



Mid-Atlantic Fishery Management Council

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MEMORANDUM

Date: July 7, 2020
To: Chris Moore, Executive Director
From: Jessica Coakley and José Montañez, Staff
Subject: Ocean Quahog Management Measures (2021-2026)

Executive Summary

The most current assessment of the ocean quahog (*Arctica islandica*) stock is a management track assessment of the existing 2017 benchmark Stock Synthesis (SS) assessment which indicated the stock is not overfished and overfishing is not occurring in 2019 (Hennen 2020). Based on the previous assessment the stock was also not overfished, and overfishing was not occurring (in 2016; NEFSC 2017). Assessment reports can be found here: https://fish.nefsc.noaa.gov/saw/reviews_report_options.php.

Specifications were last developed for 2018-2020. For this cycle, staff recommend specifications be set for 6 years (2021-2026) to create administrative efficiencies in addressing the National Environmental Policy Act (NEPA) requirements as a result of the new stock assessment process, which is expected to assess surfclam and ocean quahog on a 4 and 6 year cycle, respectively. The staff recommendation for acceptable biological catches (ABCs) for each year for 2021-2026 is around 44,000 mt each year (see box on page 3 for exact values). The fishery management plan specifies that the annual catch limit (ACL) equals the ABC. Staff recommend a non-Maine fishery ACT (annual catch target) of 25,400 mt with a Maine ACT of 524 mt for each year, 2021-2026; combined these are equal to the ABC=ACL. This results in a commercial quota of 24,190 mt (5.3 million bushels) and a quota for the Maine quahog fishery of 499 mt (100,000 Maine bushels). These are the same quotas that have been implemented since 2005.

Introduction

The Magnuson Stevens Act requires each Council's Scientific and Statistical Committee (SSC) to provide, among other things, ongoing scientific advice for fishery management decisions, including recommendations for ABC, preventing overfishing, and maximum sustainable yield. The Council's catch limit recommendations for the upcoming fishing year(s) cannot exceed the ABC recommendation of the SSC. In this memorandum, information is presented to assist the development of measures for the Council to consider for the 2021-2026 fishery for ocean quahog. The SSC will recommend an ABC for the ocean quahog fishery that addresses scientific uncertainty. Based on the SSC recommendations, the Council will make recommendations for ACLs, ACTs, and other implemented measures, and provide those recommendations to the NMFS Northeast Regional Administrator.

Review of SSC Recommendations for Fishing Years 2018-2020

In May 2017, the SSC met to recommend ABCs for ocean quahog for fishing years 2018-2020. The SSC determined that the reported OFL estimate, though associated with substantial uncertainty, was deemed credible, and could form the basis of developing management advice. The SSC deemed that, "Ocean Quahog should be considered a stock with an SSC-modified OFL probability distribution." The SSC considered the ocean quahog to be a species with an atypical life history, and applied an SSC modified OFL distribution with a CV=100% for a stock with a spawning stock biomass (SSB) > SSB target.

Year	OFL (mt)	ABC (mt)	SSB/SSB _{Threshold} (ratio)	P (overfishing)
2018	61,600	44,695	2.0	0.35
2019	63,600	46,146		
2020	63,100	45,783		

They also determined the most significant sources of scientific uncertainty associated with determination of OFL and ABC as:

- Absolute estimates of SSB, recruitment (R), and fishing mortality (F) are scale uncertain. Almost all the information on biomass scale was from the priors on survey catchability and at least one model-based depletion estimate of catchability (q) was unlikely given the prior applied in the model.
- Recruitment is difficult to estimate in the ocean quahog assessment because age composition data is not fit in the model and growth is highly variable.
- The assessment considers the stock at large spatial scales and there is a need to improve the understanding of demographic processes (including recruitment and settlement) at smaller spatial scales that are not now captured in the model.

Stock Status and Biological Reference Points

The most current assessment of the ocean quahog (*Arctica islandica*) stock is a management track assessment of the existing 2017 benchmark Stock Synthesis (SS) assessment which indicated the stock is not overfished and overfishing is not occurring in 2019 (Hennen 2020). SAW 63 biological reference points were developed and revised from the prior SAW. The reference points are ratios rather than absolute values.

- $SSB/SSB_{Target} = 1.25$ is the new biomass target (or $SSB_{MSY-Proxy}$), where SSB_{Target} is calculated as $0.5 * SSB_0$,
- $SSB/SSB_{Threshold} = 1$ is the new minimum stock size threshold which defines overfished status, where $SSB_{Threshold}$ is calculated as $0.4 * SSB_0$,
- $F/F_{Threshold} = 1$ is the new fishing mortality threshold ($F_{MSY-Proxy}$) which defines overfishing, where $F_{Threshold}$ is 0.019.

Based on this updated assessment the stock is not overfished and overfishing is not occurring. Retrospective adjustments were not made to the model results. SSB in 2019 was estimated to be 3,651 ('000 mt) which is 172.8% of the biomass target (SSB_{MSY} proxy = 2,113; Figure 1) [These values were corrected from previous versions]. The 2019 fully selected fishing mortality was estimated to be 0.005 which is 25.5% of the overfishing threshold proxy (F_{MSY} proxy = 0.019).

Basis for 2021-2026 ABC Recommendation

Staff recommend specifications be set for 6 years (2021-2026) to create administrative efficiencies in addressing the NEPA requirements as a result of the new stock assessment process, which is expected to assess surfclam and ocean quahog on a 4 and 6 year cycle, respectively.

Projections the management track assessment provided estimates of OFLs for 2021-2026 (Hennen 2020). If the SSC applied their previous methods that include an SSC-modified OFL probability distribution and an assumed lognormal OFL distribution with a CV = 100%, the ABCs would be calculated as given here.

Year	OFL (mt)	ABC (mt)	SSB/SSB_{Threshold} (ratio)^a	P (overfishing)
2021	44,960	44,031	2.18	0.49
2022	45,001	44,072	2.18	
2023	45,012	44,082	2.17	
2024	44,994	44,065	2.16	
2025	44,948	44,020	2.15	
2026	44,875	43,948	2.14	

^a The target biomass ratio = 1.25. See section on BRPs above.

Other Management Measures

In the FMP, the ABC=ACL=TAC and the Council specifies an ACT that accounts for management uncertainty and other relevant factors (Figure 1). There is an incidental fishing mortality rate of 5% that applies to landings (commercial quota).

Management uncertainty is comprised of two parts: uncertainty in the ability of managers to control catch and uncertainty in quantifying the true catch (i.e., estimation errors). Because this is an ITQ fishery, and ocean quahogs cannot be landed without cage tags, the implementation uncertainty is generally considered to be insignificant.

Catch is defined as the sum of landings, a 5% incidental mortality applied to landings, and discards. The ACL is equal to the ABC as prescribed in the FMP.

Staff recommend a non-Maine fishery ACT of 25,400 mt, and a Maine ACT of 524 mt. This results in a commercial quota of 24,190 mt (5.3 million bushels) and a quota for the Maine quahog fishery of 499 mt (100,000 Maine bushels). These are the same quotas that have been implemented since 2005.

Ocean Quahog Flowchart

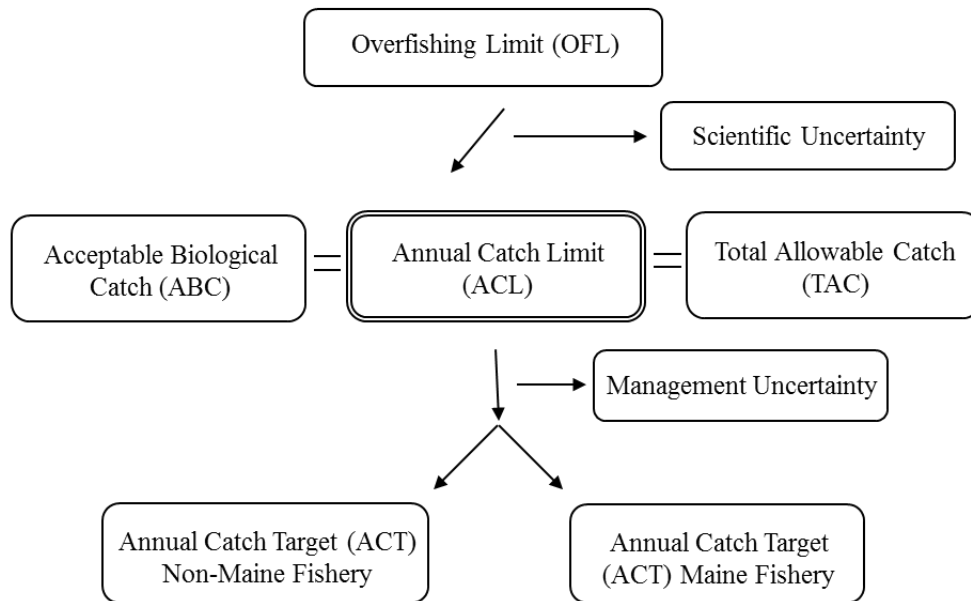


Figure 1. Ocean quahog catch limit structure.

References

Hennen, Dan. Personal Communication. June 14 and 24, 2020. NOAA Fisheries, Northeast Fisheries Science Center, 166 Water St., Woods Hole, MA 02543.

Northeast Fisheries Science Center. 2017. 63rd Northeast Regional Stock Assessment Workshop (63rd SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-09; 28 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at <http://www.nefsc.noaa.gov/publications>.