



New England Fishery Management Council

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TO: Paul J. Howard, Executive Director
FROM: Science and Statistical Committee
DATE: April 26, 2011

SUBJECT: Guidance on Acceptable Biological Catch for Whiting/Hake

The Scientific and Statistical Committee (SSC) was asked to discuss the Whiting PDT's evaluation of Acceptable Biological Catch (ABC) options and provide guidance to the PDT for developing draft ABC specifications in Amendment 19.

On April 13, 2011 the SSC reviewed the following information and presentations developed by the Whiting Plan Development Team (PDT) and 51st Stock Assessment Workshop:

1. Basis for ABC (04-06-2011)
2. Summary Hakes Assessment SARC51 (03-16-2011)
3. SAW 51 Hake Assessment Summaries (CRD 11-01)
4. Hake Benchmark Assessment Report (CRD 11-02)
5. SAW 51 Reviewer Report Armstrong
6. SAW 51 Reviewer Report Roel
7. SAW 51 Reviewer Report Tingley
8. SAW 51 Panel Summary Report Maguire
9. Hake assessment summary.pdf

For red and silver hake, the Whiting PDT considered and developed three potential methods for setting hake ABCs, using data and analysis from the benchmark assessment (NEFSC 2011).

- Method 1 assumed a constant fraction of the overfishing limit as a buffer to account for scientific uncertainty (e.g., 75% of the overfishing limit).
- Method 2 was based on uncertainty in both the overfishing threshold and in stock biomass distributions.
- Method 3 was based on an initial evaluation of uncertainty in both the overfishing threshold and in stock biomass distributions, but expressed as a constant fraction of the overfishing limit.

The SSC preferred Method 2, because it will support risk-based catch limits, and probability of overfishing can be re-evaluated for each specification cycle. The SSC requested a range of candidate ABC calculations to represent a range of probabilities of overfishing, including both sources of uncertainty (the overfishing threshold and recent surveys), to communicate the consequences of alternative risk decisions to the Council. The SSC supports the PDT's proposal to include offshore hake in the ABC for southern silver hake, because of the mixed-species fishery, the small portion of offshore hake in the mixed-species catch, and challenges in monitoring species-specific catch limits.

For all of the hake stocks, F_{MSY} is unknown, and overfishing thresholds are derived from index based proxies. Therefore, ABC can be evaluated for the probability of overfishing (as defined by SAW51), but probability of exceeding F_{MSY} will be unknown. Evaluating the performance of index based proxies is difficult, but may be informed using the age-structured population model (ASAP) developed for silver hake. The SAW51 Review Panel did not accepted the model as a basis for status determination or fishery management, but the Panel used model results to evaluate reference points and recruitment trends in the assessment summary. Therefore, the SSC recommends that the provisional ASAP model (run 6) be used as a tool to help evaluate the population's potential response to alternative ABCs for silver hake.

The Council should consider several sources of uncertainty related to data-poor stocks and specific aspects of the hake resources and fisheries. Surveys have considerable measurement error for indicating relative stock size, and noise-reduction techniques may improve the ability to monitor stock size. The SSC will collaborate with the PDT and NEFSC staff to develop such techniques for consideration in catch advice. Silver hake and red hake also appear to have had changes in productivity, sustaining much greater catches in historical periods. Therefore, the Council may consider productivity changes in their risk tolerance decision. Finally, market forces may have influenced historical and recent periods of catch and should also be considered in the interpretation of fishery development.

In summary, the SSC had the following recommendations.

- 1. ABCs for whiting/hakes should be based on uncertainty in both the overfishing threshold and in stock biomass distributions (method 2).**
- 2. A range of overfishing probabilities should be communicated to the Council.**
- 3. Offshore hake should be included in the ABC for southern silver hake.**