New England Fishery Management Council
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John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

To: Paul J. Howard, Executive Director
From: Dr**.** Steve Cadrin, Chairman, Scientific and Statistical Committee
Date: February 11, 2009

Subject: SSC Recommendations on Skate Amendment 3

The SSC was asked to review updated Skate Acceptable Biological Catch (ABC) to be implemented through Amendment 3 to the FMP for the Northeast Skate Complex. ABCs are required under the Magnuson-Stevens Act and must be specified using best available science, taking into account uncertainty to prevent overfishing. In addition, the ABCs may be specified such that they have an acceptable probability of rebuilding overfished species.

On February 6 2009, the SSC reviewed the Council request, overview presentations by the skate PDT, and six background documents:

1. NEFSC 2009. Skate Species Complex: Examination of Potential Biological Reference Points for the Northeast Region. In the Northeast Data Poor Stocks Working Group Report, December 8-12, 2008 Meeting. NEFSC Ref. Doc. 09-02.
2. Miller, T., R. Muller, B. O'Boyle and A. Rosenberg. "Report by the Peer Review Panel for the Northeast Data Poor Stocks Working Group" 20 January 2009
3. "Discard estimation" (December 11, 2008 memo from A. Applegate to Data Poor Assessment Workshop)
4. "Estimated species composition of skate landings and discards using the selectivity ogive method" (January 14, 2009 memo from A. Applegate to Skate PDT)
5. "Skate rebuilding catch limit re-analysis" (January 14, 2009 memo from PDT to SSC)
6. "Skate ABC recommendations" (January 26, 2009 memo from Skate PDT to SSC)

<u>Revised reference points and stock status</u>

The Peer Review Panel of the Data Poor Stocks Working Group recommended maintaining index-based reference points in which B_{MSY} proxies are defined based on the 75^{th} percentile of the survey time series, and $B_{threshold}$ is one-half B_{MSY}. The scientific basis of these reference points is that each of the seven skate species is assumed to have been at or near B_{MSY} during the survey series, and the upper range of the survey series approximates B_{MSY}. The Panel recommended using the entire survey series in the calculation of B_{MSY} proxies (except for barndoor skate), because there is no basis for excluding recent data. For barndoor skate, the Panel recommended that the existing definition (based on the 1963-1966 period) be maintained. The Panel also recommended maintaining existing overfishing definitions, which are based on annual percent declines of the survey index used to monitor stock biomass.

Application of the Peer Review Panel's recommended reference point values changes the status of some skate species (see Figure):

- Thorny skate is overfished and overfishing is occurring.
- Winter skate and smooth skate are approaching an overfished condition (i.e., their biomass index is near the minimum stock size threshold), but overfishing is not occurring.
- All other skates (little skate, barndoor skate, clearnose skate and rosette skate) are not overfished and overfishing is not occurring.

SSC Recommendation:

1. **The SSC endorses the minimum stock size thresholds, overfishing reference points, and resulting status determinations recommended by the Peer Review Panel of the Data Poor Stocks Working Group.**

    a. The SSC recognizes that MSY reference points could not be estimated because of uncertain catch data, imprecise survey series, and a general lack of correspondence between the magnitude of estimated fishery removals and trends in stock biomass.

    b. Endorsement of the Peer Review Panel's recommended revisions to skate reference points does not imply that reference points for the northeast skate complex (and the values of stock size thresholds) should be automatically updated when new survey data becomes available. The recommended B_{MSY} and F_{MSY} proxies are arbitrary, and continued revisions of the percentile-based B_{MSY} reference points would shift the value of the reference point in the direction of the stock's recent trend (i.e., continued decline would decrease the reference point, and rebuilding would increase the reference point). Any revision to these reference points should be recommended through a peer review process, and should be based on MSY or appropriate proxies.

<u>Acceptable Biological Catch</u>

The PDT presented several alternative methods for deriving Acceptable Biological Catch (ABC). The methodology for determining ABC was not reviewed by the Data Poor Stocks Working Group.

SSC Recommendation:

2. **The SSC recommends that Acceptable Biological Catch for the northeast skate complex is 23,826 mt per year for the 2010 and 2011 fishing years.**

    a. The ABC recommendation 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.

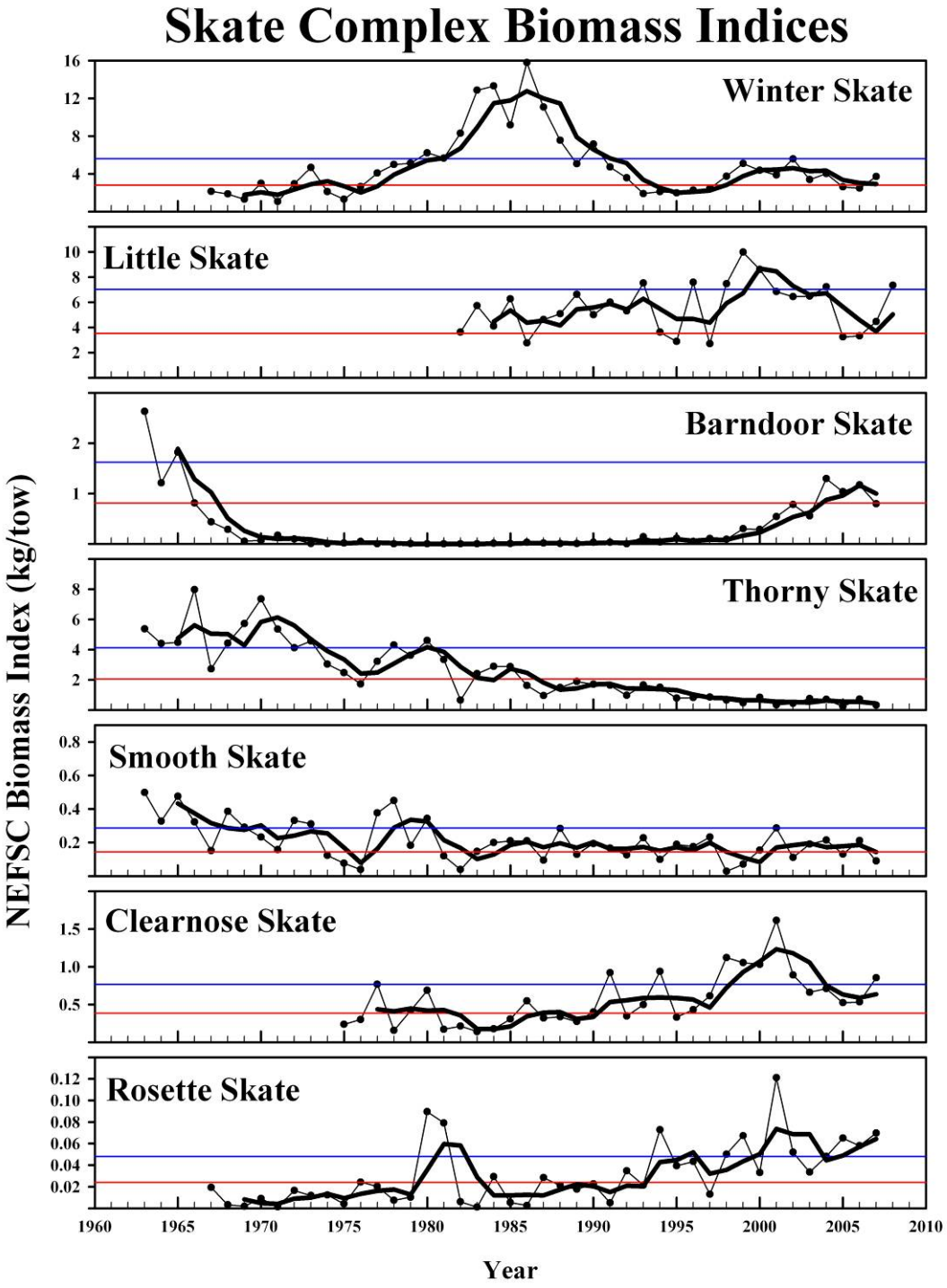
    b. The SSC agreed with the PDTs proposed strategy of monitoring the status of individual skate species, managing the fishery using a multispecies catch limit, supplemented with additional management actions as needed. Therefore the ABC recommendation is for the entire Northeast skate complex.

c. The catch associated with overfishing (OFL: overfishing level), cannot be determined, because overfishing reference points are survey proxies, and estimates of fishing mortality or fishing mortality reference points are not available. Therefore, the method of determining ABC should be considered an interim proxy until an OFL and its uncertainty can be quantified, and supplemental management actions will continue to be required for individual skate species that are overfished or for which overfishing is occurring.

d. Given that the survey series used to monitor stock biomass ended in 2008 (i.e., the R/V Albatross was replaced by the FSV Bigelow), the ABC recommendation should be maintained for 2010 and 2011 fishing years. The next framework adjustment should consider results from vessel calibration experiments to revise the ABC determination method.

e. The Annual Catch limit (ACL) cannot exceed the ABC. The recommended ABC (23,826 mt) is 57% of the estimated catch in 2007. Therefore total catch (the sum of landings and discards) must be reduced by at least 43%. The Council should account for the expected discard rate and management uncertainty to determine Total Allowable Landings (TAL).

Figure 1. Trends in stratified weight per tow compared to updated biomass reference points. The blue, upper line represents the B_{MSY} proxy. The red line represents the minimum stock size threshold (i.e., the stock is determined to be overfished when the three year moving average for biomass is below this threshold).



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Subject: Review of specific alternatives under consideration in Scallop Amendment 15

The SSC was asked to review and provide input on three aspects of Scallop Amendment 15:

1) methods for deriving Acceptable Biological Catch (ABC), Annual Catch Limit (ACL), and Annual Catch Target (ACT),
2) alternatives under consideration to modify the overfishing definition used in the Scallop FMP, and
3) to provide feedback on methods for analyzing the economic and social impacts of measures under consideration.

On February 6 2009, the SSC reviewed the Council request, an overview presentation by the scallop PDT, and five background documents:

1. Scallop Amendment 15 DEIS – Description of alternatives under consideration only
2. Summary of "hybrid" overfishing definition alternative – power point presentation
3. Economic trends in the scallop fishery (landings, revenues, prices etc.)
4. Summary of methods used for economic analyses
5. Summary of issues that will be considered in the social impact assessment

<u>Methods for deriving ABC, ACL, and ACT</u>

According to the recently published National Standard Guidelines (January 16 2009), ABC is the annual catch that accounts for the scientific uncertainty in the estimate of OFL (overfishing level, or catch associated with overfishing). The Scallop PDT presented a qualitative evaluation of scientific uncertainty and management uncertainty, and proposes an OFL-ABC-ACL-ACT process in which ABC is arbitrarily based on 90% of F_{max} to account for uncertainty in the estimate of OFL. The SSC agrees that the proposed general process for setting ACLs is appropriate, but some specific modifications are needed to comply with National Standard 1 Guidelines. 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. The SSC recognizes that the scallop stock assessment has relatively low uncertainty, and given the current stock status and management system, there is relatively low risk of the resource being overfished. Although arbitrary decisions may be necessary for data poor situations, the scallop stock assessment is informative enough to support a quantitative evaluation of uncertainty. The SSC is providing technical feedback on the evaluation of uncertainty and preferred methods for deriving ABC, ACL and ACT directly to the Scallop PDT to support an ABC recommendation to be specified in September 2009. The Scallop PDT plans to present a modified analysis to the SSC for determining ABC.

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.**

Overfishing definition and target fishing mortality

The Scallop PDT proposes a "hybrid" approach to defining overfishing and target fishing mortality that combines the status quo overfishing definition (based $F_{max,}$ the fishing mortality that maximizes yield-per-recruit, as a proxy for F_{MSY}), but includes a F_{target} that is based on time-averaging principles in access areas.

SSC Recommendation:

3. **Recognizing that there is no change to the proposed overfishing definition, and the target is based on methods recently reviewed by the SSC, the SSC repeats its October 2008 endorsement that the proposed method for deriving the target catch is scientifically sound. Using a time-averaged rate of fishing mortality is a reasonable approach to deriving target catch, provided that the Annual Catch Target (ACT) is less than or equal to the Annual Catch Limit (ACL).**

4. **With respect to the overfishing definition, the SSC repeats its advice from October 2008: "Although F_{max} may be a reasonable proxy for F_{MSY}, the SSC recommends more explicit consideration of long-term sustainable yield, rather than maximizing yield-per-recruit. For example, aspects of long-term sustainable yield include: non-equilibrium conditions, stock-recruit relationship, conservation of spawning potential, density dependence, and environmental influences; all of which should be monitored as a condition managing the fishery based on F_{max}."**

Methods for economic and social impacts of alternatives

SSC members reviewed the background documents, and briefly discussed the issue with the Scallop PDT. However, the SSC could not allocate enough time to adequately address the request at the February 6 2009 SSC meeting. Therefore, the matter will be the first item on the SSC's agenda for the March 17-18 2009 meeting. The SSC will continue to interact with the Scallop PDT in preparation of the March meeting.