



New England Fishery Management Council

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

DATE: November 21, 2022

TO: Tom Nies, Executive Director

FROM: Scientific and Statistical Committee (SSC)

SUBJECT: **Terms of Reference – Overfishing levels (OFLs), acceptable biological catches (ABC), and discard deduction approach for monkfish, 2023 through 2025**

The SSC met on October 26, 2022, in Boston, MA to address the following Terms of Reference (TORs):

Overfishing Limits and Acceptable Biological Catches TORs

1. Review information from the September 2022 management track assessment for monkfish and provided by the Monkfish Plan Development Team (PDT).
2. Comment on the conclusion of the assessment and peer review that the stock status of monkfish is unknown and the applicability of the NOAA Fisheries [Procedural Guidance for Changing Assessed Stock Status from Known to Unknown](#).
3. Recommend overfishing limits (OFLs) and acceptable biological catches (ABCs) for monkfish in both the northern and southern management areas for fishing years (FY) 2023-2025 that will prevent overfishing, meet the objectives of the fishery management plan, and consider the Council's Risk Policy Statement.

Discard Deduction Approach TORs

1. Review analyses provided by the Monkfish PDT of alternate approaches for setting the discard deduction from the annual catch target when setting specifications.
2. Recommend an approach for setting the discard deduction, commenting on the PDT's recommendations.

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

Information

1. 2022 Management Track Assessment of Monkfish
 - a. [NEFSC staff presentation](#)
 - b. [Stock assessment report](#)
 - c. [Peer review report](#)
2. [Presentation: Monkfish PDT report \(NEFMC staff\)](#)
3. [Memo from Monkfish PDT to SSC re OFLs and ABCs FY 2023-2025, October 19, 2022](#)
4. NEFMC Risk Policy
 - a. [Risk Policy Matrix for Monkfish](#)
 - b. [NEFMC Risk Policy Road Map](#)
5. [NOAA Fisheries Procedural Guidance for Changing Assessed Stock Status from Known to Unknown](#)
6. [Memo from SSC to Council re OFLs and ABCs for FY 2020-2022](#)

7. Discard deduction approaches
 - a. [Memo from Monkfish PDT to SCC re discard deduction approaches, October 19, 2022](#)
 - b. [O'Keefe C. \(2020\). Evaluation of Methods to Estimate Monkfish Discards for Calculating Total Allowable Landings. Fishery Applications Consulting Team LLC with support from the New England Fishery Management Council. 32 p.](#)
 - c. [O'Keefe C. \(2021\). 2021 Evaluation of Monkfish Discard Estimation for Calculating Total Allowable Landings. Fishery Applications Consulting Team LLC with support from the New England Fishery Management Council. 19 p.](#)
8. Background Information
 - a. [2022 Monkfish Fishery Performance Report](#)
 - b. NOAA/NEFSC. 2022 State of the Ecosystem Reports. Available at: <https://www.fisheries.noaa>

SSC members in attendance

Mike Carroll, Jeremy Collie, Yong Chen, Kevin Friedland, Adrian Jordaan, Lisa Kerr, Conor McManus, Jason McNamee, Richard Merrick, Cate O'Keefe, Terry Stockwell, Sam Truesdell, John Wiedenmann, Lindsey Williams

TERMS OF REFERENCE – Overfishing Limits and Acceptable Biological Catches

1. *Review information from the September 2022 management track assessment for monkfish and provided by the Monkfish Plan Development Team (PDT).*

Presentations from Northeast Fisheries Science Center (NEFSC) staff and the Monkfish Plan Development Team (PDT) were provided to the SSC regarding the recent management track assessment for monkfish. The management track assessment changed the method for calculating discards, reinserted discard records that had been manually deleted, and reduced the discard mortality rate in the scallop fishery from 100% to 64% based on recently published literature¹. The assessment applies the ISmooth approach (formerly referred to as PlanBSmooth) to estimate a direction and rate of change in NEFSC survey indices that forms the basis for catch advice.

The SSC recommends continued use of the Ismooth index-based assessment as the basis for catch advice for monkfish in both the Northern and Southern Management Areas.

2. *Comment on the conclusion of the assessment and peer review that the stock status of monkfish is unknown and the applicability of the NOAA Fisheries [Procedural Guidance for Changing Assessed Stock Status from Known to Unknown](#).*

The Ismooth index-based approach precludes formal estimation of reference points and stock status for monkfish in both Management Areas. The 2022 Management Track peer review panel recommended listing stock status as unknown. The SSC reviewed the NOAA Fisheries Procedural Guidance for changing status from known to unknown and commented that monkfish stock status be switched to unknown based on the time since the index-based method was introduced (Criterion B, Aging Stock Assessment) and because of short-comings of the previous analytic assessment (Criterion C3, Reject New Assessment, Flawed Previous Model).

¹ Weissman, A., Knotek, R., Mandelman, J., Rudders, D., Roman, S., and Sulikowski, J. 2021. Determining discard mortality of monkfish in a sea scallop dredge fishery. North American Journal of Fisheries Management 41: 856-870.

The SSC concurs with the conclusion that monkfish stock status is presently unknown given problems identified with the previously rejected length-based assessment and the time elapsed since the last analytical assessment in 2016.

3. *Recommend overfishing limits (OFLs) and acceptable biological catches (ABCs) for monkfish in both the northern and southern management areas for fishing years (FY) 2023-2025 that will prevent overfishing, meet the objectives of the fishery management plan, and consider the Council's Risk Policy Statement.*

The SSC recommends OFL be unknown for the Northern and Southern Management Areas for FY 2023-2025, and ABCs of 5,526 mt for the Northern Management Area and 3,766 mt for the Southern Management Area to be held constant for FY 2023-2025.

The unknown OFL advice is based on the absence of analytical assessments and biological reference points for monkfish, which preclude determination of OFL for either the Northern or Southern Fishery Management Areas. The ABC advice is based on applying the ISmooth multipliers to the most recent 3-year average catch to calculate the Annual Catch Targets (ACT) for the Northern and Southern management areas, the ACT is increased by the management uncertainty buffer (3% for monkfish) to calculate ABCs. The SSC noted that simulations conducted by the Index-Based Methods Working Group indicated that the ISmooth approach is expected to prevent overfishing.

RATIONALE INCLUDING SIGNIFICANT SOURCES OF UNCERTAINTY

The SSC concurred with suggestions and recommendations from the 2022 Management Track assessment and Peer Review Panel that OFL for Northern and Southern monkfish is unknown. The 2022 Management Track Peer Review Panel did not provide consensus advice on whether the ISmooth multipliers should be applied to the existing ABC or to recent realized catch. The PDT highlighted that recent ABCs (since 2014) were propagated from the previous analytical assessment, which was rejected as the basis for catch advice in 2016 due to flawed ageing methods and recommended that ABCs for FY 2023-2025 should be based on applying the ISmooth multipliers to realized average catch in FY 2020-2022. The SSC noted that recent catches, managed under Total Allowable Landings (TAL), have been substantially less than the ABCs due to several factors, including discard deductions, shifts in scallop fishing effort distribution, and low prices causing uncertainty about relative stock status. They highlighted that setting ABC based on applying the ISmooth multipliers to recent realized catch can create a ratchet effect, whereby, for any given survey trend, catching less than the ABC (e.g., by reducing discards, lack of targeting due to market conditions, etc.) results in a lower ABC in subsequent years that would have resulted if the entire ABC was caught. Since discards are not allocated or controlled in the monkfish fishery, but instead deducted from the ACT, the SSC recommends that catch advice derived from the ISmooth approach corresponds more closely to the ACT than the ABC.

The SSC recommends setting Northern and Southern Management Area monkfish ABCs based on:

- ACT = ISmooth multipliers applied to most recent 3-year average catch
- ABC = ACT increased by 3% management uncertainty buffer
 - For the Northern Management Area:
 - $ACT = 0.829 * 6,465 = 5,360$ mt
 - $ABC = 5,360 * 103\% = 5,526$ mt
 - For the Southern Management Area:
 - $ACT = 0.646 * 5,655 = 3,653$ mt
 - $ABC = 3,653 * 103\% = 3,766$ mt

The SSC discussed how this recommended approach for monkfish, to apply the ISmooth multipliers to the ACT, differs from other SSC recommended approaches for catch advice based on PlanBSmooth assessment methods. The SSC noted that the Monkfish Fishery Management Plan (FMP) includes an ACT, which is not applied in other FMPs where the PlanBSmooth approach has been used as the basis for catch advice. The ACT is intended to account for management uncertainty in the monkfish fishery and can be adjusted by the Council. Additionally, the SSC noted that discards in the monkfish fishery are not allocated or managed under sub-Annual Catch Limits (sub-ACLs) as is done in other FMPs. The SSC’s recommended reductions in ABC compared with previous levels reflect the PDT’s concern about declining survey indices, particularly in the Southern Management Area. The SSC highlighted high utilization of monkfish in the Northern Management Area relative to TALs with historically lower discard rates. The SSC noted that the recommended deviation in the application of the ISmooth approach may not be warranted for other stocks.

ADDITIONAL COMMENTS

The SSC discussed future needs and technical recommendations for the monkfish populations in the two management areas. The SSC recognizes that improved age and growth information for conducting analytical assessments are unlikely to be available in the foreseeable future. The SSC concurs with the 2022 Management Track Peer Review Panel that alternative assessment methods, including cohort tracking, tagging studies, delay-difference models, and catch-survey analysis, could be pursued. If successful, such methods could provide a basis for estimating reference points and stock status.

The SSC recommends consideration of additional survey indices in the assessment (i.e., shrimp and scallop survey indices), as well as further analysis of the different patterns among surveys (e.g., integration of multiple indices), including length-frequency distributions. Since the ISmooth multiplier is based on the most recent data, the Bigelow surveys could be considered as separate abundance indices. Additionally, swept-area biomass estimates for monkfish, as reported in the Management Track assessment, could be used to estimate exploitation ratios, though this approach has not been peer-reviewed.

SUMMARY OF RECOMMENDATIONS

- 1. The SSC recommends that OFL be unknown for FY 2023-2025, and ABCs of 5,526 mt for the Northern Management Area and 3,766 mt for the Southern Management Area to be held constant for FY 2023-2025.**
- 2. The SSC concurs with the conclusion that monkfish stock status is presently unknown given problems identified with the previously rejected length-based assessment and the time elapsed since the last analytical assessment in 2016.**
- 3. The SSC recommends that alternative assessment methods for monkfish should be investigated in the next assessment iteration.**
- 4. The SSC recommends consideration of additional survey indices, analyses of differences in survey indices, and swept-area biomass estimates derived from survey indices be analyzed.**

Fishing Year	Management Area	OFL (mt)	ABC (mt)
2023-2025	Northern	Unknown	5,526
2023-2025	Southern	Unknown	3,766

TERMS OF REFERENCE – Discard Deduction Approach

- 1. Review analyses provided by the Monkfish PDT of alternate approaches for setting the discard deduction from the annual catch target when setting specifications.*

The SSC received a presentation from the Monkfish PDT describing analyses conducted to support consideration of an alternative discard deduction approach to set TALs. The current approach for deducting discards in the Monkfish FMP is based on the most recent 3-year discard-to-catch ratio applied to the ACT for the subsequent 3-year TAL advice. There have been variable discard rates by monkfish management area over time, and the current approach uses lagged information applied to future years. The PDT presented a range of alternative approaches to calculate discard deductions including:

- 3-year and 10-year time series
- Mean and median discard estimates
- Direct discard amounts and discards-to-catch ratios

- 2. Recommend an approach for setting the discard deduction, commenting on the PDT's recommendations.*

The SSC considered the Council's goals for adjusting the discard deduction method, which included stability to the directed fishery, minimizing changes between management cycles, and accuracy of discard predictions. The PDT highlighted that overestimating discards results in lowered TALs, whereas underestimating discards risks exceeding the ACL. The SSC noted that applying a discard ratio may be more appropriate in the Northern Management Area where discards occur in the directed fishery, whereas applying a direct discard amount may be more appropriate in the Southern Management Area where discards primarily occur in other target species fisheries (e.g., scallop fishery). The PDT explained that scallop biomass has recently been shifting northward. While most of the scallop biomass on Georges Bank is still in the Southern Management Area, scallop biomass could shift further northward into areas that overlap with the monkfish Northern Management Area, which may result in increased monkfish discards from non-targeted fisheries in the future.

The SSC recommends the following approach for setting the discard deduction, which supports the PDT's recommendations:

- **Use of 10-year moving time series**
- **Use of median discards**
- **Use of direct discard amount**
- **Updates to occur every 3 years**

SUMMARY OF RECOMMENDATIONS

- 1. The SSC recommends that Alternative 5 from the Monkfish PDT Memo be used for setting the discard deduction for both the Northern and Southern Management Areas:**
 - a. Latest 10-year median of discards**
- 2. The SSC recommends analysis of a recruitment index as a predictor for future discards.**
- 3. The SSC recommends further evaluation of the accuracy of discard information from fisheries that catch monkfish, including both targeted and bycatch fisheries.**