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New England Fishery Management Council

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**To:** Paul J. Howard, Executive Director  
**From:** Dr. Steve Cadrin, Chairman, Scientific and Statistical Committee  
**Date:** June 23, 2009

**Subject: Amendment 16 to the Northeast Multispecies Fishery Management Plan: Review of Rebuilding Programs for Newly Overfished Stocks and Further Development of ABC Guidance**

The Scientific and Statistical Committee (SSC) was asked to review rebuilding plans and provide guidance on specification of Acceptable Biological Catch (ABC) for all stocks in the Northeast Multispecies Fishery Management Plan. The terms of reference were to:

1. *Review the formal rebuilding strategies for stocks that have been determined to be overfished (witch flounder, GB winter flounder, pollock, Atlantic wolffish, and northern windowpane flounder). Amendment 16 proposes one alternative for each of these stocks. The Council asks that the SSC comment on the reasonableness of these options and the development of rebuilding programs for the stocks that do not have reliable projections (Atlantic wolffish, northern windowpane flounder).*
2. *Develop further guidance for setting groundfish ABCs. Amendment 16 adopts mortality objectives and formal rebuilding strategies but does not specify ABCs or ACLs. The Council is expected to ask the SSC to review ABCs for the multispecies complex this fall and will adopt ACLs based on those recommendations. These decisions will be forwarded to NMFS in a specifications package, similar to the approach used for annual TACs for other species.*

On April 30-May 1, 2009, the SSC reviewed several sources of information and associated presentations by the Multispecies Plan Development Team (PDT):

1. SSC Overview of Amendment 16 (powerpoint presentation).
2. SSC Amendment 16 Mortality Targets (powerpoint presentation)
3. Groundfish PDT memo dated September 26, 2008 (Amendment 16 mortality reductions)
4. Groundfish PDT memo dated October 24, 2008 (new rebuilding programs)
5. Multispecies ABCs (powerpoint presentation)
6. Draft technical guidance for setting ABCs
7. Stocks Without Projections
8. Examples of applying the Groundfish PDT's proposed ABC rules to several species as assessed at GARM II.
  - a. CASE 1: Gulf of Maine Cod
  - b. CASE 2: Georges Bank Cod
  - c. CASE 3: CC/GOM Yellowtail Flounder

As a basis for providing recommendations on rebuilding plans and ABC specification, the SSC endorses the assessment methodology from the 2008 Groundfish Assessment Review Meeting (NEFSC 2008), including the projection methods approved by the Peer Review Panel. The SSC also

supports the PDT's proposed rebuilding plans for newly overfished stocks (witch flounder, Georges Bank winter flounder, pollock, Atlantic wolffish, and northern windowpane flounder), in which the rebuilding period is determined by age based projections and the maximum net present value.

In July 2008, the SSC reviewed the Multispecies PDT's general approach to specifying ABC. The SSC offered several suggestions for improvement to the general approach including a recommendation that the approach be applied to previous stock assessment results to evaluate performance of the approach. On April 30 2009, the PDT presented its performance evaluation of the proposed approach for three principle groundfish stocks: Gulf of Maine cod, Georges Bank cod and Cape Cod-Gulf of Maine yellowtail flounder. The PDT's approach to specifying ABC produced fishing mortalities that exceeded  $F_{MSY}$ , therefore not preventing overfishing nor achieving rebuilding objectives. The PDT concluded that their proposed ABC method would not have ended overfishing if used after the 2005 groundfish assessments. The SSC noted that the PDT evaluation used the results of the 2005 assessments and compared the outcome of the ABC specification approach with the results of the 2008 assessments. Because of a retrospective pattern in the assessments, historical stock sizes estimates in the 2008 assessments are lower than those estimated in the 2005 assessments. The SSC concluded that this unfortunate result is a reflection the fact that the 2005 assessments now appear to have been optimistic. While it is generally assumed that the most recent estimates of stock sizes are the most reliable, simulations based on principle groundfish stocks suggest that this is not always the case (unpublished analyses presented at GARM III; NEFSC 2008).

This situation highlights the following:

1. Medium to long term probabilistic stock projections are highly uncertain,
2. Accurately estimating probabilities at the tails of probability distributions (either high or low probabilities) is particularly difficult,
3. Even if projections are unbiased and probabilities are accurately estimated, some fish stocks will not be rebuilt by the end of the rebuilding period.
4. The available data is inadequate to conduct probabilistic projections for some stocks.

Thus, the SSC recommends that the Council consider ABC methods that are robust to the four points above. Such an approach could be derived from the guidance provided by the National standard guidelines' provision for a stock or stock complex that "... *has not rebuilt by  $T_{max}$  [the end of the rebuilding period], then the fishing mortality rate should be maintained at  $F_{rebuild}$  or 75 percent of the MFMT [maximum fishing mortality threshold; i.e.,  $F_{MSY}$ ], whichever is less*" (NOAA 2009). Considering that seventeen of the twenty groundfish stocks are currently rebuilding, and many are not achieving the scheduled rebuilding, the SSC anticipates that the prescribed ABC specification will be applicable to many groundfish stocks.

The SSC concluded that in the absence of better information on what an appropriate buffer should be between the OFL and the ABC, a relatively simple ABC and robust specification could be applied to all groundfish stocks, in all stages of rebuilding or long-term maintenance of optimum yield. Given the guidance for specifying ABC as the lesser of  $75\%F_{MSY}$  or  $F_{rebuild}$ , and the definition of optimum yield in the current Multispecies Fishery Management Plan as that associated with  $75\%F_{MSY}$ , the SSC recommends that the Council consider this ABC specification be applied to all groundfish stocks.

The recommended ABC specification requires the continuation of existing rebuilding plans and the development of new rebuilding plans (including determination of the optimal rebuilding period and

schedule of rebuilding) when  $75\%F_{MSY}$  does not allow rebuilding within the desired time period. The recommended ABC specification is intended to decrease the influence of biomass reference points and medium-term projections, both of which have considerable uncertainty (NEFSC 2008).

Management strategies based on  $75\%F_{MSY}$  have been evaluated for many worldwide fisheries, and consistently perform well for avoiding overfishing and producing nearly maximum long-term yield (Restrepo et al. 1998, Restrepo and Powers 1999). Specification of optimum yield is based on  $75\%F_{MSY}$  for several U.S. fishery resources (GOMFMC 2008, SAFMC 2008). The performance of the recommended ABC specification should be evaluated for each New England groundfish stock. Stock assessments that suffer from a consistent overestimation of biomass will be a challenge for any ABC specification, and rebuilding plans will need to be monitored frequently. For stocks that do not have accepted projection methods (e.g., wolffish, northern windowpane flounder), the SSC recommends that ABC be based on  $75\%F_{MSY}$  (or its proxy) and the most recent estimate of exploitable biomass.

Stocks that have unknown stock status with respect to overfishing or overfished will have to be addressed on a case-by-case basis for interim ABC recommendations from the SSC. Unknown status can result from no accepted stock assessment method (e.g., Gulf of Maine winter flounder) or no accepted reference points. For example, the SSC reviewed the most recent stock assessment for Gulf of Maine winter flounder, and recommends a reduction in catch. The 2008 assessment reports states that *“While the Panel was unable to determine the stock’s status relative to the BRPs, it agreed that the current trend in the population was very troubling. The Panel generally agreed that it is highly likely that biomass is below  $B_{MSY}$ , and that there is a substantial probability that it is below  $\frac{1}{2} B_{MSY}$ . The Panel noted that other stocks in the area of this mixed fishery were also at low levels.”* (NEFSC 2008). Therefore, the SSC recommends that an interim ABC for Gulf of Maine winter flounder be based on 75% of status quo catch (defined as average catch of 2005-2007),

The SSC was informed that the recommended ABC specification may impose procedural difficulties for the Council, because Amendment 16 options were developed using  $F_{MSY}$  or  $F_{rebuild}$  projection scenarios that are somewhat different than the resulting ABC’s for some stocks. However, in response to the SSC’s terms of reference to provide guidance on new rebuilding programs and ABC specifications, the SSC concludes that these recommendations should be implemented as soon as possible.

#### **SSC Recommendations:**

- 1. The target date for rebuilding for stocks recently classified as overfished (witch flounder, Georges Bank winter flounder, pollock, Atlantic wolffish, and northern windowpane flounder) should be 2017 based on the results of age-based projections and maximum net present value.**
- 2. The Council should consider an Acceptable Biological Catch (ABC) specification that uses the same method for all stocks, similar to guidelines for stocks that have not rebuilt at the end of the required building period:**
  - a. ABC should be determined as the catch associated with 75% of  $F_{MSY}$ .**
  - b. If fishing at 75% of  $F_{MSY}$  does not achieve the mandated rebuilding requirements for overfished stocks, ABC should be determined as the catch associated with the fishing mortality that meets rebuilding requirements ( $F_{rebuild}$ ).**

- c. **For stocks that cannot rebuild to  $B_{MSY}$  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).**
- d. **Interim ABCs should be determined for stocks with unknown status according to case-by-case recommendations from the SSC.**

#### References

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