



New England Fishery Management Council

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MEMORANDUM

DATE: November 11, 2020

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 small-mesh multispecies stocks (northern silver hake, southern whiting, northern red hake, and southern red hake) for fishing years 2021 to 2023**

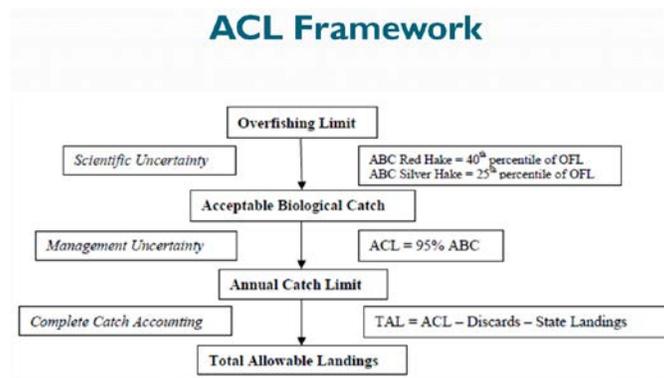
Terms of Reference

Considering the Council’s Risk Policy Statement, provide an OFL and an ABC for each stock for each year 2021, 2022, and 2023 that will prevent overfishing, and achieve rebuilding if needed, consistent with the Council’s ABC control rule for small-mesh multispecies stocks.

Background

Amendment 19 established a harvest control rule that associates a proxy for MSY with an Overfishing Level (OFL) and accounts for estimated scientific uncertainty to set the Allowable Biological Catch (ABC). It also includes an allocation framework to account for discards, account of state and other landings, and for accounting for prior overages with accountability measures (AMs) (see figure below). The amendment also established a procedure for allocating catch to account for discards and state-water landings, but the allocations do not need to be approved by the SSC.

Figure 1. Small-mesh fishery specification framework adopted and approved in Amendment 19.



There are four small-mesh multispecies stocks, all that were analyzed via a management track assessment (MTA) in September 2020 (link to peer review).

The northern silver hake assessment was treated as a Level I review, presented directly to the PDT. The southern whiting assessment was treated as a Level II review, because of an evaluation of methods to address the incomplete 2017 fall survey. Both stocks were found to be not overfished and overfishing was not occurring.

OFL and the estimated risk of overfishing based on estimated scientific uncertainty was provided to the PDT. Amendment 19 provides that the ABC is set using a $P^*=25\%$ (link to 2011 SSC review). These reference points and estimated catch limits (see Table 2) are again recommended by the PDT. The recommended ABC has a low probability of overfishing and the stocks are above the overfished threshold. For southern whiting, these specifications were increased by 4% per previous procedures to account for the customary catches of offshore hake, which are often landed together with silver hake as 'whiting'. The Southern whiting OFL estimates were reviewed during the MTA.

A research track assessment and an independent peer review by the Center for Independent Experts was performed in March 2020. The Research Track Assessment (RTA) primarily examined stock structure and the catch efficiency of the survey trawl. During the RTA, the existing AIM assessment model was rejected due to the non-significant relationship between changes in catch and stock biomass, which is a precondition of this model. An alternative assessment was conducted by Dr. Miller and reviewed by the RTA. The peer reviewers thought that the new assessment model was a promising method, but it was not recommended as a means to establish reference points or determine status without further development.

During the September 2020 MTA, this new assessment model was updated with 2019 catch data (the spring survey was unfortunately cancelled), but no MSY proxy reference points were reviewed. Thus, the status for both stocks is classified as 'unknown' relative to both overfishing and overfished thresholds. Plan B Smooth Approach estimates were available late during the MTA but were not reviewed or approved.

The Whiting PDT developed several sets of OFL and ABC options based on different applications of the Plan B Smooth Approach for consideration by the SSC, but the PDT does not have a preference or specific recommendation. The justification and potential issues with each approach are summarized in Table 1 and numerical estimates of OFL and ABC are summarized in Table 3. For comparison, a range of OFL and ABC at various exploitation rates is also given in Table 3, but the SSC should be mindful that only a fraction of the stock area is within the seasonal small-mesh exemption areas, particularly in the northern management area (see Map 1).

Table 1. Red Hake strategies for setting 2021-2023 catch specifications. These approaches would define an OFL and uncertainty would be applied to derive an ABC.

Plan B proportional change (2017-2019) applied to:	Justification	Issues
1. 2017-2019 actual estimated catch	Follows Plan B approach application that was developed but not considered in the most recent management track assessment.	Catch may not be representative of OFL, especially with fishing restrictions. May be driven by circumstances that affect the fishery or by actual catch that exceed the OFL.
2. Existing OFL from 2018-2020 specifications	Applies Plan B approach to previous OFL, rather than actual catch	Uses OFL estimate from rejected AIM model application
3. 1981-2009 OFL forecast from Plan B smooth in that time period (previous estimate using the Plan B smooth approach)	Consistent with overfishing definition, but using Plan B method to evaluated OFL during the MSY proxy time period	Period may not be representative of contemporary stock productivity.
4. 2017-2019 OFL forecast from Plan B smooth in that time period (previous estimate using the Plan B smooth approach)	Follows Plan B approach, using Plan B estimate for 2017-2019 as representative of MSY proxy, rather than actual catch.	May be sensitive to rapid changes in survey swept area biomass.
5. Fixed exploitation rate applied to SWAB 2017-2019 (TYMA).	Fishing mortality estimates are exceptionally low, particularly for the northern stock. Uses an F MSY proxy that is more consistent with life history	Catch limits may exceed availability of the stock due to regulations. Mean exploitation rates for time series were rejected by the MTA as the basis for catch advice.

Table 2. 2021-2023 silver hake specification (mt) estimates and options by management area.

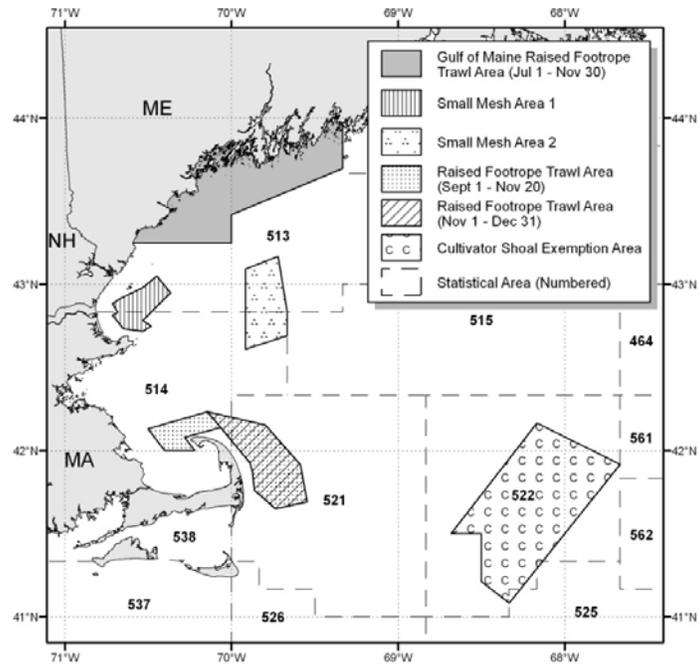
Stock	Strategy	North		South	
		OFL (% ch)	ABC (% ch)	OFL (% ch)	ABC (% ch)¹
Silver hake/ Whiting	Same method Update scientific uncertainty	39.93 (-28%)	20.41 (-34%)	75.05 (+141%)	42.63 (120%)

¹ Scientific uncertainty buffer to set southern red hake ABC was set at 25% by Framework 62 as a rebuilding measure.

Table 3. 2021-2023 red hake specification (mt) estimates and options by management area. See Table 1 for more detail about red hake options 1 to 5f.

Strategy	North			South			
	OFL (% ch)	ABC		OFL (% ch)	75% OFL (rebuild)	ABC	
		P*40 (% ch)	Lower 90% CI			P*40 (% ch)	Lower 90% CI
1 Catch	229 (-73%)	TBD	183 (-75%)	1,919 (+67%)	1,440 (+43%)		731 (-15%)
2 2018 specs	785 (-6%)	TBD	758 (+5%)	1,460 (+27%)	1,095 (+9%)		1,443 (+67%)
3 Plan B OFL	1,722 (+105%)	TBD	NA	3,181 (+177%)	2,386 (+137%)		NA
4 2019 Plan B	2,328 (+177%)	TBD	???	3,093 (+169%)	2,320 (+130%)		???
5a (2% expl)	4,602 (+448%)	TBD	3,607 (+400%)	1,294 (+13%)	971 (-4%)		409 (-53%)
5b (4% expl)				2,589 (+125%)	1,941 (+93%)		
5c (6% expl)	13,873 (1544%)		10,904 (+1412%)	3,883 (+238%)	2,912 (+189%)		2,039 (+136%)
5d (8% expl)				5,177 (+350%)	3,883 (+286%)		
5e (10% expl)				6,471 (+463%)	4,854 (+382%)		
5f (12% expl)	27,615 (3187%)	TBD	21,807 (+2925%)	7,766 (+575%)	5,824 (+478%)		4,201 (+367%)

Map 1. Small-mesh exemption areas in the Gulf of Maine and Georges Bank



Information

- A.1 [Management Track Peer Review Panel Reports](#) for Silver and Red Hake stocks, DRAFT (September 2020)
- A.2 [Research Track Peer Review Panel Report](#) for red hake stocks (March 2020).
- A.3 Supplemental Information: [Stock Assessment Support Information \(SASINF\)](#) - use this link to access the database which includes the assessment reports, peer review presentations, and additional information.
- A.4 Background: Draft SAFE Report for Fishing Year 2019 [link to be inserted when document is ready].
- A.5 Background: [SSC review of the small-mesh multispecies MSY proxy reference points](#).
- A.6 Background: [Amendment 19](#) (established the small-mesh multispecies specification procedures).
- A.7 Background: DRAFT [Framework Adjustment 62](#) (initiates a rebuilding plan for southern red hake).
- A.8 Background: [NEFMC Risk Policy Roadmap](#) that includes the Risk Policy Statement and Implementation Plan, see pp. 4-5.
- A.9 Background: [Description of Plan B Smooth Approach](#)
- A.10 Background: State of the Ecosystem and Current Conditions. NOAA/NEFSC. Available at: <https://www.fisheries.noaa.gov/new-england-mid-atlantic/ecosystems/state-ecosystem-reports-northeast-us-shelf>
- A.11 Presentation: Whiting PDT Report and recommendations for OFL and ABC (NEFMC staff)
- A.12 Presentation: Summary of silver hake assessments, with estimates for OFL and ABC (Dr. Alade)
- A.13 Presentation: Summary of red hake assessments (T. Chute)
- A.14 Presentation: Options for setting red hake OFL with different applications of Plan B smooth (NEFMC staff)
- A.15 Presentation: Estimation of scientific uncertainty for red hake OFL estimates and application for setting ABC (Dr. Alade)
- A.16 Risk Policy Matrix for Small Mesh Multispecies