



## New England Fishery Management Council

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Eric Reid, *Chairman* | Thomas A. Nies, *Executive Director*

### MEMORANDUM

**DATE:** October 6, 2021  
**TO:** Scientific and Statistical Committee (SSC)  
**FROM:** Tom Nies, Executive Director  
**SUBJECT:** **Terms of Reference – Overfishing levels (OFLs) and acceptable biological catch (ABC) recommendations for Atlantic sea scallops for fishing year 2022 and 2023 (default)**

#### Terms of Reference

1. Review information provided by the Scallop PDT on changes to scallop meat weights and dredge efficiency used to develop 2021 survey estimates, and growth and selectivity parameters used in the Scallop Area Management Simulation (SAMS) model to project biomass. Provide the Council with a recommendation as to whether these changes are appropriate.
2. Consider if the biomass estimates developed by PDT for areas of the Gulf of Maine that have been surveyed but are outside of the NGOM and the current Georges Bank scallop survey strata are appropriate to include in the biomass estimates for the resource as a whole in developing 2022 and 2023 OFL and ABC estimates.
3. Using reference points updated by the 2020 management track assessment, and considering the Council's Risk Policy Statement, review the Scallop PDTs updated projections for the scallop resource, including estimates from the Gulf of Maine and Northern Gulf of Maine management unit, and provide the Council with OFL and ABC recommendations using the Council's ABC control rule for fishing years 2022 and 2023 (default).

#### Background

##### 2020 SSC Recommendations

1. The SSC noted that the SAMS model seems to be having some difficulty capturing some of the recent stock changes. 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.
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, meaning 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.

## **Other Background**

Framework 34 to the Scallop FMP will include fishery specifications for 2022, as well as default measures for 2023. The Council requests that the SSC provide OFL and ABC recommendations for these years to be included in Framework 34. This is the first year that biomass from the Gulf of Maine and Northern Gulf of Maine management (NGOM) area is included as part of the OFL and ABC, which was changed in Amendment 21 to the Scallop FMP. The PDT has also developed projections for areas of the Gulf of Maine that have been surveyed but are outside of the NGOM and the current Georges Bank scallop survey strata.

The SSC final report from last year has been included for reference (Doc. 1.2), as has the summary report from the 2020 scallop management track assessment which was reviewed in September of 2020 (Doc. 1.4). The Council is requesting that the SSC review adjustments to survey data and projections proposed by the Scallop PDT (TOR#1). The OFL and ABC projections were developed using survey data collected in May, June, and July of 2021. Estimates for Georges Bank and the Mid-Atlantic are presented separately from the Gulf of Maine and Northern Gulf of Maine. This is to allow for comparisons of the Georges Bank and Mid-Atlantic estimates with previous years (SSC Recommendations #1 & #2). This will also allow the SSC to evaluate the estimates for the Gulf of Maine and Northern Gulf of Maine individually. As the scallop resource is managed as a single stock throughout its range, the Council requests that the SSC provide an OFL and ABC recommendation that combines all appropriate areas for 2022 and 2023.

The 2020 management track assessment updated biological reference points for the scallop resource. The current ABC control rule sets ABC at a level that has a 25-percent probability of exceeding OFL (*i.e.*, a 75-percent probability that it will not exceed OFL). The F rate associated with OFL decreased from  $F=0.64$  to  $F=0.61$  in the 2020 Management Track Assessment. The ABC F rate with a 25% chance of exceeding OFL is estimated at  $F=0.45$ . In 2019, the stock was not overfished, and overfishing was not occurring. The OFL and ABC estimates for 2022 and 2023 (default) are based on these updated reference points and are provided in Document 1.3.

As with previous years, the PDT memo will address several data treatment issues. Dredge efficiency in high density areas continues to be an issue in the Nantucket Lightship South area, where there are high densities of slow growing scallops. The Scallop PDT recommends using finer scale meat weight estimates based on data from the 2016-2021 VIMS dredge surveys in the Nantucket Lightship South area. Fishery selectivity assumptions for scallops in high density areas of the Nantucket Lightship South were adjusted to account for very slow growth.

The PDT continued to compare survey results with projections from the previous year. In the three years since the 2018 benchmark assessment, projections have been overly optimistic compared to the survey results, with some exceptions.

The 2018 benchmark assessment indicated that there had been substantial changes in growth over time, with growth rates tending to increase from 1994-2012. In recent years, growth appears to have slowed based on survey size-frequencies. The 2020 update assessment modified growth assumptions in the CASA model by applying slower growth rates in the Mid-Atlantic and Georges Bank in recent years to account for the perceived change in growth. Based on the reduced growth expectations in the CASA model, and what appears to be an overestimation of biomass in recent years, the PDT reduced the maximum growth potential ( $L_{\infty}$ ) across most of Georges Bank and the Mid-Atlantic in the SAMS model in 2020. Comparison of 2021 survey results with last year's projections suggest that this change is appropriate to continue, and the

PDT used slower growth assumptions again for the 2022 and 2023 projections. Reducing  $L_{\infty}$  has the net effect of reducing exploitable biomass estimates for the coming fishing years.

The OFL and ABC estimates are based on projections of exploitable biomass from all areas that are open or closed to scallop fishing. Allocations to the fishery are based on projected landings from areas open to the fishery.

### Information

- 1.0 Staff Presentation (*to be provided*)
- 1.1 Terms of Reference for Sea Scallops for October 13, 2021, SSC Meeting
- 1.2 SSC Final Report on OFL and ABC for Scallop Framework 33, December 1, 2020
- 1.3 Scallop PDT recommendations for 2022 and 2023 (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 (2021) - 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>

### Additional Background Documents

- 1.9 Scallop PDT recommendations for 2021-2022 (default) ABC, dated November 18, 2020.
- 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. September 1 – October 1 (five meetings)
- 1.16 SARC 65 Full Report ([link only](#))
- 1.17 Hodgdon, C.T., Torre, M., and Chen, Y. 2020. Spatiotemporal variability in Atlantic sea scallop (*Placopecten magellanicus*) growth in the Northern Gulf of Maine. J. Northw. Atl. Fish. Sci., 51: 15–31. <https://doi.org/10.2960/J.v51.m729>
- 1.18 Chang, J.H., Shank, B.V. and Hart, D.R., 2017. A comparison of methods to estimate abundance and biomass from belt transect surveys. Limnology and Oceanography: Methods, 15(5), pp.480-494.
- 1.19 Hart, D. R., Munroe, D. M., Caracappa, J. C., Haidvogel, D., Shank, B. V., Rudders, D. B., Klinck, J. M., Hofmann, E. E., and Powell, E. N. 2020. Spillover of sea scallops from rotational closures in the Mid-Atlantic Bight (United States). – ICES Journal of Marine Science, 77: 1992– 2002.

- 1.20 Ridders, D., S. Roman, A. Trembanis, and D. Ferraro. 2019. A study to assess the effect of tow duration and estimate dredge efficiency for the VIMS sea scallop dredge. survey: final report. Marine Resource Report No. 2019-04. Virginia Institute of Marine Science, William & Mary. <https://dx.doi.org/doi:10.25773/g9sh-qt28>.