



Mid-Atlantic Fishery Management Council
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MEMORANDUM

Date: May 5, 2017
To: Dr. Chris Moore, Executive Director
From: Jason Didden *JDD*
Subject: Mackerel, Squid, and Butterfish (MSB) ABCs

Summary

This memo supports the May 2017 SSC meeting for:

- Review of ongoing mackerel multiyear specifications (2016-2018)
- Setting *Illex* Squid, longfin squid, and butterfish specifications for up to three years (2018-2020)

Introduction

The Magnuson Stevens Act (MSA) as currently amended requires each Council's Scientific and Statistical Committee (SSC) to provide, among other things, ongoing scientific advice for fishery management decisions, including recommendations for acceptable biological catches (ABCs). The SSC recommends ABCs to the Council that address scientific uncertainty such that overfishing is unlikely to occur per the Council's risk policy. The Council's ABC recommendations to NMFS for the upcoming fishing year(s) cannot exceed the ABC recommendation of the SSC. As such, the SSC's ABC recommendations form the upper limit for catches of Council-managed species.

Once the SSC meets and decides on the ABCs, the Squid-Mackerel-Butterfish Monitoring Committee will meet to discuss if changes to other management measures should be recommended per the ABCs from the SSC and other management considerations. These measures include Annual Catch Limits (ACLs), Annual Catch Targets (ACTs), and Accountability Measures (AMs). Based on the SSC's and Monitoring Committee's recommendations, the Council will make recommendations to the NMFS Northeast Regional Administrator. Based on NMFS' evaluation of the Council's recommendations, NMFS will publish a Proposed Rule for specifications and then a Final Rule, which may change from the Proposed Rule based on public comment.

Illex Squid, Longfin Squid, and Butterfish

Illex squid, longfin squid, and butterfish are currently in the final year of multi-year specifications for 2015-2017, and will need ABC recommendations for 2018 and beyond. Mackerel is in year two of multi-year specifications (2016-2018) and the SSC will be reviewing its previous 2018 recommendation, which may be found at <http://www.mafmc.org/ssc-meetings/2015/may-13-14>. The NMFS Northeast Fisheries Science Center provided assessment updates for butterfish and longfin squid as well as data updates for mackerel and *Illex* squid, which are posted to <http://www.mafmc.org/ssc-meetings/2017/may-17-18>. That same web page also has a staff informational document for the Advisory Panel and the Advisory Panel Fishery Performance Report, as well as links to previous assessments and related documents.

Atlantic Mackerel

Staff recommends no modifications be made to the mackerel multi-year ABC of 19,898 metric tons (mt). Though low, catch has remained relatively consistent from 2011-2016 and early 2017 landings are above 2016 at the same point in the year. NEFSC spring bottom trawl indices continue to vary considerably from year to year. An assessment is underway, and results should be available for review in May 2018 for setting future mackerel specifications.

Butterfish

Summary

-The status of butterfish is not overfished and no overfishing is occurring according to the recent assessment update (data through 2016).

-For 2018-2020, staff recommends an ABC of 24,500 mt, based on projections that use a 100% coefficient of variation (CV) for uncertainty and an average probability of overfishing of 0.34. This is consistent with the Council's pending risk policy modifications.

-The projections are being impacted by a very low recruitment estimate in 2016. The 2012 recruitment was estimated to be similarly low initially but the estimate increased with additional data. However, there appears to be a long term downward trend in recruitment and biomass as estimated by the assessment.

-Fishery participants on the Advisory Panel (AP) reported no observations of marked changes in butterfish abundance. Other AP members advised caution given the forage role of butterfish.

-Seafreeze staff (the largest harvester/processor of butterfish) reported that they limited early 2017 landings because of market uncertainty affecting their ability to sell additional fish at a profit.

Regulatory Review

The 2017 ABC for butterfish is 30,922 mt, which translates into a domestic landings quota of 20,652 mt after management uncertainty and discards are accounted for. The directed fishery operates under a limited access system. The primary directed commercial fishery could close at 19,241 mt in 2017, after which point a smaller scale fishery is allowed.

Biological Reference Points, Stock Status, and Projections

A butterfish assessment update is posted to the SSC meeting page. The spawning stock biomass (SSB) was estimated to be at 64,376 mt in 2016, which is 141% of the accepted biomass reference point ($SSB_{MSYproxy} = 45,616$ mt). Overfishing is not occurring (F was 94% below the reference point) and the stock is not overfished. The 2016 recruitment was estimated to be the lowest in the time series, which reduced projections in 2017 down to 33,720 mt (74% of the reference point and 48% lower than 2016). While a very low initial terminal 2012 recruitment was revised upward with additional data, there is a long term downward trend in estimated biomass and recruitment since about 2000.

Catch and Landings

The fishery declined in the 1990s due to lack of availability and market forces. Landings from 2005-2012 were strongly restricted by regulations. In 2013, a limited re-establishment of a directed fishery began. Landings have been low relative to the substantially higher quota implemented in 2015, though early 2017 landings are higher. Discards are controlled through a cap on the longfin squid fishery and are accounted for in directed butterfish fishing as well.

OFL/ABC Recommendations

OFL – The updated assessment suggests an OFL of 28,628 mt for 2018, which is also recommended by staff.

ABC

Staff finds it unlikely that the butterfish stock is/will be half its 2016 size in 2017. Factors supporting this conclusion include the initial underestimate of 2012 recruitment, good availability reported by the fishery, low fishing mortality, and typical butterfish bycatch in the longfin squid fishery early in 2017. However, staff notes the long-term decline in abundance and recruitment in the assessment. The assumption of average recruitment pushing the stock up quickly in projections may also be problematic. As such, a reduction in the ABC seems like a reasonable precaution, and staff recommends a constant ABC of 24,500 mt for 2018-2020, which would be consistent with the pending update to the Council's risk policy allowing averaging of overfishing probabilities (P*s). The projection details are available on the SSC meeting webpage. They use a 100% CV and average to a 34% probability of overfishing for the 3 years, with a maximum probability of overfishing of 43% in 2018. Chasing apparent drastic declines in estimated recruitment or rapid increases in predicted recruitment does not seem appropriate for this naturally variable fishery given our inability to predict recruitment changes.

Longfin Squid

Summary

-The status of longfin squid is currently “unknown” with respect to fishing mortality rates and "not overfished" according to the recent assessment update (data through 2016). The last benchmark assessment considered the stock to be “lightly exploited” and no major changes in exploitation were apparent in the update.

-For 2018-2020, staff recommends extending the current multi-year ABC specification of 23,400 mt previously set for 2015-2017 by the SSC.

-Changes in biomass, catch, and the ratio of catch to biomass (“exploitation indices”) appear consistent with the variability observed in the last assessment.

Regulatory Review

The 2017 ABC for longfin squid is 23,400 mt which results in a quota of 22,445 mt after discards are subtracted. There is a recreational fishery but no catch estimates are available and recreational catch is believed to be minor relative to the ABC. The commercial fishery operates under limited access and the directed fishery closes based on weekly monitoring. The annual quota is divided up into 3 four-month trimesters 43% (Trimester 1 Jan-April) - 17% (Trimester 2 May-Aug) - 40% (Trimester 3 Sept-Dec). There is a 1 7/8" minimum mesh required in Trimester 2 and a 2 1/8" mesh at other times. There is a butterflyfish discard cap which can close the longfin squid fishery, but the current cap does not appear to be constraining (several bycatch avoidance efforts have commenced since implementation of the cap). The Council is currently considering reducing latent capacity in the fishery and reducing the catch that can occur in Trimester 2. Plan provisions allow Trimester 2 to increase to 25.5% of the annual quota if catches in Trimester 1 are low, and directed fishing still occurs at a smaller scale once the fishery “closes.” See <http://www.mafmc.org/actions/squid-capacity-amendment> for details.

Biological Reference Points, Stock Status, and Projections

A longfin squid assessment update has been posted to the SSC meeting page. Like the most recent benchmark for longfin squid (2010), the update notes there are no reliable estimates of current fishing mortality rates but a Bmsy target of 42,405 mt was accepted along with a Bthreshold of 1/2 of the target = 21,203 mt. The Bmsy target was derived assuming that the 1976-2008 median biomass estimate represents 90% of the stock’s carrying capacity "K" (SAW/SARC 42 concluded that the stock appears "lightly exploited") and the Bmsy target is 1/2 of K. The spawning stock biomass (SSB) was estimated to be at 73,762 mt in 2016, which is 174% of the accepted biomass reference point target ($SSB_{MSYproxy} = 42,405$ mt).

Catch and Landings

Since full domestication of the fishery (1987), landings have varied approximately $\pm 10,000$ mt from a 15,000 mt median. The fishery information document available at <http://www.mafmc.org/council-events/2017/may-2017-ssc-meeting> details this landings history. There was a relative landings decline from 1994-2010 and a relative increase from 2010-2016.

OFL/ABC Recommendations

OFL – An overfishing level likely cannot be determined.

ABC

Given the recent exploitation indices in the assessment update appear to vary within a range consistent with the benchmark assessment, staff recommends setting a new 2018-2020 multi-year ABC specification of 23,400 mt (the same as since 2012). This is based on the catch in the year with the highest observed exploitation fraction (catch divided by the estimated biomass) during a period of apparent relatively light exploitation (1976-2009) according to the 2010 longfin squid assessment.

Illex Squid

Summary

- The status of *Illex* is currently “unknown” with respect to both fishing mortality rates and stock size.
- For 2018-2020, staff recommends extending the current multi-year ABC specification of 24,000 mt previously set for 2015-2017 by the SSC.
- Landings have been low recently, but this fishery is highly variable.
- NEFSC indices for number per tow have been close to the long-term median in recent years.

Regulatory Review

The 2017 ABC for *Illlex* is 24,000 mt which results in a U.S. DAH of 22,915 mt after discards are subtracted. There is no recreational fishery. The fishery operates under limited access and the directed fishery closes at 95% of its quota. Incidental trips limits would be allowed if the directed fishery closes.

Biological Reference Points, Stock Status, and Projections

The *Illlex* stock was most recently assessed at SARC 42 (2006). The SARC 42 report included data through 2004. There are no reliable estimates of stock biomass or fishing mortality rate.

Catch and Landings

Landings vary within a wide range. The fishery information document available at <http://www.mafmc.org/council-events/2017/may-2017-ssc-meeting> details the landings history. Landings have been relatively low for the years 2013-2016 but there have been similar periods before (1999-2003).

OFL/ABC Recommendations

OFL – An overfishing level cannot be determined.

ABC

For 2018-2020, staff recommends extending the current multi-year ABC specification of 24,000 mt previously set by the SSC. This was based on the observation that landings of 24,000-26,000 MT do not appear to have caused harm to the *Illlex* stock based on indices and landings in years following years when landings were in the range of 24,000 mt-26,000 mt.