



New England Fishery Management Council

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Dr. John F. Quinn, *Chairman* | Thomas A. Nies, *Executive Director*

To: Tom Nies, Executive Director
From: Scientific and Statistical Committee (SSC)
Date: December 1, 2020

Subject: Terms of Reference – Overfishing levels (OFLs) and acceptable biological catch (ABC) recommendations for scallops for fishing years 2021 to 2022

The SSC met on November 23, 2020 via webinar to address the following terms of reference (TORs):

1. Review changes to meat weights and dredge efficiency used to develop 2020 survey estimates, and growth and selectivity parameters used in the SAMS model to project biomass. Evaluate the PDT's approach for addressing survey data gaps that resulted from canceled surveys due to the COVID-19 pandemic. Provide the Council with a recommendation as to whether these changes are appropriate.
2. Using reference points updated by the management track assessment (2020), and considering the Council's Risk Policy Statement, review the Scallop PDT's updated projections for the scallop resource, and provide the Council with OFL and ABC recommendations using the Council's ABC control rule for fishing years 2021 and 2022 (default).

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

- 1.1 Terms of Reference for Sea Scallops for November 17, 2020, SSC Meeting
- 1.2 SSC Final Report on OFL and ABC for Scallop Framework 32, November 22, 2019
- 1.3 Scallop PDT recommendations for 2021 and 2022 (default) OFL and ABC
- 1.4 Sea scallop assessment update from the Fall 2020 Management Track Assessment (September 2020)
- 1.5 Management Track Peer Review Panel Report (September 2020). See pp.8-12.
- 1.6 Risk Policy Matrix (2020) - Atlantic Sea Scallops
- 1.7 NEFMC Risk Policy Roadmap that includes the Risk Policy Statement and Implementation Plan, see pp. 4-5.
- 1.8 State of the Ecosystem Report for the Northeast U.S. Shelf – Available at:
<https://www.fisheries.noaa.gov/new-england-mid-atlantic/ecosystems/state-ecosystem-reports-northeast-us-shelf>
- 1.9 Scallop PDT recommendations for 2019-2020 (default) ABC, dated October 9, 2019
- 1.10 Yochum, N. and DuPaul, W.D. Journal of Shellfish Research, Vol. 27, No.2, 265-271, 2008.
- 1.11 Hart, D.R. Quantifying the tradeoff between precaution and yield in fishery reference points. ICES Journal of marine Science, doi.10.1093/icesjms/fss204
- 1.12 SARC 65 – Scallop Appendix A1 – Sea Scallop Growth
- 1.13 SARC 65 – Scallop Appendix A2 – Scallop Shell Height/Meat Weight Relationships
- 1.14 2020 Management Track Assessment – Appendix I, CASA Models
- 1.15 Scallop PDT Meeting Summaries
 - a. October 15-28, 2020 (four meetings)
- 1.16 SARC 65 Full Report if available (link)

INTRODUCTORY STATEMENT

This report contains four main sections. In the first section (“TOR”), the report provides the SSC’s recommendations and catch advice by TOR. The second section (“RATIONALE INCLUDING SIGNIFICANT SOURCES OF UNCERTAINTY”), discusses the SSC’s rationale for the recommendations and catch advice made in the first section. The third section (“ADDITIONAL COMMENTS”), provides additional relevant SSC discussion. The fourth section is a summary table with the OFL and ABC advice.

TOR

TOR 1 - Review changes to meat weights used to develop 2020 survey estimates, and growth and selectivity parameters used in the SAMS model to project biomass.

The SSC accepts the shell height to meat weight adjustments that have been used to develop the 2020 survey estimates, growth, and selectivity parameters used in the SAMS model to project biomass. The changes are appropriate and are consistent with methodologies and calculations historically used.

TOR 2 - Review the Scallop PDT’s updated projections for the scallop resource, and provide the Council with OFL and ABC recommendations for fishing years 2020 and 2021 (default)

The SSC accepts use of the SAMS model to determine stock status and for setting catch advice. The SSC considered the calculations provided by the PDT and recommends the following OFLs and ABCs (metric tons):

Year	OFL	ABC
2021	45,392	35,627
2022	41,926	32,872

RATIONALE INCLUDING SIGNIFICANT SOURCES OF UNCERTAINTY

TOR 1

As in previous years, the SSC agreed with the PDT’s use of area-specific shell-height to meat-weight parameter estimates derived from the dredge survey in the Nantucket Lightship region. This area seems to have different characteristics for these biological parameters, and it is therefore appropriate to use these estimates in the model. The SARC 65 and PDT recommended adjustment to the dredge efficiency in high density areas, based on comparison with visual surveys, is also supported by the SSC.

The SSC also agreed with the use of different growth assumptions to match slower growth of scallops in the Georges Bank and the Mid-Atlantic regions and to apply the SARC 65 Georges Bank Open Area selectivity curve as estimated in the CASA model in the Nantucket South area as the best approach for use in the SAMS model. The continued need to make area specific adjustments causes the SSC some concern, which is highlighted in the additional comments section of this report.

Despite this, the SSC agreed with the use of these adjustments for setting catch advice based on the best scientific information available.

TOR 2

The OFL was set as the equivalent of the catch associated with F_{msy} ($F=0.61$), which was adjusted downward during the 2020 management track assessment. The ABC control rule sets catch at a 25% probability of exceeding OFL ($F=0.45$), also adjusted downward from the previous estimate. These control rules are deemed adequate to account for the remaining scientific uncertainty in this fishery, therefore the SSC adopts the use of the model output and established control rule without modification for setting catch advice in 2021 and 2022.

ADDITIONAL COMMENTS

TOR 1

The SSC notes that the SAMS model seems to be having some difficulty capturing some of the recent stock changes. The SSC does understand and supports the need to make the adjustments noted above in an effort to produce the most reliable model results for setting catch advice, but spending time developing upgrades to the existing modeling framework seem needed at this point. The SSC felt this could happen on two tracks. A review of the SAMS forecasting model may be achievable under the new management track assessment process by upgrading the scallop assessment to a level 2 or 3 review. One explicit thing discussed by the SSC was looking into new treatments for recruitment assumptions in the SAMS model as an item that potentially could be addressed during a management track assessment in an enhanced review level. In parallel, a revamp of the SAMS model to allow for more spatial estimation would be another fruitful area to explore. The SSC recognizes that this would have to wait for the 2024 research track scheduled for this species. In summary, the SSC recommends a review of the SAMS model in the next management track assessment, and supports NEFSC's development of a geostatistical SAMS model for the 2024 research track assessment.

TOR 2

The SSC discussed the need to raise awareness about the decreasing biomass over the coming years. There has been a period of lower recruitment in the scallop stock, therefore the biomass will decline back to B_{msy} over the next few years in the absence of another large recruitment event. This loss of effective biomass is something that the NEFMC should take account of as they are looking forward over the next few years. That being said, the rotational management strategy used by the fishery appears to be effective at keeping harvest well below a level that would cause concern, therefore the SSC simply offers this comment as something to be aware of if the biomass decreases to a more critical level in the future.

SSC MEMBER ATTENDANCE

Dr. Birkenbach, Mr. Carroll, Dr. Collie, Dr. Jordaan, Dr. Kerr, Mr. Maguire, Dr. McNamee, Dr. Merrick, Dr. O'Keefe, Dr. Serchuk, Dr. Sullivan, Dr. Uchida, Dr. Wiedenmann, Dr. Williams

SUMMARY OF RECOMMENDATIONS

The following is a summary table for the OFL and ABC recommendations made during the November 2020 meeting.

Year	Stock	OFL	ABC	Method (Control Rule; Other)
'21	Scallops	35,627	45,392	Control rules were applied
'22		32,872	41,926	