



**Summary of 2009 ABC Control Rules
New England Fishery Management Council SSC Meeting
June 21-22, 2010**

Charges to the SSC and Council

Acceptable Biological Catch (ABC) should be based on an ABC control rule, which is a “*specified approach to setting the ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL (Overfishing Limit) and any other scientific uncertainty*”; and

“Councils must build into the reference points and control rules appropriate consideration of risk, taking into account uncertainties in estimating harvest, stock conditions, life history parameters, or the effects of environmental factors.” (National Standard 1 Guidelines)

NEFMC SSC

The New England Council’s SSC developed ABC recommendations to meet the 2010-2011 deadlines for annual catch limits (ACLs). The basis of the ABC recommendations and conformance to National Standard 1 Guidelines (NS1 Guidelines) varies among Council FMPs. Furthermore, formal ABC control rules have not been developed for all stocks. *Eventually, all FMPs should include ABC control rules that account scientific uncertainty in OFL and the Council’s desired risk tolerance.

Terms of Reference

1. Review ABC control rules or methods for deriving ABC in each FMP with respect to their expected performance for avoiding overfishing.
2. Identify the information needed to develop ABC control rules that account for scientific uncertainty in OFL and the Council’s desired risk tolerance.

About Data Poor and Interim ABCs

- Many stock assessments don’t support the estimation of quantities needed to derive ABC as specified in National Standard Guidelines, but catch advice is mandated for all fisheries, with few exceptions.
- Interim ABC methods are needed until more analytical approaches to ABC can be developed.
- Data-Poor interim ABCs should account for major sources of uncertainty when providing catch advice.
- In data-poor situations, interim ABCs can be based on the magnitude of catch or exploitation index during periods of stability (or periods of stock increase for rebuilding plans).
- Management Strategy Evaluation (MSE) is an option for estimating probability of overfishing for any ABC control rule, including data-poor proxies.

Sea Scallops - 2009 Control Rule for ABC

- Based on the probability of overfishing and the projected loss in yield relative to F_{max} , the SSC endorsed the proposal by the Scallop Plan Team and other conventions of risk-based harvest rules that ABC be based on 25% probability of overfishing.
- The optimal combination of risk and probability of overfishing is a management option to be determined by the Council, with input from the Scallop Plan Team and the SSC on scientific consequences of alternative degrees of risk.

SSC Advice and TORs for June 2010 SAW 50

Oct. 2008 SSC Report to NEFMC: "Although F_{max} may be a reasonable proxy for FMSY, the SSC recommends more explicit consideration of long-term sustainable yield, rather than maximizing yield-per-recruit."

- June 2010 SAW50 estimate of FMSY=0.38
- **ToR1:** Expected performance for avoiding overfishing.
 - ABC can be based on a nominal probability of overfishing
- **ToR 2:** Information needed to develop ABC control rules that account scientific uncertainty in OFL and the Council's desired risk tolerance.
 - Decision on risk tolerance needed from Council*
 - Management strategy evaluation could include model error

Groundfish Stock - 2009 Control Rules for ABCs

- In the absence of better information on what an appropriate buffer should be between OFL and the ABC, a relatively simple ABC was applied to all groundfish stocks.
- Given the guidance for specifying ABC as the lesser of 75%FMSY or F rebuild, and the definition of optimum yield in the current Multispecies Fishery Management Plan as that associated with 75%FMSY, the SSC recommended that the Council consider this ABC specification be applied to all groundfish stocks.
- **Method 1: ABC based on 75%FMSY:**
 - 3 groundfish stocks are rebuilt (GB haddock, GOM haddock & redfish).
 - 6 stocks are expected to rebuild within the required period if fishing mortality is limited to 75%FMSY (GB cod, GOM cod, CC yellowtail, plaice, witch & GB winter flounder).
 - 6 stocks do not have accepted projection methods (pollock, N. windowpane, S. windowpane, ocean pout, halibut and wolfish).
- **Method 2: ABC based on F rebuild:**
 - 3 stocks are not expected to rebuild within the required period at 75%FMSY (GB yellowtail, SNE yellowtail and hake).
- **Method 3: ABC based on reduction in incidental bycatch:**
 - SNE winter flounder is not expected to rebuild within the required period, and the ABC recommendations are based on estimates of discards that result from recent management measures.
- **Method 4: Interim ABCs based on data-poor proxies:**
 - GOM winter flounder stock status is unknown, and the ABC recommendation is based on 75% of recent catches.

SSC Advice and TORs for 2010 Groundfish Assessments

- **ToR 1** - expected performance for avoiding overfishing.
 - Performance of 75%FMSY only evaluated generically and for other stocks and situations (e.g., principal groundfish in the late 1990s).
- **ToR 2** - information needed to develop ABC control rules that account for scientific uncertainty in OFL and the Council's desired risk tolerance.
 - Most stocks need reliable stochastic projections (or MSEs)
 - Decision on risk tolerance needed from Council*

Monkfish – 2009 Interim ABC Control Rule

- Considerable uncertainties in the monkfish assessment model preclude its use to determine probability of exceeding the projected OFL.
- The SSC recommended an interim method for determining Acceptable Biological Catch based on average exploitation rate during the recent period of increase in both management units and the most recent estimate or index of exploitable biomass.
- The data-poor default method for determining interim ABC produces catch advice that is substantially less than the nominal OFL, but is not directly associated with overfishing.
 - OFL is 22,729 mt for the north and 28,263mt for the south.
 - ABC is 17,485 mt for the north (77% of OFL) and 13,326 mt for the south (47% of OFL).
- Although the interim ABCs are not derived as a function of scientific uncertainty, the reductions from OFL are consistent with data-poor situations.

Updated Monkfish ABC (2010) and TORs, June 2010 SAW 50 Benchmark

- **ToR 1** - expected performance for avoiding overfishing.
 - Recent exploitation rate appeared to be sustainable
- SAW50 projections of updated assessment indicate low probability of overfishing in the southern area, but high probability of overfishing in the northern area if catch=ABC.

ToR 2 - information needed to develop ABC control rules that account for scientific uncertainty in OFL and the Council's desired risk tolerance.

- Stochastic projections or MSEs needed
- Decision on risk tolerance needed from Council*

Skate Complex – 2009 Interim ABC Control Rule

- OFL cannot be determined, because overfishing reference points are survey proxies, and estimates of F or FMSY reference points are not available; **Feb. 2009**.
- The interim ABC is derived as the multispecies skate catch associated with the median of the observed series of a catch/biomass exploitation index and the most recent 3-year average of the multispecies skate survey index; **March 2010**.
- Status of each skate species will continue to be monitored, but the fishery will be managed using a multispecies catch limit, supplemented with additional management actions.
- The multispecies ABC is supplemented with a prohibition on possessing thorny skate.

Updated Skate ABC (2012?) and ToRs for Future Assessments

- New challenges concerning skate management are expected.
 - Old and new survey systems need calibration.
 - Discarding of skates may increase.
 - Life histories and geographic ranges vary among species:
 - Northern species (thorny and smooth) are overfished;
 - Southern species (rosette and clearnose) are not overfished;
 - Target species (winter and little), as well as barndoor are rebuilding and are most likely transboundary resources.
- Future management of skate fisheries should include consideration of treating species separately or as geographic groups of species.
- **ToR 1** - expected performance for avoiding overfishing.
 - Unknown, but recent exploitation rate appears to be sustainable for most skate species
- **ToR 2** - information needed to develop ABC control rules that account for scientific uncertainty in OFL and the Council's desired risk tolerance.
 - Reliable assessment and stochastic projections needed (or MSE of simpler ABC control rule)
 - Decision on risk tolerance needed from Council*

Herring – 2009 Interim ABC Control Rule

- Retrospective inconsistency in biomass estimates is greater than confidence limits.
- ABC recommendation was initially based on magnitude of inconsistency in exploitable biomass (40% buffer between OFL and ABC); **Sept. 2009.**
- Council requested that the SSC consider a smaller buffer (17%) based on recent retrospective inconsistency.
- The SSC's revised recommendation was that "In the context of uncertainties, it would not be appropriate to allow catches to increase."
- Recent catch should be used as an interim ABC; **Nov. 2009.**
- The choice of recent time period to use for ABC depends on the Council's tolerance to risk.*

Updated Herring ABC (2013?) and ToRs for a 2012 SAW (including a management strategy evaluation)

- **ToR 1** - expected performance for avoiding overfishing.
 - Unknown, but recent catches appear to be sustainable
- **ToR 2** - information needed to develop ABC control rules that account for scientific uncertainty in OFL and the Council's desired risk tolerance.
 - Reliable assessment and stochastic projections needed (or MSE of simpler ABC control rule)
 - Decision on risk tolerance needed from Council*

Deep Sea Red Crab – 2009-2010 Interim ABC Control Rules

- MSY was initially approximated from depletion-adjusted average catch model
- OFL= MSY proxy
- ABC recommendation was initially based on 2007 landings (70% OFL); **Sept. 2009.**
- The PDT demonstrated that the Depletion-Adjusted Average Catch model developed by the Data Poor Stocks Working Group provides an estimate of sustainable yield that underestimates maximum sustainable yield (MSY).
- Therefore, the information available for red crab is insufficient to estimate MSY or OFL.

In lieu of an estimate of OFL, the SSC recommendation for an interim ABC is based on the long-term average landings of males, which is the same result as provided by Depletion Adjusted Average Catch model that assumes no depletion; **March 2010.**

- The two survey estimates of abundance and their variance do not provide evidence of significant depletion from 1974 to 2003-2005.
- The SSC concludes that an interim ABC based on long-term average landings is safely below an overfishing threshold and adequately accounts for scientific uncertainty.

Updated Red Crab ABC (2011?)

- **ToR 1** - expected performance for avoiding overfishing.
 - Unknown, but average catch appears to be sustainable
- **ToR 2** - information needed to develop ABC control rules that account for scientific uncertainty in OFL and the Council's desired risk tolerance.
 - Reliable assessment and stochastic projections needed (or MSE of simpler ABC control rule)
 - Decision on risk tolerance needed from Council*