeting). Concerns from the herring fishery included the potential for some of the projections to only allow one trip or less per year by the herring vessels, that biomass shifts out of certain stock areas has prevented full quota utilization (among other reasons cited), and that state surveys should be included more directly in stock assessments to inform recruitment estimates. Other commenters asked how predator consumption is included in the assessment and about the impacts of the loss of the shrimp survey to the assessment. The assessment scientists clarified that diet data is used in the assessment, challenges persist with using some data sources, but that outcomes generally match external research; the pausing of the shrimp survey increases uncertainty.

In summary, the most important sources of uncertainty include continued poor recruitment; the treatment and interpretation of NAA random effects; the mismatch between recent conditions and conditions used for the assumptions from some projection and reference point calculations; uncertainty in WHAM biological reference points and their comparability with the former ASAP framework; and missing or limited recent survey information. The SSC also noted that survey indices remain low but have not shown a recent precipitous decline, adding to concern about the apparent disconnect between the control rule catch advice and the available empirical information.

#### *Additional Comments and Research Recommendations*

The SSC supports the peer review research recommendations and emphasizes several of those as top priorities: continued development of the vector autoregressive spatiotemporal (VAST) model to incorporate additional surveys which could improve information on age-1 herring; investigation of potential autocorrelation in annual recruitment and covariates that may be aliased in the NAA random effects; and improved treatment of NAA random effects in projections.

The SSC also recommends reevaluating the performance of the Atlantic herring ABC control rule in the context of changes associated with the new assessment framework (WHAM), further investigate potential spatial changes in stock distribution, reexamine stock structure, and reassess the appropriate treatment of Canadian catch and fleet selectivity informing the assessment model and biological reference points. The constant OFL and ABC recommendations should be viewed as an interim approach and revisited if an updated assessment or additional technical analyses become available during the specification period. As a final thought, the SSC believes the stock should be prioritized for assessment again as soon as possible.

This was the first application of the Council's new Risk Policy. The SSC discussed the Risk Policy approach and outcomes at length during their discussions, and voiced appreciation as it provided more pertinent information to the decision process than the previous risk policy did. Additionally, the enhanced risk policy matrix provided a good assemblage of really important information. Some SSC members felt that the outcome did not reflect the actual level of stress being experienced by the industry, and therefore note that there may be some additional scrutiny applied to the socioeconomic factor portions of the risk policy procedure to make sure it is functioning the way the Council intends. In total, the SSC felt the new Risk Policy was a positive step forward in the process.

#### Summary of Recommendations

1. The SSC recommends an OFL of 13,165 mt for FY2027-2031 for Atlantic herring.
2. The SSC recommends an ABC of 10,532 mt for FY2027-2031 for Atlantic herring.
3. The SSC recommends treating the constant OFL and ABC as an interim approach and revisiting the specifications when updated assessment information or additional technical work resolves key uncertainties in projections, reference points, and their interaction with the herring ABC control rule.
4. The SSC recommends the following research priorities:
  - a. Prioritize work on age-1 survey information potentially using VAST to synthesize the different available trawl surveys,
  - b. Investigate causes for the poor recruitment and negative NAA random effects,
  - c. Examine best practices for NAA random effect treatment in projections,
  - d. Reevaluate the performance of the Atlantic herring ABC control rule with the changes associated with WHAM, and
  - e. Investigate potential spatial changes in Atlantic herring distribution.

| <b>Fishing Year</b> | <b>OFL (mt)</b> | <b>ABC (mt)</b> |
|---------------------|-----------------|-----------------|
| 2027-2031           | 13,165          | 10,532          |

#### Minority Report

A minority of the SSC supported alternative approaches to setting the Atlantic herring OFL and ABC, as described in Appendix I.

### ***DYNAMIC REFERENCE POINTS***

The SSC received a presentation from the SSC Chair that summarized the outcomes of the SSC's workshop on dynamic reference points held on June 1-2, 2026. The SSC remains interested and committed to their recommendations documented in their SSC Dynamic Reference Point (DRP) Workshop report, with some slight modifications based on changes in the NEFMC-related science or activities since the DRP Workshop. Specifically, the SSC recommended altering the priority species of interest, developing a subcommittee to help with executing the concept mapping, and an additional factor to consider.

#### ***Terms of Reference***

- A. Consider the outcomes of the SSC workshop on dynamic reference points, and make any refinements to the recommendations for indicators, candidate stocks, and other recommendations for next steps.

#### ***TOR Findings***

The SSC recommended modifying their original stock recommendations for carrying through the concept mapping process to evaluate the utility of dynamic reference points. First, the SSC recommended deprioritizing witch flounder. Though the stock is to be assessed within the next two years, and thus would be an opportunity to evaluate and implement some form of DRPs, the assessment framework is empirical and not an analytical framework. As such, the SSC recommended efforts be placed elsewhere. With this de-prioritization, the SSC noted that white hake and the four Atlantic cod stocks would be strong candidates to evaluate DRPs through the concept mapping exercise.

White Hake: The SSC recommended white hake be a prioritized species for DRP consideration, based research for this stock to-date. The SSC has reviewed multiple pieces of work on this topic, one that evaluated changes in recruitment using change point analyses ([Cadrian 2023](#)) and another that used dynamic linear modeling to understand changes in productivity via the stock-recruit relationship ([Collie 2023](#)). These works together showed that the method of which one uses can influence the detectability of changes in recruitment or productivity, and that the dynamic linear modeling exercise revealed a significant decline in white hake stock productivity in recent decades. White hake has continued to represent a stock where accounting for changes in stock productivity using dynamic reference points, accompanied with a time-varying harvest control rule, can be advantageous for stocks where productivity change signals are strong ([Collie et al. 2026](#)). White hake is scheduled to be assessed in 2027, and thus the SSC envisions that work conducted as part of this effort could be useful in the near future. Recent management track assessments and projections used in guiding catch advice have also highlighted the importance of better understanding recruitment for improved projections and understanding rebuilding plan probability.

Atlantic Cod Stocks: The SSC began their deliberations recommending specifically the Georges Bank (GB) and Southern New England (SNE) cod stocks, but later noted that all of these stocks could benefit from the concept mapping exercise. As part of the 2023 Atlantic Cod Research Track Stock Assessment, the cod stocks were evaluated for ecosystem or environmental influence on their vital rates (including recruitment), leveraging both empirical data and integrating fishers' ecosystem knowledge (the final stock assessment report can be found in the [Stock Assessment Support Information](#)

[Portal](#), and additional examples of this effort can be found in [Kerr et al. 2026](#)). The development of these exercises and processes could provide a basis or starting place for further applying the concept mapping exercise to cod stocks. These stocks are to be assessed in 2027.

The SSC discussed at length the number of stocks to recommend for DRP evaluation given the level of effort required for this exercise, the number of stocks being suggested for consideration, and the unforeseen challenges likely to be encountered when working through the concept mapping process for the first time. While there was interest from the SSC in specifically picking individual cod stocks for evaluation to focus efforts, ultimately, the SSC opted to propose these five stocks based on their scientific merit as opposed to other logistical constraints. The SSC understands that these stocks may face other priorities as part of their next management track assessments that may preclude them from being tested with the DRP concept mapping exercise, but the SSC does believe these five stocks may benefit from stock productivity, recruitment, and DRP evaluation. Some members of the SSC expressed concern with proposing five stocks. Given the DRP Workshop envisaged a rigorous weight-of-evidence based analysis to establish whether a shift to DRPs is warranted, recommending this number of stocks may be overly ambitious (especially with these stocks all to be assessed in 2027), and could warrant testing a single stock.

The SSC also recommended that an SSC Subgroup be established to assist with the implementation or testing of the DRP concept mapping for the candidate stock(s). Strong support was expressed for creating an SSC subgroup to collaborate directly with NEFSC analysts, assist with scoping, and help establish a consistent, standardized approach across stocks.

Lastly, the SSC recommended including the addition of changes in natural mortality ( $M$ ) as a factor to evaluate within the concept mapping exercise. While empirical data on  $M$  are largely lacking for stocks, information that could inform changes in  $M$  for a stock would be insightful for understanding stock productivity changes.

#### Summary of Recommendations

1. The SSC recommends considering White Hake and the Atlantic Cod stocks (GB, SNE, eGOM, wGOM) for consideration for the DRP concept mapping exercise.
2. The SSC recommends a subgroup of the SSC be formed to help partners with executing the concept mapping exercise for the recommended stocks.
3. The SSC recommends including potential natural mortality indicators in the biological indicator category for evaluation.

#### **MEETING DOCUMENTS**

##### Risk Policy

1. Presentation on Risk Policy Concept and implementation, J. Peros, NEFMC
2. Risk Policy Statement and Concept, August 4, 2026

##### Social Science Subcommittee

1. Presentation on SSS updates, SSS members
2. SSS report, [November 21, 2025](#)

3. SSS report, [April 1, 2026](#)
4. CINAR Workshop Report, July 31, 2026

#### Atlantic Herring

1. June 2026 Management Track Assessment\*
  - a. Assessment presentation
  - b. Atlantic Herring 2026 Management Track Assessment Report, June 5, 2026
  - c. 2026 Management Track Assessment Peer Review Report
2. Herring PDT information
  - a. PDT presentation
  - b. Atlantic Herring PDT and TC memo to the SSC on OFLs and ABCs for FY 2027-2031
  - c. Risk Policy Report for Atlantic herring
3. [Framework Adjustment 9 Affected Environment](#) (Section 5.0, p. 25-75), February 11, 2022
4. Previous SSC recommendations
  - a. July 2024 for FY2025-2027
    - i. Meeting materials, [July 30-31, 2024](#)
    - ii. SSC report, [August 16, 2024](#)
  - b. April 2025, for FY 2025-2027
    - i. Meeting materials, [April 4, 2025](#)
    - ii. SSC report, [April 10, 2025](#)

#### Dynamic Reference Points

1. Presentation by SSC Chair
2. Workshop final report, [July 30, 2026](#)

#### Other Documents

1. Presentation on Other Business topics
2. NOAA/NEFSC [State of the Ecosystem Reports](#) for the Northeast U.S. Shelf

### **APPENDIX I - MINORITY REPORT FOR ATLANTIC HERRING OFLs AND ABCs**

A minority of the SSC supported alternative approaches to setting the Atlantic herring OFL/ABC which are based on the projection runs of the assessment scientist and the herring PDT and also more closely honor the existing Atlantic herring harvest control rule.

Each of the seven projection runs produced a unique OFL and ABC by varying the assumptions for Numbers At Age (NAA), recruitment, and catch (see presentation by NEFMC PDT staff lead for details). We believe this approach honors the recommendation by the Atlantic herring management track assessment peer reviewers that the original two sets of projections and sensitivity analysis provide “context for catch advice setting” and that by developing the additional five sets of projections the PDT has extended the projections sufficiently that they are no longer limited in their utility.

Following this logic, we recommend that the seven sets of OFLs and ABCs be treated as an ensemble and averaged together. This yields for fishing year 2027 an OFL of 13,656 mt (CV = 20.2%) and an ABC of 5,162 mt (CV = 17.1%). The low CV suggests the projections produce relatively similar results despite varying NAAs, recruitment and catch assumptions. We further recommend that OFL and ABC be held constant at the same level for fishing years 2028-2031.

Recognizing concerns raised during the SSC discussions over the decreasing Fmsy and ramped portion of the control rule, we additionally recommend as an alternative a constant ABC based on 70% of the OFL, corresponding to 9,559 mt. The 80% value recommended by the majority reflects the maximum fraction from the control rule for when the stock is above 50% of  $SSB_{MSY}$  and was explicitly intended to account for the role of herring as forage (i.e., leaving 20% for the ecosystem). The control rule, notably including the ramped portion that decreases the ratio of  $F/F_{msy}$  below the 80% maximum as biomass drops below 50% of  $SSB_{MSY}$ , was also accepted as the rebuilding plan for the stock. Given the overfished status and low biomass of the stock, it being in the fifth year of a rebuilding plan, and the strong scientific uncertainty associated with the assessment, we recommend the 70% as a lower and more cautious value than the 80% value that is intended for when the stock is in healthy status.

Finally, we believe that these approaches honor the low risk tolerance recommended for the stock by the NEFMC's new approach to assessing risk. From the PDT's factor scoring and Council weightings under the new risk policy, the calculated probability of management success is 94%, putting the stock well into the low risk tolerance category. Here the risk to management is of setting ABCs that lead to overfishing and failing to rebuild, and the risk policy would suggest targeting 6% likelihood of these outcomes. Under the set of 7 projections provided by the PDT, the probability there is overfishing in 2026 under the previously set catch limits ranges from 52 to 100%, with an average of 76%. The probability of being rebuilt by the 2031 target date ranges from 0 to 63%, with an average of 26%. Acknowledging that these numbers are based on uncertain projections, and that setting a constant ABC mitigates risk, these likelihoods nonetheless suggest a strong risk of failing to achieve management success. Our recommended approaches suggest the ABC for this declining stock should be set at a level below the current ABC, increasing the likelihood of management success in the form of avoiding overfishing and promoting rebuilding.



## New England Fishery Management Council

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Daniel Salerno, *Chair* | Cate O'Keefe, PhD, *Executive Director*

**DATE:** August 5, 2026  
**TO:** Scientific and Statistical Committee  
**CC:** NEFMC Atlantic Herring Committee & ASMFC Atlantic Herring Management Board  
**FROM:** NEFMC Atlantic Herring Plan Development Team & ASMFC Atlantic Herring Technical Committee  
**SUBJECT:** Atlantic Herring OFLs and ABCs for Fishing Years 2027 through 2031

The New England Fishery Management Council's (Council) Atlantic Herring Plan Development Team (PDT) and the Atlantic States Marine Fisheries Commission's (Commission) Atlantic Herring Technical Committee (TC) held joint meetings by webinar on July 7 and July 14, 2026, to discuss the recent 2026 management track stock assessment.

### ***Overview***

This memorandum provides information to support fishing year (FY) 2027 through 2031 overfishing (OFL) and acceptable biological catch (ABC) recommendations from the Scientific and Statistical Committee (SSC). The PDT/TC reviewed 2024 and 2026 stock assessments, the 2026 peer review report, SSC reports, and PDT reports. A [summary of past specifications](#) was included in the materials for the SSC's Dynamic Reference Points Workshop. Appendix I details the Risk Policy scoring for Atlantic herring.

The PDT/TC did not provide recommendations for specific OFLs and ABCs.

### ***Summary of Projections***

The PDT/TC focused its analysis on addressing the [peer review panel's recommendations](#) under Term of Reference 5: Conduct short-term stock projections when appropriate (pp. 16-17).

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

....

*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 PDT/TC applied the Council's ABC control rule for Atlantic herring and rebuilding plan (following Amendment 8 and Framework Adjustment 9) to develop the standard projections. The range of projections the PDT/TC developed reflects more optimistic (1 & 4) to more pessimistic scenarios (2, 3, and 5). See Tables 1-5.

1. Standard projections (consistent with the stock assessment report)
2. Sensitivity on #1 to project NAA at the most recent 5-year average (as presented to the peer review panel)
3. Additional sensitivity on #1 to project recruitment at the most recent 10-year average
4. Additional sensitivity on #1 to modify catch assumptions - estimated US catch for 2026 (assumes 75% of the ACL is caught) and 5-year average Canadian catch (in 2026 and projection years)
5. Additional sensitivity – project recruitment at the most recent 10-year average and NAA at most recent 5-year average (combination of #2 and #3)

In addition, the PDT ran a simulation analysis on recruitment to look at WHAM-like recruitment estimates (i.e., similar length, signal, and noise) to compare different assumptions of trailing average recruitment in the projections (Figure 1). The simulation demonstrates 1) not to expect to detect a significant ARy1 correlation in a noisy declining timeseries, and 2) that using a trailing window of recruitment for projections does more good than harm.

In general, the PDT found a very low probability of detecting an ARy1 in a simulated trending timeseries (although, it increases with timeseries length). Using the geometric mean of the full timeseries (which is equivalent to the recruitment scaling parameter used by WHAM) with a declining trend results in increasingly over-optimistic projections. This can be improved substantially by using a trailing geometric mean (10 years achieved the lowest RMSE). If, in fact, there is no underlying trend and it's all noise, using a trailing 10-year window performs about the same as using the full-time series.

## Tables

**Table 1. Standard projections (consistent with the stock assessment report). Light gray indicates the bridge year (2026), and dark gray indicates the short-term projection period (2027-2031). Bold identifies the year the stock is projected to be rebuilt with at least a 50% probability of achieving the rebuilding target.**

| Year        | Mobile Catch (mt) | Fixed Catch (mt) | Canada (NB) Catch (mt) | SSB (mt)       | Mobile Gear OFL (mt) | Mobile Fleet F | SSB/SSBmsy  | OFL (mt)      | ABC (mt)      | ACL (mt)      | P(overfished) | P(overfishing) | P(rebuild)  |
|-------------|-------------------|------------------|------------------------|----------------|----------------------|----------------|-------------|---------------|---------------|---------------|---------------|----------------|-------------|
| 2026        | 9,134             | 4,031            | -                      | 26,103         | -                    | 0.38           | 0.14        | -             | 13,165        | 8,034         | 0.99          | 0.75           | -           |
| 2027        | 939               | 5,283            | 5,131                  | 77,841         | 11,486               | 0.02           | 0.41        | 16,769        | 6,222         | 1,091         | 0.59          | -              | 0.15        |
| 2028        | 13,015            | 5,283            | 5,131                  | 140,644        | 20,305               | 0.17           | 0.75        | 25,587        | 18,297        | 13,166        | 0.32          | 0.04           | 0.37        |
| 2029        | 22,354            | 5,283            | 5,131                  | 184,357        | 27,608               | 0.22           | 0.98        | 32,890        | 27,637        | 22,506        | 0.21          | 0.19           | 0.49        |
| <b>2030</b> | <b>27,572</b>     | <b>5,283</b>     | <b>5,131</b>           | <b>214,544</b> | <b>34,019</b>        | <b>0.22</b>    | <b>1.14</b> | <b>39,301</b> | <b>32,854</b> | <b>27,723</b> | <b>0.16</b>   | <b>0.19</b>    | <b>0.56</b> |
| 2031        | 32,886            | 5,283            | 5,131                  | 235,978        | 40,505               | 0.22           | 1.25        | 45,788        | 38,169        | 33,038        | 0.13          | 0.19           | 0.61        |
| 2032        | 36,801            | 5,283            | 5,131                  | 250,221        | 45,279               | 0.22           | 1.33        | 50,562        | 42,084        | 36,953        | 0.11          | 0.19           | 0.64        |
| 2033        | 39,060            | 5,283            | 5,131                  | 258,497        | 48,035               | 0.22           | 1.37        | 53,318        | 44,343        | 39,212        | 0.10          | 0.19           | 0.66        |
| 2034        | 40,325            | 5,283            | 5,131                  | 263,183        | 49,578               | 0.22           | 1.40        | 54,861        | 45,608        | 40,477        | 0.09          | 0.19           | 0.67        |
| 2035        | 41,049            | 5,283            | 5,131                  | 265,870        | 50,461               | 0.22           | 1.41        | 55,744        | 46,332        | 41,201        | 0.09          | 0.19           | 0.67        |
| 2036        | 41,466            | 5,283            | 5,131                  | 267,418        | 50,969               | 0.22           | 1.42        | 56,252        | 46,748        | 41,617        | 0.09          | 0.19           | 0.67        |

**Table 2. Sensitivity to project NAA at the most recent 5-year average (as presented to the peer review panel). Light gray indicates the bridge year (2026), and dark gray indicates the short-term projection period (2027-2031). The stock is not projected to be rebuilt under this projection scenario.**

| Year | Mobile Catch (mt) | Fixed Catch (mt) | Canada (NB) Catch (mt) | SSB    | Mobile Gear OFL (mt) | Mobile Fleet F | SSB/SSBmsy | OFL (mt) | ABC (mt) | ACL (mt) | P(overfished) | P(overfishing) | P(rebuild) |
|------|-------------------|------------------|------------------------|--------|----------------------|----------------|------------|----------|----------|----------|---------------|----------------|------------|
| 2026 | 9,134             | 4,031            | -                      | 18,150 | -                    | 0.52           | 0.10       | -        | 13,165   | 8,034    | 1.00          | 0.97           | 0.00       |
| 2027 | -                 | 5,283            | 5,131                  | 41,108 | 6,378                | 0.00           | 0.22       | 11,661   | 5,283    | 152      | 0.90          | 0.00           | 0.01       |
| 2028 | 2,291             | 5,283            | 5,131                  | 64,576 | 9,265                | 0.06           | 0.34       | 14,548   | 7,574    | 2,443    | 0.72          | 0.00           | 0.05       |
| 2029 | 5,551             | 5,283            | 5,131                  | 76,039 | 11,090               | 0.13           | 0.40       | 16,373   | 10,834   | 5,703    | 0.63          | 0.03           | 0.07       |
| 2030 | 7,644             | 5,283            | 5,131                  | 81,238 | 12,286               | 0.17           | 0.43       | 17,569   | 12,926   | 7,795    | 0.60          | 0.06           | 0.08       |
| 2031 | 8,995             | 5,283            | 5,131                  | 83,844 | 13,275               | 0.18           | 0.45       | 18,557   | 14,277   | 9,146    | 0.58          | 0.08           | 0.09       |
| 2032 | 9,779             | 5,283            | 5,131                  | 85,042 | 13,865               | 0.19           | 0.45       | 19,147   | 15,061   | 9,930    | 0.57          | 0.09           | 0.09       |
| 2033 | 10,117            | 5,283            | 5,131                  | 85,403 | 14,092               | 0.19           | 0.45       | 19,375   | 15,400   | 10,269   | 0.57          | 0.09           | 0.09       |
| 2034 | 10,215            | 5,283            | 5,131                  | 85,452 | 14,154               | 0.19           | 0.45       | 19,436   | 15,498   | 10,367   | 0.57          | 0.09           | 0.09       |
| 2035 | 10,229            | 5,283            | 5,131                  | 85,432 | 14,163               | 0.19           | 0.45       | 19,445   | 15,512   | 10,381   | 0.57          | 0.09           | 0.09       |
| 2036 | 10,224            | 5,283            | 5,131                  | 85,411 | 14,160               | 0.19           | 0.45       | 19,442   | 15,507   | 10,376   | 0.57          | 0.09           | 0.09       |

**Table 3. Additional sensitivity to project recruitment at the most recent 10-year average. Light gray indicates the bridge year (2026), and dark gray indicates the short-term projection period (2027-2031). The stock is not projected to be rebuilt under this projection scenario.**

| Year | Mobile Catch (mt) | Fixed Catch (mt) | Canada (NB) Catch (mt) | SSB (mt) | Mobile Gear OFL (mt) | Mobile Fleet F | SSB/SSB <sub>msy</sub> | OFL (mt) | ABC (mt) | ACL (mt) | P(overfished) | P(overfishing) | P(rebuild) |
|------|-------------------|------------------|------------------------|----------|----------------------|----------------|------------------------|----------|----------|----------|---------------|----------------|------------|
| 2026 | 9,134             | 4,031            | -                      | 26,100   | -                    | 0.38           | 0.139                  | -        | 13,165   | 8,034    | 0.99          | 0.75           | 0.00       |
| 2027 | 878               | 5,283            | 5,131                  | 76,616   | 10,711               | 0.02           | 0.407                  | 15,994   | 6,161    | 1,030    | 0.59          | 0.00           | 0.15       |
| 2028 | 9,433             | 5,283            | 5,131                  | 100,027  | 14,978               | 0.17           | 0.531                  | 20,260   | 14,715   | 9,584    | 0.47          | 0.03           | 0.23       |
| 2029 | 13,630            | 5,283            | 5,131                  | 103,922  | 16,808               | 0.22           | 0.552                  | 22,091   | 18,912   | 13,781   | 0.45          | 0.19           | 0.23       |
| 2030 | 15,105            | 5,283            | 5,131                  | 106,440  | 18,607               | 0.22           | 0.566                  | 23,889   | 20,388   | 15,257   | 0.44          | 0.19           | 0.23       |
| 2031 | 16,824            | 5,283            | 5,131                  | 108,062  | 20,678               | 0.22           | 0.574                  | 25,960   | 22,106   | 16,975   | 0.43          | 0.19           | 0.23       |
| 2032 | 17,137            | 5,283            | 5,131                  | 108,294  | 21,059               | 0.22           | 0.575                  | 26,342   | 22,420   | 17,289   | 0.42          | 0.19           | 0.22       |
| 2033 | 16,912            | 5,283            | 5,131                  | 107,422  | 20,784               | 0.22           | 0.571                  | 26,067   | 22,195   | 17,064   | 0.43          | 0.19           | 0.22       |
| 2034 | 16,764            | 5,283            | 5,131                  | 106,878  | 20,604               | 0.22           | 0.568                  | 25,886   | 22,046   | 16,915   | 0.43          | 0.19           | 0.21       |
| 2035 | 16,678            | 5,283            | 5,131                  | 106,561  | 20,499               | 0.22           | 0.566                  | 25,781   | 21,960   | 16,829   | 0.43          | 0.19           | 0.21       |
| 2036 | 16,629            | 5,283            | 5,131                  | 106,378  | 20,439               | 0.22           | 0.565                  | 25,722   | 21,912   | 16,781   | 0.43          | 0.19           | 0.21       |

Table 4. Additional sensitivity to modify catch assumptions - estimated US catch for 2026 (assumes 75% of the ACL is caught) and 5-year average Canadian catch (in 2026 and projection years). Light gray indicates the bridge year (2026), and dark gray indicates the short-term projection period (2027-2031). Bold identifies the year the stock is projected to be rebuilt with at least a 50% probability of achieving the rebuilding target.

| Year        | Mobile Catch (mt) | Fixed Catch (mt) | Canada (NB) Catch (mt) | SSB (mt)       | Mobile Gear OFL (mt) | Mobile Fleet F | SSB/SSB <sub>msy</sub> | OFL (mt)      | ABC (mt)      | ACL (mt)      | P(overfished) | P(overfishing) | P(rebuild)  |
|-------------|-------------------|------------------|------------------------|----------------|----------------------|----------------|------------------------|---------------|---------------|---------------|---------------|----------------|-------------|
| 2026        | 6,850             | 3,617            | -                      | 27,599         | -                    | 0.28           | 0.15                   | -             | 10,468        | 6,862         | 0.99          | 0.52           | 0.00        |
| 2027        | 1,176             | 3,617            | 3,606                  | 80,345         | 11,932               | 0.03           | 0.43                   | 15,549        | 4,793         | 1,187         | 0.58          | 0.00           | 0.16        |
| 2028        | 13,972            | 3,617            | 3,606                  | 144,385        | 20,940               | 0.18           | 0.77                   | 24,557        | 17,589        | 13,983        | 0.31          | 0.05           | 0.38        |
| <b>2029</b> | <b>22,961</b>     | <b>3,617</b>     | <b>3,606</b>           | <b>189,338</b> | <b>28,356</b>        | <b>0.22</b>    | <b>1.01</b>            | <b>31,973</b> | <b>26,578</b> | <b>22,972</b> | <b>0.20</b>   | <b>0.19</b>    | <b>0.50</b> |
| 2030        | 28,314            | 3,617            | 3,606                  | 220,467        | 34,933               | 0.22           | 1.17                   | 38,550        | 31,931        | 28,325        | 0.15          | 0.19           | 0.58        |
| 2031        | 33,772            | 3,617            | 3,606                  | 242,570        | 41,596               | 0.22           | 1.29                   | 45,213        | 37,389        | 33,783        | 0.12          | 0.19           | 0.63        |
| 2032        | 37,811            | 3,617            | 3,606                  | 257,254        | 46,522               | 0.22           | 1.37                   | 50,139        | 41,428        | 37,822        | 0.10          | 0.19           | 0.65        |
| 2033        | 40,148            | 3,617            | 3,606                  | 265,784        | 49,372               | 0.22           | 1.41                   | 52,989        | 43,765        | 40,159        | 0.09          | 0.19           | 0.67        |
| 2034        | 41,454            | 3,617            | 3,606                  | 270,598        | 50,965               | 0.22           | 1.44                   | 54,582        | 45,071        | 41,465        | 0.09          | 0.19           | 0.68        |
| 2035        | 42,199            | 3,617            | 3,606                  | 273,347        | 51,873               | 0.22           | 1.45                   | 55,490        | 45,816        | 42,210        | 0.09          | 0.19           | 0.68        |
| 2036        | 42,625            | 3,617            | 3,606                  | 274,922        | 52,394               | 0.22           | 1.46                   | 56,011        | 46,242        | 42,636        | 0.08          | 0.19           | 0.69        |

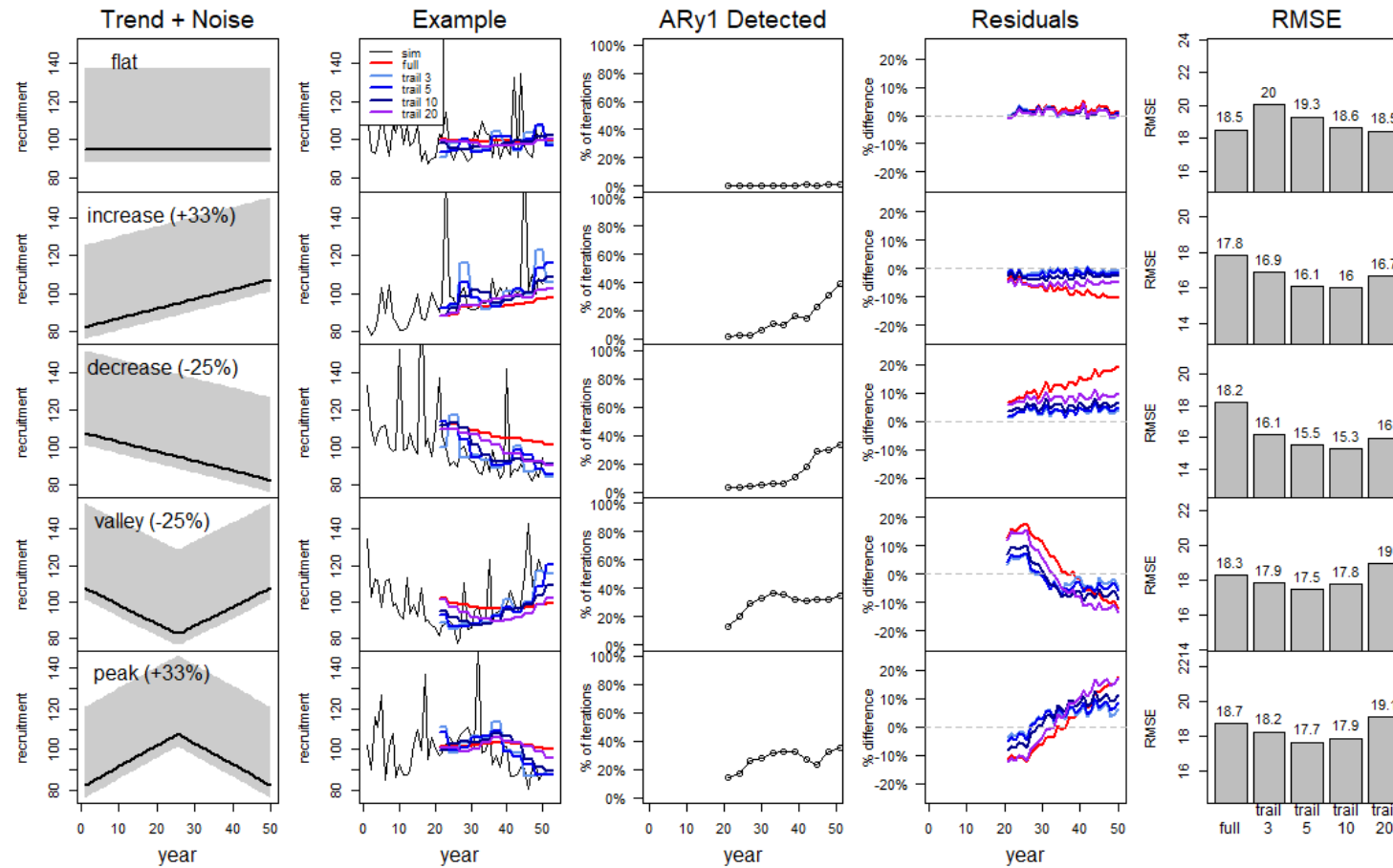
**Table 5. Additional sensitivity to project recruitment at the most recent 10-year average and NAA at the most recent 5-year average. Light gray indicates the bridge year (2026), and dark gray indicates the short-term projection period (2027-2031). The stock is not projected to be rebuilt under this projection scenario.**

| Year | Mobile Catch (mt) | Fixed Catch (mt) | Canada (NB) Catch (mt) | SSB    | Mobile Gear OFL (mt) | Mobile Fleet F | SSB/SSBmsy | OFL (mt) | ABC (mt) | ACL (mt) | P(overfished) | P(overfishing) | P(rebuild) |
|------|-------------------|------------------|------------------------|--------|----------------------|----------------|------------|----------|----------|----------|---------------|----------------|------------|
| 2026 | 9,134             | 4,031            | -                      | 18,147 | -                    | 0.52           | 0.10       | -        | 13,165   | 8,034    | 1.0           | 1.0            | 0.0        |
| 2027 | -                 | 5,283            | 5,131                  | 40,127 | 5,788                | 0.00           | 0.21       | 11,071   | 5,283    | 152      | 0.9           | 0.0            | 0.0        |
| 2028 | 1,477             | 5,283            | 5,131                  | 41,579 | 6,203                | 0.06           | 0.22       | 11,485   | 6,760    | 1,629    | 0.9           | 0.0            | 0.0        |
| 2029 | 1,515             | 5,283            | 5,131                  | 38,781 | 5,959                | 0.07           | 0.21       | 11,242   | 6,797    | 1,666    | 1.0           | 0.0            | 0.0        |
| 2030 | 1,355             | 5,283            | 5,131                  | 38,207 | 6,055                | 0.06           | 0.20       | 11,338   | 6,638    | 1,507    | 1.0           | 0.0            | 0.0        |
| 2031 | 1,383             | 5,283            | 5,131                  | 38,195 | 6,327                | 0.06           | 0.20       | 11,609   | 6,666    | 1,535    | 1.0           | 0.0            | 0.0        |
| 2032 | 1,388             | 5,283            | 5,131                  | 38,092 | 6,349                | 0.06           | 0.20       | 11,631   | 6,670    | 1,539    | 1.0           | 0.0            | 0.0        |
| 2033 | 1,362             | 5,283            | 5,131                  | 37,819 | 6,269                | 0.06           | 0.20       | 11,551   | 6,645    | 1,514    | 1.0           | 0.0            | 0.0        |
| 2034 | 1,333             | 5,283            | 5,131                  | 37,673 | 6,222                | 0.06           | 0.20       | 11,505   | 6,615    | 1,484    | 1.0           | 0.0            | 0.0        |
| 2035 | 1,317             | 5,283            | 5,131                  | 37,600 | 6,198                | 0.06           | 0.20       | 11,481   | 6,600    | 1,469    | 1.0           | 0.0            | 0.0        |
| 2036 | 1,310             | 5,283            | 5,131                  | 37,565 | 6,186                | 0.05           | 0.20       | 11,469   | 6,592    | 1,461    | 1.0           | 0.0            | 0.0        |

## Figure

**Figure 1.** PDT's recruitment simulation to look at WHAM-like recruitment estimates (i.e., similar length, signal, and noise) to compare different assumptions of trailing average recruitment in the projections.

Simulations: 100 iterations of 50 years of trend + 2 SD of lognormal noise  
Projections: geomean of past values every 3 years, starting in year 20



## APPENDIX I

# 2026 PDT Scoring Report for Atlantic Herring

## Executive Summary

Scores were discussed among the Atlantic Herring Plan Development Team (PDT) on July 7 and 14, 2026. These scores and weights can be viewed in the [NEFMC Risk Policy Application](#) and are combined to determine the level of risk that should be considered when making management decisions for Atlantic herring. Further information on the scores and the rationale for each factor provided by the PDT are included below.

| Report Year | Stock            | Factor       | Score |
|-------------|------------------|--------------|-------|
| 2026        | Atlantic herring | biomass      | -4    |
| 2026        | Atlantic herring | recruitment  | -4    |
| 2026        | Atlantic herring | climate      | -1    |
| 2026        | Atlantic herring | commercial   | 2     |
| 2026        | Atlantic herring | recreational | NA    |

## SSB / Stock Status

**Score:** -4

**Rationale:** The terminal year SSB (2025; 35,258 mt) is below the SSB threshold of 94,107 mt ( $188,214 \times 0.5$ ). The 2026 SSB<sub>msy</sub> is 188,214 mt.

**Sources:** 2026 Atlantic Herring Management Track Stock Assessment

## Recruitment

**Score:** -4

**Rationale:** Used the complete time series dataset to calculate the 25<sup>th</sup> and 75<sup>th</sup> percentiles (upper and lower quantile), establishing 3 regimes (below-average, average, above-average recruitment). In the last 5 years (2021-2025), there were no above-average years, 1 average year, and 4 below-average years, resulting in a score of -4.

**Sources:** 2026 Atlantic Herring Management Track Stock Assessment

## Climate Vulnerability

**Score:** -1

**Level:** Species level

**Rationale:** Moderate climate vulnerability. Pre-scored

**Sources:** Hare et al 2016

## *Commercial Fishery Characterization*

**Score:** 2

**Stress Level:** Moderate stress

### *Utilization*

**Sub-factor Score:** 0

**Rationale:** Based on fishery catch and ACLs for FY 2023, 2024 and 2025.

**Sources:** [2025-2027 Atlantic Herring Specifications SIR](#), Table 4 (US quota and catch, FY 2008-2023); 2024, received from GARFO; [full year in-season report for FY 2025](#).

### *Communities*

**Sub-factor Score:** 1

**Rationale:** Set at 1 for all NEFMC stocks based on a regional port commercial fishing activity analysis.

**Sources:** NEFMC Risk Policy Concept Appendix I

### *Revenue*

**Sub-factor Score:** 1

**Rationale:** Fishery revenue has been below average in 3 of the last 5 years (2021-2023) using a time series from 2012-2024. Calculated the 25<sup>th</sup> percentile (\$7,822,524) and 75<sup>th</sup> percentile (\$35,749,339) to identify the below average, average, and above average states, then identified the state for each year from 2020-2024.

**Sources:** NOAA Fishery Performance Measures herring FMP revenue data, accessed 7/2026.

### *Fisheries Interactions*

**Sub-factor Score:** 0

**Rationale:** The Atlantic herring quota is not currently constraining any other fisheries, though it may limit the ability to prosecute the Atlantic mackerel fishery moving forward.

**Sources:** NA

### *AP Input*

**Sub-factor Score:** 0

**Rationale:** Advisors generally agreed that the PDT scores for Commercial Fishery

Characterization were appropriate and still correct, though there were a few differing opinions and some additional context was provided. With regards to utilization, an Advisor noted that while the numbers are correct, the increased 2025 quota was not in place until December 2025, and there were challenges harvesting at that time due to weather. Also, a few Advisors felt that the Atlantic herring quota does impact the mackerel fishery, particularly as mackerel quotas are increasing.

**Sources:** NA

### *Recreational Fishery Characterization*

There is no recreational fishery for this stock. Thus, there is no score for this factor.

# 2026 Risk Policy Report for Atlantic herring

August 06, 2026

| Factor                     | Value                         | Supporting Information                                                                                                                                                                                                                                     |
|----------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Assessment and Uncertainty | Assessment Type               | The stock has an analytical assessment.                                                                                                                                                                                                                    |
|                            | Assessment Model              | WHAM                                                                                                                                                                                                                                                       |
|                            | Terminal Assessment Year      | 2025                                                                                                                                                                                                                                                       |
|                            | Retrospective Pattern         | There was minor retrospective pattern.                                                                                                                                                                                                                     |
|                            | Retrospective Values          | SSB Mohn's $\rho=0.22$ ; F Mohn's $\rho=-0.04$                                                                                                                                                                                                             |
|                            | Data Used                     | US and Canada commercial landings; NEFSC spring/fall bottom trawl surveys; NEFSC summer (shrimp) survey; NEFSC acoustic survey (collected on fall bottom trawl survey)                                                                                     |
|                            | Missing Data                  | 2025 acoustic survey data is missing.                                                                                                                                                                                                                      |
|                            | Uncertainty Sources           | No definitive explanation for continued poor recruitment; natural mortality; stock structure/ mixing with Nova Scotian & Bay of Fundy herring; numbers-at-age random effects imply that abundance of older herring is declining, no definitive explanation |
| Biomass                    | Overfished                    | The stock is overfished.                                                                                                                                                                                                                                   |
|                            | Overfishing                   | Overfishing is not occurring for this stock.                                                                                                                                                                                                               |
|                            | Rebuilding Plan               | The stock is in a rebuilding plan.                                                                                                                                                                                                                         |
|                            | Rebuilding Target             | 2031                                                                                                                                                                                                                                                       |
|                            | SSB                           | 35,258 mt                                                                                                                                                                                                                                                  |
|                            | Relative SSB                  | 19% of SSBMSY proxy (188,214 mt)                                                                                                                                                                                                                           |
| Recruitment                | Recruitment is estimated      | Yes                                                                                                                                                                                                                                                        |
|                            | Recruitment Model             | WHAM (iid random effects for recruitment)                                                                                                                                                                                                                  |
|                            | Initial year of time series   | 1987                                                                                                                                                                                                                                                       |
|                            | Recruitment estimates         | 743,734 mt (2023), 456,155 mt (2024), 1,966,904 mt (2025)                                                                                                                                                                                                  |
|                            | Other Recruitment Information | Continued poor recruitment, reason is unknown.                                                                                                                                                                                                             |
| Climate Vulnerability      | Climate Vulnerability         | Moderate climate vulnerability                                                                                                                                                                                                                             |
|                            | Climate Direction             | Negative directional effect of climate change                                                                                                                                                                                                              |

|                                       |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fish Condition                        | No Of Prey                                 | 14                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                       | Prey Information                           | Copepods, amphipods, small crustaceans/fish, fish larvae                                                                                                                                                                                                                                                                                                                                                                    |
| Commercial Fishery Characterization   | Commercial Revenue                         | 3.3 million (USD, 2022); 5.9 million (USD, 2023); 7.9 million (USD, 2024)                                                                                                                                                                                                                                                                                                                                                   |
|                                       | Commercial Catch                           | 10,228 mt (2023), 10,439 mt (2024), 3,163 mt (2025; in-season year-end quota monitoring report)                                                                                                                                                                                                                                                                                                                             |
|                                       | Commercial Management Uncertainty Buffer   | FY 2025 = 4,031 mt                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                       | Commercial Vessels                         | 20 vessels (2022), 25 vessels (2023), 22 vessels (2024)                                                                                                                                                                                                                                                                                                                                                                     |
|                                       | Commercial Dealers                         | Not provided                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                       | Commercial Ports                           | Stonington, Rockland, Portland (ME); Gloucester, New Bedford (MA); Narragansett/Pt. Judith (RI); Montauk (NY); Cape May (NJ)                                                                                                                                                                                                                                                                                                |
|                                       | Other Quota Reliance                       | Fishery does not rely on quota of another species                                                                                                                                                                                                                                                                                                                                                                           |
|                                       | Other Fisheries                            | Not provided                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                       | Recreational Fishery                       | There is not a recreational fishery, and thus there is no recreational fishery trend data available.                                                                                                                                                                                                                                                                                                                        |
|                                       | Recreational Catch                         | Not provided                                                                                                                                                                                                                                                                                                                                                                                                                |
| Recreational Fishery Characterization | Recreational Trips                         | Not provided                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                       | Recreational Management Uncertainty Buffer | Not provided                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                       | Recreational Ports                         | Not provided                                                                                                                                                                                                                                                                                                                                                                                                                |
| Other Socioeconomic Information       | Other Socioeconomic Information            | 70% commercial fishery utilized for lobster bait (primary market in June-November), 30% for food and other uses (aquaculture feed, canned pet food, livestock food, industrial/biomedical purposes). Linkage between herring and recreational fishery, ecotourism industry. Link between herring fishery and mackerel fishery (can be landed on the same trip). River herring and shad bycatch in Atlantic herring fishery. |
|                                       | FMSY Reference Point                       | 0.272                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                       | SSB MSY Reference Point                    | 188,214 (123,672 - 286,439)                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                       | MSY Reference Point                        | 55,211 (35,747 - 85,273)                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                       | OFL                                        | FY 2026 = 23,491 mt                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                       | ABC                                        | FY 2026 = 13,165 mt                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                       | Harvest Control Rules                      | ABC control rule: when biomass $\geq 0.5$ for the ratio of SSB/SSBMSY, Fmax is 80% of FMSY. As B declines, F declines linearly, and if B falls below 0.1, then ABC is set to zero.                                                                                                                                                                                                                                          |

|                           |                                  |                                                                                                                                                                                                                     |
|---------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Additional<br>Information | Accountability<br>Measures       | In-season possession limit changes to prevent exceeding sub-ACLs or total ACL; overage deductions and carryover provisions; AM to close large areas when GB or GOM haddock sub-ACLs or RH/S catch caps are reached. |
|                           | Significant Catch<br>Present     | There was not significant catch in other fisheries                                                                                                                                                                  |
|                           | Significant Catch<br>Information | Not provided                                                                                                                                                                                                        |

## Scores and Weights

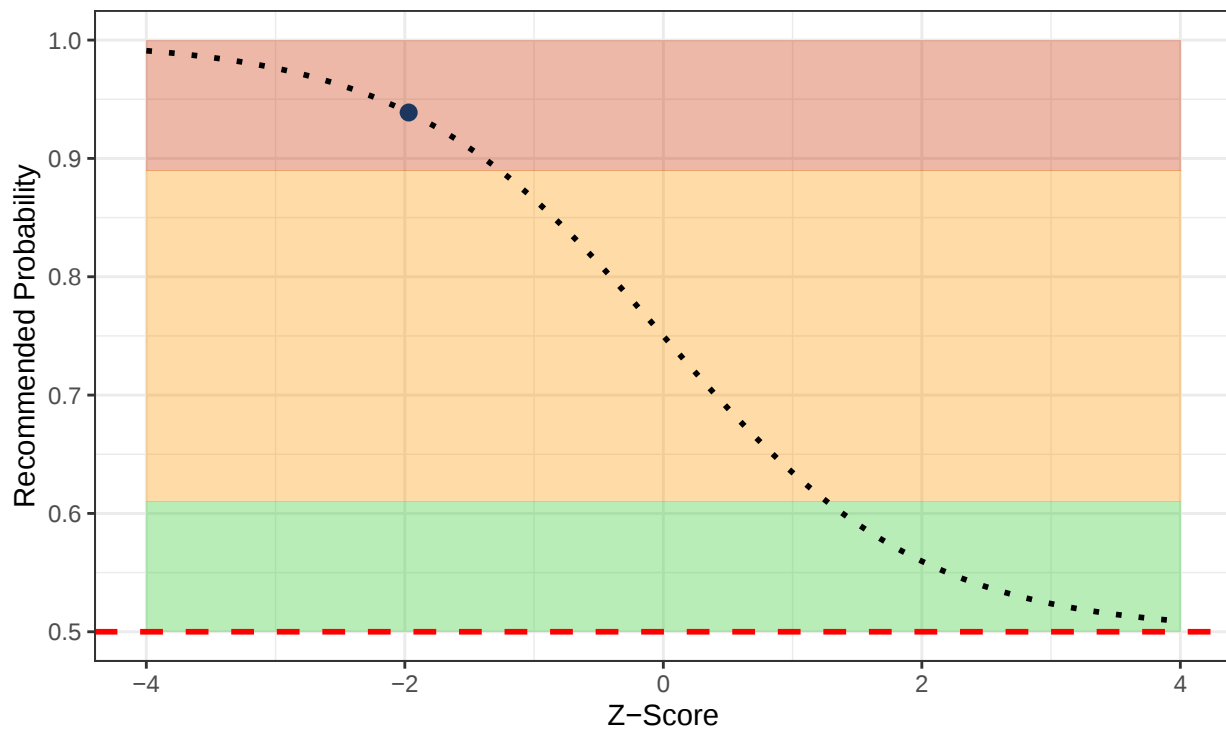
| Report Year | Stock            | Factor      | Score | Average Weight |
|-------------|------------------|-------------|-------|----------------|
| 2026        | Atlantic herring | Biomass     | -4    | 3.44           |
| 2026        | Atlantic herring | Recruitment | -4    | 2.89           |
| 2026        | Atlantic herring | Climate     | -1    | 2.11           |
| 2026        | Atlantic herring | Commercial  | 2     | 2.83           |

The calculated z-score is **-1.97**

The recommended probability is **93.9%**

## Recommended Probability

The level of risk that should be considered based on the z-score and recommended probability for Atlantic herring is *Low Risk Tolerance*.



### Legend

— MSA 50% probability limit      ● Recommended Probability

### Tiers

High Risk Tolerance      Intermediate Risk Tolerance      Low Risk Tolerance