Groundfish #2

New England Fishery Management Council
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To: Paul J. Howard, Executive Director
From: Steve Cadrin, Chairman, Scientific and Statistical Committee
Date: September 20, 2010

Subject: **Acceptable Biological Catch Recommendations for Pollock, Georges Bank Yellowtail Flounder, Southern Windowpane Flounder, Northern Windowpane Flounder, Ocean Pout and Gulf of Maine Winter Flounder**

The Scientific and Statistical Committee (SSC) was asked to:

1) Consider the pollock assessment results of the 50th Stock Assessment Workshop (SAW50) and provide the Council FY 2011 – 2014 Acceptable Biological Catch (ABC) recommendations consistent with the interim control rules adopted in Amendment 16 and the following levels of risk:
    a. An ABC that has approximately a 40 percent probability of overfishing (i.e. less than a median risk of overfishing) in any single year for FY 2011 – FY 2014.
    b. An ABC that has approximately a 10 percent probability of overfishing in any single year for FY 2011 – FY 2014.
    c. Low risk that the stock will be overfished during FY 2011 – FY 2014.
2) Review Gulf of Maine winter flounder catches for 2009 and additional survey information collected since the 3rd Groundfish Assessment Review Meeting (GARM III) and evaluate whether this information affects the current ABC recommendation. If so, provide an updated ABC recommendation for fishing years 2011 – 2012.
3) Review the 2010 assessment of Georges Bank yellowtail flounder from the 2010 Transboundary Resources Assessment Committee (TRAC) and recommend ABCs for the fishing mortality that is consistent with the following rebuilding strategies under Council consideration:
    a. Rebuild by 2014 with a 75 percent probability of success (this is current approved rebuilding strategy and must be considered as the No Action alternative).
    b. Rebuild by 2016 with a 50 percent probability of success.
    c. Rebuild by 2016 with a 60 percent probability of success.
    d. Rebuild by 2016 with a 75 percent probability of success.
4) Review additional survey information, if available, and recommend revised 2011-2012 ABCs for ocean pout, as well as northern and southern windowpane flounder, as appropriate.

On August 25-26, 2010 the SSC reviewed the following information and associated presentations developed by the Groundfish Plan Development Team (PDT), SAW50, GARM III, and the 2010 TRAC for groundfish species:

1. Terms of Reference Memo to the SSC from Paul Howard.
2. Groundfish PDT memo dated August 6, 2010 (with attachments): Multispecies ABCs for 2011-2014
3. Northeast Fisheries Science Center. 2010. 50th Northeast Regional Stock Assessment Workshop (50th SAW): Assessment Summary Report. NEFSC Ref. Do. 10-09.

4. NEFSC 2010. 50th Northeast Regional Stock Assessment Workshop: (50th SAW) Assessment Report.
5. O'Boyle, Robert. 2010. SARC 50 Panel Summary Report.
6. Bell, Michael C. 2010. 50th Northeast Regional Stock Assessment Workshop (50th SAW): reviewer comments.
7. Sullivan, Patrick J. 2010. 50th Northeast Regional Stock Assessment Workshop (50th SAW): reviewer comments.
8. Trzcinski, M. Kurtis. 2010. 50th Northeast Regional Stock Assessment Workshop (50th SAW): reviewer comments.
9. Wheeler, John P. 50th Northeast Regional Stock Assessment Workshop (50th SAW): reviewer comments.
10. Northeast Fisheries Science Center. 2008. Report of the 3rd Groundfish Assessment Review Meeting (GARM III): I. Gulf of Maine Winter Flounder. NEFSC Ref. Doc. 08-16.
11. Transboundary Resource Assessment Committee. 2010. Georges Bank Yellowtail Flounder: TRAC Status Report 2010/03.
12. Assessment of GB Yellowtail Flounder for 2010. TRAC Ref. Doc. XX-XX. When published, will be available at: http://www2.mar.dfo-mpo.gc.ca/science/TRAC/rd.html
13. Northeast Fisheries Science Center. 2008. Report of the 3d Groundfish Assessment Review Meeting (GARM III): O.: Ocean Pout. NEFSC Ref. Doc. 08-16.
14. Northeast Fisheries Science Center. 2008. Report of the 3d Groundfish Assessment Review Meeting (GARM III): P.: Gulf of Maine/Georges Bank Windowpane Flounder. NEFSC Ref. Doc. 08-16.
15. Northeast Fisheries Science Center. 2008. Report of the 3d Groundfish Assessment Review Meeting (GARM III): Q.: Southern New England/Mid-Atlantic Bight Windowpane Flounder. Gulf of Maine Winter Flounder. NEFSC Ref. Doc. 08-16.
16. Groundfish PDT memo dated July 13, 2009: Groundfish ABCs/OFLs
17. Groundfish PDT memo dated August 7, 2009: Groundfish ABCs/OFLs

Pollock

A new benchmark stock assessment was developed for pollock by SAW50. Pollock was previously assessed using a survey index method by GARM III in 2008 and was determined to be overfished and subject to overfishing. In 2009, the SSC established the ABC for fishing years 2010–2012 by applying 75%F_{MSY} to the most recent 3-year average survey estimate of exploitable stock biomass. The SAW50 assessment is based on an age-structured model, and stock status was revised to not overfished and overfishing not occurring.

The SSC endorses the SAW50 Review Panel's recommendation to accept the revised assessment of pollock as a basis for revising ABC recommendations. However, there were considerable uncertainties in the assessment, an important one being the apparent partial selection of larger and older pollock by the fisheries and surveys (termed 'dome-shaped selectivity'). A domed-shaped selectivity implies that there are fish in the population that are not available to either the fishery or the survey. This could be due to larger Pollock out swimming the survey and fishing gears or to them being in untrawlable or untrawled areas. As a result of the domed - shaped selectivity, only 39% of total stock biomass in 2009 is exploitable, and 61% of total stock biomass is not vulnerable to the fishery. A sensitivity analysis that assumed complete survey retention of large, old pollock (termed 'flat-topped selectivity') resulted in lower biomass estimates and suggests that uncertainty associated with selectivity is greater than statistical estimates of imprecision. However the sensitivity analysis also indicated that the stock is not overfished.

Although sensitivity analyses provide a crude evaluation of uncertainty, they cannot be used to quantify probability of overfishing, as requested in the terms of reference. In June 2009, 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… ABC should be determined as the catch associated with 75% of F_{MSY}.*" The SSC noted that despite the major changes in stock assessment methods and the change in perception of stock status, the revised estimate of maximum sustainable yield (MSY) is similar to previous estimates.

Using projections from the SAW50 assessment at 75%F_{MSY}, the ABC recommendations are 16,900 mt in 2011; 15,400 mt in 2012 mt; 15,600 mt in 2013; and 16,000 mt in 2014. Scenario analyses indicate that ABCs based on 75%F_{MSY} have low risk of overfishing and low risk of leading to an overfished stock by 2015 if the domed survey selectivity estimated by the SAW50 assessment is true. However, if selectivity is actually flat-topped, ABCs based on the SAW50 assessment and 75%F_{MSY} have high risk of overfishing (risk>50%) and a moderate risk of leading to an overfished stock by 2015 (risk between 25% and 50%).

1. **The SSC recommends that Acceptable Biological Catch of pollock is 16,900 mt in 2011; 15,400 mt in 2012 mt; 15,600 mt in 2013; and 16,000 mt in 2014.**

Gulf of Maine Winter Flounder

In 2008, GARM III attempted to assess Gulf of Maine winter flounder but none of the alternative assessment models was accepted by the review panel. Panelists concluded that "*…it is highly likely that biomass is below B_{MSY}, and that there is a substantial probability that it is below ½ B_{MSY}.*" In 2009, the SSC recommended ABC based on 75% of the most recent three-year average catch (238 mt). In June 2010, the Council approved a motion to ask the SSC to examine any recent fisheries independent and fisheries dependent data collected since GARM III for Gulf of Maine winter flounder and to evaluate whether this new information would affect their current ABC recommendation for Gulf of Maine winter flounder.

Conflicting signals persist in the updated information provided by the PDT which continue to confound attempts to assess the Gulf of Maine winter flounder stock. The PDT developed an alternative approach to deriving ABC that is consistent with the ABC control rule for groundfish and which is based on survey data that have been used to assess Gulf of Maine winter flounder. Area-swept survey estimates of exploitable biomass suggest that the current ABC (238 mt) represents a more conservative exploitation rate than 75%F_{MSY}. The SSC concluded that an area-swept survey approach to deriving ABC may provide a better scientific basis for ABC than the current approach, which is based on recent average catch, and is appropriate for the uncertainties in the data and the possibility that the stock is overfished.

The SSC requested an evaluation by the PDT of candidate ABCs for 2011 based on area-swept survey biomass estimates, including a 75%F_{MSY} option and further exploration of survey data properties (e.g., confidence intervals, geographic distributions, inter-annual variability, trawl mensuration) to be considered by the SSC in November 2010. A benchmark assessment is scheduled for spring 2011, so any revision for ABC would be an interim until a peer-review assessment is developed.

2. **The SSC recommends that a revised interim Acceptable Biological Catch of Gulf of Maine winter flounder in 2011 that is based on area-swept survey biomass be considered.**

Georges Bank Yellowtail Flounder

Georges Bank yellowtail flounder was assessed by the TRAC in July 2010. Based on the new assessment and the rebuilding alternatives under consideration by the Council, the SSC was asked to review the ABC for this stock and recommend new ABCs consistent with the assessment and the fishing mortality that is consistent with the rebuilding strategies under consideration.

The 2010 TRAC assessment has a retrospective inconsistency in which recent estimates of stock size were revised downward approximately 40% when the analysis was updated with new data. Despite considerable uncertainties in the assessment and the systematic overestimation of stock size, the SSC endorses the 2010 TRAC estimates as the basis for ABC recommendations. The accepted assessment method for Georges Bank yellowtail flounder does not adjust for retrospective inconsistency. Using the 2010 TRAC assessment and projection methods, the stock cannot rebuild to B_{MSY} by 2014 with a 75% probability of success, even if ABC=0. An ABC of 1,998 would allow rebuilding to B_{MSY} by 2016 with 50% probability. Probability of successful rebuilding by 2016 is expected to increase to 60% if ABC is 1,486 mt and to 75% if ABC is 590 mt.

The inconsistency in estimates of recent stock size primarily results from over-estimating the abundance of the 2005 yearclass. The catches associated with rebuilding options have low probability of overfishing, even if recent overestimation of abundance continues. However, the expected rebuilding under these catch options may not be realized if overestimation continues. Similarly, if future recruitment is less than that assumed in the projections, then the expected rebuilding will not be realized. Estimates of recruitment for the last 30 years have been less than the median recruitment assumed in projections and the B_{MSY} estimate. Although there are uncertainties in the stock assessment and stock projections, the SSC concludes that these are insufficient to modify catch advice based on rebuilding scenarios. Although recent retrospective inconsistency is substantial, it may not continue if it was indeed associated with the 2005 year class. Concerns about recent recruitment affect both the short-term projections and the rebuilding target (B_{MSY}), so alternative assumptions of future recruitment would require re-estimation of B_{MSY}. Therefore the SSC recommends consideration of a revised estimate of B_{MSY} at the next benchmark assessment that accounts for lower recruitment in the last 30 years.

The Transboundary Management Guidance Committee (TMGC) concluded that the most appropriate Total Allowable Catch for the combined Canadian and USA fishery for Georges Bank yellowtail for the 2011 fishing year is 1,900 mt. This catch is expected to allow rebuilding in the short-term (10% increase in 2011), and result in a low risk of overfishing, even if the retrospective inconsistency persists.

3. **The SSC recommends that Acceptable Biological Catch for Georges Bank yellowtail in 2011 depends on the Council's desired rebuilding objectives:**
    a. **The current rebuilding strategy (rebuild by 2014 with a 75% probability of) requires that ABC=0 mt;**
    b. **rebuilding by 2016 with a 50% probability of success requires that ABC=1,998 mt;**
    c. **rebuilding by 2016 with a 60% probability of success requires that ABC=1,486 mt; and**

d. **rebuilding by 2016 with a 75% probability of success requires that ABC=590mt.**
e. **The rebuilding target, B_{MSY}, should be reconsidered by the next benchmark assessment to account for lower recruitment in the last 30 years.**

Index-Based Stocks

Ocean pout and the two windowpane flounder stocks are assessed using a trawl survey index. In 2009, the SSC recommended ABCs for 2010 to 2012 fishing years based on 75% of the F_{MSY} proxy applied to the most recent three-year average estimate of stock size and agreed to review these ABCs as new survey information became available. Updated surveys indicate approximately a 5% reduction in ocean pout and greater reductions for windowpane stocks. However, updated survey data are from the new Bigelow survey system, and conversions between the Albatross survey and the Bigelow survey are considered to be preliminary. More extensive evaluation of other flatfish species (e.g., Georges Bank yellowtail flounder) indicate that survey conversion factors should vary by fish length. Therefore the SSC does not recommend revising ABCs for index-based groundfish stocks.

4. **The SSC recommendations that Acceptable Biological Catch for index-based groundfish stocks should not be revised.**