



New England Fishery Management Council

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

**MEMORANDUM**

August 28, 2008

TO: Council  
FROM: Paul J. Howard, Executive Director  
SUBJECT: Summary of Scientific and Statistical Committee Comments (SSC) on the Development of Northeast Multispecies Amendment 16

You will find attached the SSC's advice and comments to the Groundfish Plan Development Team concerning approaches to be employed in the analyses for the Draft Environmental Impact Statement (DEIS) for Multispecies (Groundfish) Amendment 16. The SSC reviewed the following:

- Groundfish Annual Catch Limits -- a process, structure and framework for evaluating uncertainty
- Cost/Benefit Analysis of Rebuilding Strategies
- Closed Area Model – overview of positive math programming, model evolution and limitations
- Estimated Economic Impacts – including expected changes for Amendment 16 based on the Closed Area Model

**Scientific and Statistical Committee Meeting  
Gulf of Maine Research Institute, Portland ME  
July 10, 2008**

**Summary of Comments Related to the Development of Amendment 16  
to the Northeast Multispecies Fishery Management Plan**

**Groundfish Annual Catch Limits**

Council staff summarized an approach for setting ABCs and ACLs that is being developed for the Northeast Multispecies Fishery Management Plan by the Groundfish Plan Development Team. After reviewing the administrative process for setting these catch levels, staff described a structure for considering scientific and management uncertainty. The goal of developing the structure is to provide a consistent approach to evaluating uncertainty for the nineteen multispecies stocks. This will facilitate setting ABCs and ACLs since the public, SSC, and Council will require an understanding of the criteria that are used to evaluate risk and uncertainty. Recognizing that the structure may need to be modified as experience increases, the PDT is proposing that it not be detailed in the Amendment 16 document so that changes can be made without a formal management action.

The structure is based in part on a paper that describes a method for evaluating scientific uncertainty (Rosenberg et al 2007), but modifies the concepts suggested in the paper and extends the concepts to include management uncertainty and risk. To evaluate scientific uncertainty, the PDT proposes to evaluate for each stock various factors that characterize stock productivity and assessment uncertainty. The results of this evaluation are used to suggest a catch level for the ABC based on the projection output (in the case of age-structured models).

A similar approach is being developed to evaluate management uncertainty and risk for setting the ACL less than or equal to the ABC, but additional PDT work is needed to complete this part of the proposal. Staff emphasized that the results of these analyses are meant to be informative, not prescriptive. The goal is not to create a formula that results in an unchangeable catch level, but to provide information that informs the decision on catch levels.

The PDT asked two questions: does this approach seem reasonable, and does the SSC have suggestions for improving this approach? SSC members supported continued development of this approach and felt it would provide information that will be useful in setting ABCs and ACLs.

SSC members offered several suggestions for improvement, among them that the PDT should reconsider the elements used to determine scientific uncertainty. Rosenberg et al (2007) evaluated vulnerability for each stock, while the PDT instead used assessment uncertainty. The PDT believed that since all groundfish stocks are very vulnerable to the fishery, evaluating the stocks for this element would provide little useful information. SSC members, however, felt that it was important to provide these vulnerability determinations. Staff agreed to reconsider using vulnerability as an element to be considered when evaluating scientific uncertainty.

SSC members also suggested that the categorical approach developed by the PDT seemed to bypass a more probabilistic approach that is possible for many stocks. Since uncertainty can be

estimated for factors such as stock size, fishing mortality, and recruitment, it is possible to develop a quantitative estimate of the uncertainty associated with a given catch level. They explained further, that this should not be ignored in favor of the categorical approach. PDT members noted that part of this quantifiable uncertainty is incorporated into the projection model used to develop catch distributions. The categorical approach supplements this by addressing factors that cannot be estimated by the projection model.

The SSC further suggested that the PDT apply this approach to past data collected in previous years to see how that approach would have performed if used at that time. For example, using the results of GARM II, they discussed that the PDT should work through the approach and develop catch levels consistent with the proposed evaluations, and then compare these catch levels to the results of later assessments (GARM III) to determine if the resulting catch levels would have resulted in a closer adherence to mortality targets.

The SSC also offered a comment on the steps of the process. Noting the concern that ABCs and ACLs will often be based on data that is several years old because of the timing of assessments and the setting of catch levels, they suggested that it may be possible to reduce the time lags by guiding the decisions with data that is available on a more frequent basis (such as trawl surveys).

### **Groundfish Economic Analyses**

Long-term economic and short-term input-output analyses: The SSC asked about how predicted outcomes compared to actual outcome. Dr. Eric Thunberg explained that the main value of the model was to make relative comparisons between long-term strategies such as rates of rebuilding and not to predict actual economic outcomes. It could not accurately predict results because there are too many factors such as annual fluctuations in recruitment, fishing costs including fuel costs and fish prices to make it possible to predict actual revenues in the long-term. The SSC felt that the comparison of predicted to observed catch was reassuring and indicated that the model was accurately representing the management system.

Dr Thunberg also presented information on the input-output model that is being used to estimate the geographic distribution of economic impacts from a change in revenues for fishing vessels in different ports as well as the limitations of input-output analyses. The Committee asked several questions about how the models could be used but did not make any recommendations with respect to changes or modifications in the models.

Closed area model: The SSC recommended that the model be run using 2007 data to evaluate the impacts of the Amendment 16 management alternatives. The Committee also made two other suggestions. The first was to restructure the model to try to account for hard TACs. The other was to compare the predicted effort distribution for past actions with the actual outcome. Dr. Walden accepted these comments, however, he noted there would likely not be enough time to carry them out during the development of Amendment 16.