



New England Fishery Management Council

50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116

John Quinn, J.D., Ph.D., *Chairman* | Thomas A. Nies, *Executive Director*

To: Tom Nies, Executive Director

From: Scientific and Statistical Committee

Date: May 18, 2021

Subject: Terms of Reference – (1) Technical basis of draft rebuilding plan options for Atlantic herring; (2) Review of NEFSC 2021 State of the Ecosystem Report

The Scientific and Statistical Committee (SSC) met on March 26, 2021 via webinar to address the following terms of reference (TOR):

Review preliminary work by the Herring Plan Development Team (PDT) and comment on the initial projections developed by the PDT to evaluate the rebuilding plan alternatives. Specifically, the PDT has developed projections using two different assumptions about recruitment, “average” and “autocorrelated” recruitment. The SSC should answer the questions: Are these projections technically sound and appropriate ways to evaluate the potential impacts of the rebuilding plan? Does the suite of the projections capture the potential states of nature appropriately?

Second, the PDT has prepared an additional set of projections to help evaluate the longer-term impacts of the rebuilding plan. These projections either maintain the same control rule for the entire time series or apply a default control rule, in this case the control rule approved in Amendment 8, after the stock is estimated to be rebuilt. The SSC should answer the questions: Are the projections technically sound based on the scenarios used?

Finally, the SSC will receive a presentation on the Northeast Fisheries Science Center’s Ecosystems Status Report and provide the Council any recommendations about possible revisions to the report for the next year.

To address these TORs, the SSC considered the following information:

- 1.1 Presentation: Herring Plan Development Team Report on Initial Development of Rebuilding Strategies for Atlantic Herring (NEFMC and NEFSC staff).
- 1.2 Memo from Herring PDT to SSC re Initial Development of Rebuilding Strategies for Atlantic Herring (March 16, 2021)
- 1.3 Letter GARFO to Council re Atlantic herring stock status (October 13, 2020)
- 1.4 2020 Operational assessment for Atlantic herring (June 2020). Available at: <https://www.nefmc.org/library/final-report-key-documents-herring-management-track-assessment-peer-review-meeting-june-22-25-2020>
- 1.5 National Standard 1 Guidelines – Optimum Yield (Section 600.310 (j) Council actions to address overfishing and rebuilding for stocks and stock complexes).
- 2.1 2021 State of the Ecosystem and Current Conditions (Draft)
- 2.2 State of the Ecosystem 2020: New England. NOAA/NEFSC. Available at: <https://repository.library.noaa.gov/view/noaa/23890>
- 2.3 SSC Report to NEFMC re Ecosystems Report – April 2020

SSC Attendance

Dr. Birkenbach, Dr. Chen, Dr. Collie, Dr. Jordaan, Dr. Friedland, Dr. Kerr, Dr. McManus, Mr. Maguire, Dr. McNamee, Dr. Merrick, Dr. O'Keefe, Dr. Serchuk, Dr. St. Martin, Mr. Stockwell, Dr. Uchida, Dr. Wiedenmann, Dr. Williams

SSC Response

Atlantic herring rebuilding strategies

The SSC received a memo and a thorough overview of the rebuilding strategies for Atlantic herring. The SSC was asked to address specific questions from the Herring PDT about some preliminary approaches for rebuilding herring; therefore, the report is structured around those questions. The first question asked if the projections were a technically sound and appropriate way to evaluate the potential impacts of the rebuilding plan. The SSC felt that all the techniques being used in the rebuilding analyses were both technically sound and appropriate, though some were more realistic than others, and some had more or less risk associated with them as described below. The SSC went on to critique how some of the assumptions were likely to reflect possible states of nature, which were in response to the second question posed in the TORs.

The second question asked if the suite of projections capture the potential states of nature appropriately. The SSC had commented in the past that the standard approach for using average recruitment from the entire time series could be a risky assumption that could lead to optimistic rebuilding of the population if average recruitment were not achieved during the rebuilding period. The SSC felt that the autocorrelated recruitment method developed by the PDT was a good technique to better capture the short-term properties of recruitment, and therefore felt that this was a good addition to the recruitment assumptions for the projections. While this method was a better method for capturing short-term recruitment trends, the SSC felt the longer-term recruitment trends were still uncertain. There are dynamics occurring that are not yet captured by the quantitative process that should continue to be explored as ways to define additional states of nature. There have been changes to copepod assemblages in the GOM, there is an interaction with the haddock population and herring recruitment, and other environmental covariates may also influence the herring population through recruitment. These all impact the possible states of nature and could be investigated further in the future, though the SSC recognizes these investigations are likely not viable for development in the current rebuilding plan. The SSC appreciated the PDT exploration of other modeling techniques such as empirical dynamic modeling as alternatives to the autocorrelation approach, and the SSC supports the continuation of these explorations into the next assessment process.

Public comment made during the meeting touched on consideration of the impact of the rebuilding strategies on fishing communities. The SSC agreed that this was an important consideration. They went on to state that the point of the control rule developed under Amendment 8 of the Atlantic Herring Fishery Management Plan should have accounted for some of these types of impacts though recognized the desire to explore other potential options in this rebuilding plan to make sure these types of impacts are covered by the strategies explored.

State of the Ecosystem Report

The SSC was provided a thorough review of the State of the Ecosystem Report (SOE). The new structure of the report was appreciated by the SSC as was the report in general. The SSC felt that the information contained in the report was valuable for consideration in the management process, and the positive evolution of the report since its inception was appreciated by the group. The SSC made several editorial comments, which were subsequently provided to the NEFSC directly after the meeting and will

not be captured in this report. Beyond the editorial comments the SSC offered the following suggestions for consideration as modifications to the report:

- Ocean acidification is a factor contained in the MAFMC report and could be considered as an addition to the New England version of the report as well.
- There was discussion on the trends presented in the report, with a note that long term trends would be more valuable if shorter term trends were also presented for context.
- There was general appreciation for the socio-economic information contained in the report, though the SSC felt there was more scope to broaden this information even further.
 - One of the areas that can be expanded in this subset of the information is with regard to the spatial nature of the socio-cultural information.
 - It was noted that the social-cultural data in the State of the Ecosystem report lacks historical depth while the economic data, which does have historical depth, lacks spatial resolution (i.e. community level metrics).
 - One of the pieces of economic information that the SSC felt would improve the report would be to focus more on commercial revenues than commercial profits.
- Finally, the SSC wondered if management objectives could be stated up front in the report as a way to provide context for the overall report.

There was a bit of discussion on how the information could be incorporated into stock assessments. As mentioned previously, a more directed subject specific series of reports is being developed for this purpose, so the NEFSC also recognizes the need to provide the information in a way that can be integrated into the quantitative processes for fish stocks. They are working towards this product in parallel with the SOE.

Conflict of Interest Modifications

Executive Director Nies described some modifications to the conflict of interest policies for the NEFMC and its SSC. He highlighted two particular areas of change that may be meaningful to the SSC. The SSC considered these modifications but did not have any major concerns with the proposed changes.