



New England Fishery Management Council

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To: Tom Nies, Executive Director
From: Scientific and Statistical Committee
Date: September 24, 2014

Subject: Overfishing levels (OFLs) and acceptable biological catch (ABC) recommendations for Gulf of Maine cod

The SSC met on September 15, 2014 in Boston, Massachusetts, to address the following term of reference (TOR):

Review the 2014 assessment update for Gulf of Maine (GOM) cod and the work of the Groundfish Plan Development Team (PDT) and provide the OFL and ABC for each year for fishing years 2015-2017 that will prevent overfishing, provide for rebuilding and is consistent with the default control rule.

To meet this TOR, the SSC considered the following documents:

1. Memo from Groundfish PDT to SSC re Gulf of Maine cod ABCs, dated September 11, 2014
2. Gulf of Maine Atlantic Cod 2014 Assessment Update, Draft Working Paper, (NEFSC) – dated September 3, 2014
3. Gulf of Maine Cod 2014 Assessment Update Peer Review Report, August 28-29, 2014 (NEFSC) – dated September 5, 2014
4. SAW 55 Stock Assessment Report (NEFSC), CRD 1311, dated June 2013
5. SAW 55 Assessment Summary Report (NEFSC), CRD 1301, dated January 2013
6. Memo from Groundfish PDT to SSC re FY 2013-2015 ABCs, dated January 13, 2013
7. SSC Memo to Executive Director Paul Howard re Georges Bank cod, Gulf of Maine cod and Southern New England/Mid-Atlantic winter flounder ABCs for FY2013-2015, dated January 29, 2013
8. Presentation: Gulf of Maine Atlantic Cod 2014 Assessment Update – Mike Palmer (NEFSC) – dated September 15, 2014
9. Presentation: Groundfish Plan Development Team Report: Gulf of Maine Cod ABCs and OFLs for FY 2015- FY 2017– Jamie Cournane (NEFMC) and Paul Nitschke (NEFSC) – dated September 15, 2014

The 2014 operational assessment of GOM cod used the two formulations of the ASAP model approved during SAW/SARC 55: one in which $M=0.2$ throughout the time series, and a second in which M increases linearly from 0.2 to 0.4 (“M-ramp”). The PDT developed three sets of catch alternatives using the outcomes of each formulation as a starting point. For the M-ramp model, two scenarios were considered: one in which M remains at 0.4 and another in which M declines back to 0.2.

Because all three scenarios are plausible and the resulting OFL values are comparable, the SSC recommends an OFL for 2015 that is the average of the three: 514mt. However, based on recent experiences, the SSC is concerned with the uncertainties inherent in projections of GOM cod and other stocks, and does not recommend changing the OFL for 2016 and 2017 based on projections. Therefore, OFL should remain at 514mt for 2016 and 2017 in the absence of new information warranting a change.

The PDT developed ABC alternatives based on estimates of F_{rebuild} given that the stock is overfished, and projections suggest that catches at 75% F_{MSY} will not achieve rebuilding targets (i.e., F_{rebuild} is less than 75% F_{MSY}). Among the alternatives presented, the PDT included a constant catch ABC alternative of 200mt, which is intermediate between the values developed for the scenario in which M remains 0.2 (180mt) and the scenario in which M ramps up to 0.4 but then returns to 0.2 (207mt), and follows a similar logic as that used by the SSC in developing the OFL recommendation. The SSC provisionally recommends an ABC for 2015 of 200mt. ABCs for 2016 and 2017 would remain at 200mt in the absence of additional information warranting a change due to the concerns about projections raised above.

The SSC offers 200mt as a provisional ABC because an important difference in proposing OFL and ABC values based on average or intermediate values among the scenarios considered is that the ABC alternative of 200mt does not include values based on the scenario in which M ramps up to 0.4 and remains at that rate. Projections suggest that the stock cannot rebuild to the biomass target within 10 years even with $F=0$ in that scenario due to assumptions about natural mortality used in the projections. The model suggests that the stock cannot rebuild unless natural mortality switches back to 0.2 by 2016, but whether and why that would occur is uncertain. For these reasons, the PDT did not recommend utilizing that projection since it is difficult to know for how long natural mortality would remain high. The PDT raised additional concerns that the stock might not be able to recover within 10 years under the scenarios with $M=0.2$ from the outset given that projections have often proved to be too optimistic in hindsight.

The ABC control rule addresses the possibility of rebuilding that cannot be achieved within 10 years with the following approach:

c. For stocks that cannot rebuild to BMSY in the specified rebuilding period, even with no fishing, the ABC should be based on incidental bycatch, including a reduction in bycatch rate (i.e., the proportion of the stock caught as bycatch).

Therefore, the SSC requests that the PDT produce estimates of incidental, non-target bycatch of GOM cod under the prevailing operating conditions of the fishery in time for the October 20, 2014 SSC meeting. If possible, these estimates should be specific to different fleets and gears, including spatial patterns. The SSC would like to see these estimates in order to determine whether some fine-tuning of the ABC is warranted to account for the third mortality scenario and accommodate operations of the fleet.

It is important to bear in mind that the OFL of 514mt would not change in light of these requested analyses and sets an upper bound for the final ABC. Furthermore, the SSC might not make adjustments to the ABC if the PDT is not able to conduct the requested analyses due to time or analytical constraints, or if the uncertainties in the outcomes are too great.

In requesting additional analyses on unavoidable, non-target bycatch, the SSC is not yet endorsing any particular strategy for keeping catch within that limit. The SSC discussed the potential for spatial management strategies to help achieve the targets in light of the high spatial concentration of both the stock and catch. The SSC did not strive to reach consensus on whether and how spatial or other approaches should be used, and is interested in continuing that discussion to develop advice on spatial and other strategies for achieving the catch reductions.

In anticipation of a continued discussion about strategies for achieving catch reductions, the SSC has requested, via the PDT Chair, that the Groundfish Advisory Panel and Recreational Advisory Panel provide input on the level of incidental, non-target bycatch by the fleet, as well as the reductions in catch that can be achieved via new fishing strategies. There is an important tradition of industry collaboration in both science and management in New England, and the current status of both the GOM cod stock and fishery make those collaborations especially important. The SSC is interested in discussing and advising on how those collaborations can help meet science and management needs.

In making these recommendations, the SSC recognizes that an operational assessment is scheduled for 2015, and we expect that OFLs and ABCs for 2016 and 2017 to be updated as a result.

In light of the continued poor status of GOM cod and uncertainties concerning the nature and implications of prevailing environmental conditions, the SSC reiterates the following previous recommendations:

- The process to re-evaluate stock structure of cod begun by NEFSC should be resumed and completed as soon as possible.
- A process to define criteria for identifying significant changes in environmental conditions, especially regime shifts, and to determine whether those changes have occurred in and develop scientific and management responses, should be undertaken as soon as possible.

The first recommendation is especially important given that the majority of the catch of GOM cod comes from an increasingly contracted region of the western GOM. This led to discussion among the SSC about the potential for spatial management strategies to both achieve the needed reductions in fishing mortality and help the fleet, issues the SSC is interested in addressing at its next meeting.

The second recommendation is important because the implications of assuming $M=0.2$ versus $M=0.4$ in the future are significant for setting reference points, determining stock status, and developing catch advice. The SSC was informed that an NEFSC work group is addressing the issue of regime shift, and is interested in being briefed by and providing feedback to that group.

Summary of recommendations

- 1. OFL for GOM cod in 2015, 2016 and 2017 is 514mt.**
- 2. ABC for GOM cod in 2015, 2016 and 2017 is provisionally 200mt.**
- 3. The SSC requests that the PDT produce estimates of incidental, non-target bycatch of GOM cod, including spatial patterns of bycatch, in time for the October 20, 2014 SSC meeting so that the SSC can consider adjusting the ABC in light of that information and providing additional advice.**
- 4. OFL and ABC for 2016 and 2017 should be updated following the planned 2015 GOM cod operational assessment.**

- 5. The process to re-evaluate stock structure of cod begun by NEFSC should be resumed and completed as soon as possible.**
- 6. A briefing on the progress of the NEFSC regime shift work group should be provided to the SSC.**