



New England Fishery Management Council

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John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

MEMORANDUM

DATE: August 6, 2010
TO: Scientific and Statistical Committee (SSC)
FROM: Council
SUBJECT: Terms of Reference - Development of ABC Recommendations to Council

Framework 22 to the Scallop FMP will include fishery specifications for 2011 and 2012. The Council requests that the SSC provide an ABC recommendation for both years, to be included in Framework 22.

The SSC has already approved an ABC control rule that is currently being considered in Amendment 15 to the Scallop FMP. Final action on Amendment 15 is scheduled for September 2010. Based on the previous SSC recommendation for an ABC control rule, Section 3.2.3.7.3 of Amendment 15 says:

the specific ABC control rule that will be used for the Scallop FMP will be based on setting ABC equivalent to the fishing rate that has a 25% probability of overfishing. These analyses will be based on a stochastic estimate of F_{max} that will be prepared by the Scallop PDT prior to each specifications package.

Term of Reference for SSC recommendation of ABC for 2011 and 2012:

- 1. Review relevant aspects of the recent scallop assessment as they pertain to setting ABC in the Scallop FMP.**
- 2. Provide the Council with ABC recommendation, based on the previously approved ABC control rule, for inclusion in Framework 22 (fishing years 2011 and 2012).**

As background, a summary of the previous work by the SSC and Scallop PDT on identifying an ABC control rule is attached. This summary is taken from Amendment 15 DEIS, and includes specific language from relative SSC final memos to the Council. Furthermore, the primary document the SSC reviewed when developing the ABC control rule is included, Document #3.

In addition to the work the SSC completed on the proposed ABC control rule for Amendment 15, the SSC also recommended an ABC for fishing year 2010 as part of Framework 21. For that action the SSC recommended an ABC using the same ABC control rule proposed in Amendment 15. For 2010, ABC was set at 29,578 mt. for the entire fishery including discards. The final memo from the SSC to the Council on setting ABC for FY2010 has been included (Document #2).

For this meeting the Scallop PDT will present ABC recommendations for fishing years 2011 and 2012 based on the same ABC control rule proposed in Amendment 15, catch equivalent to the fishing rate that has a 25% probability of overfishing. Members of the PDT will present updated values as well as summarize how those estimates are impacted by results from the recent scallop assessment. SAW50 (July 2010) recently reviewed and approved new reference points based on updated models and assumptions (Document #4). Staff will review the updated modifications that are relevant to setting ABC in the scallop fishery.

Documents:

1. Scallop TOR memo
2. September 23, 2009 Report from SSC Chair Dr. Steve Cadrin to Council Executive Director Paul J. Howard
3. Quantifying the tradeoff between precaution and yield in the US sea scallop fishery
4. Sea Scallop Assessment Summary for 2010 (SAW50)
5. Draft Framework 22 measures under consideration
6. Scallop PDT recommendations for 2011 and 2012 ABC (*to be distributed later*)

3.2.3.7.3 Quantitative analysis of scientific uncertainty

On February 6, 2009, the SSC reviewed the qualitative analysis recommended by the PDT that could be used for setting ABC. While the SSC agreed that the proposed general process for setting ACLs is appropriate, they recommended that some specific modifications are needed to comply with the final rule on National Standard 1 Guidelines, which was published after the PDT prepared the qualitative analyses.

The SSC prepared several final memos to the Council and PDT, reporting that “the proposed ABC does not explicitly account for uncertainty, there is no quantified measure of uncertainty in OFL (including uncertainty in the F_{MSY} proxy as well as the projected stock biomass), and there is no evaluation of how the ABC method performs with respect to preventing overfishing. Therefore, there is no scientific basis for using 90% of F_{max} to derive ABC.” In addition, “the SSC recognizes that the scallop stock assessment is one of the most informative assessments in the region, and the fishery is one of the most successfully managed. The positive status of the stock and the management system reflect the high-quality of science being produced by the Scallop PDT. The SSC also acknowledges that the draft Amendment document was developed before the final National Standard Guidelines were published (January 16 2009).”

SSC Recommendation:

- 1. Managing the current fishery so that fishing mortality is less than F_{max} complies with National Standard 1 (preventing overfishing while achieving the optimum yield on a continuing basis).**
- 2. At this time, no analysis has been provided to demonstrate that the proposed ABC complies with National Standard 1 Guidelines. Uncertainty in the estimate of OFL has not been quantified, and performance of alternative ABC methods with respect to preventing overfishing has not been evaluated. Therefore, a method to derive ABC will be recommended at a later date.**

Specifically, the SSC requested “a quantified estimate of uncertainty in OFL (including uncertainty in the F_{MSY} proxy as well as the projected stock biomass). A distribution of the projected value of OFL (the projected catch associated with F_{max}) will allow the SSC to use a lower quantile of the projected OFL such that ABC is lower, but not significantly different than OFL. In general, stochastic projection would be an appropriate approach to estimating uncertainty in OFL, but the SSC feels that the Scallop PDT is the most qualified group to determine the most appropriate method. Eventually, the SSC would like to base its ABC recommendation on an evaluation of how alternative ABC methods perform with respect to preventing overfishing.” The SSC provided several alternative ABC methods for the Scallop PDT to consider.

The Scallop PDT met in March, May and July 2009 to develop analyses to satisfy SSC suggestions. On August 11, 2009 and the SSC approved the PDT recommendation to set ABC at

the fishing mortality rate estimated to have 25% chance of exceeding OFL. The detailed quantitative analyses presented to the PDT are available in Appendix II. In summary, Monte-Carlo simulations were used to determine the distribution around the model parameters. These distributions were used to model F_{max} in both the Mid Atlantic and Georges Bank. The probability of overfishing was plotted alongside the fraction loss of YPR to search for a best risk scenario.

The Scallop PDT presented an updated analysis of uncertainty of OFL based on a previous SSC recommendation to finalize a scallop ABC recommendation for fishing year 2010. The stochastic estimate of F_{max} (which considers uncertainty in natural mortality, growth, meat yield, selectivity, discard mortality and non-capture mortality) is 0.37. The stochastic estimate is somewhat greater than the previous estimate of $F_{max} = 0.29$ from deterministic calculations (i.e., assuming no uncertainty in component processes).

The PDT examined the consequences of a range of fishing scenarios, the associated probability of overfishing (i.e., probability that 2010 F is greater than F_{max}) and the projected loss in yield relative to F_{max} . Based on the results of these analyses, the SSC endorses the proposal by the Scallop PDT and other conventions of risk-based harvest rules that ABC be based on 25% probability of overfishing. Analyses of uncertainty indicate that a 25% risk of overfishing is associated with less than 1% loss in yield relative to F_{max} . The Council agreed with this determination and therefore includes an ABC rule that includes setting ABC at an F that has a 25% chance of exceeding F_{max} .