



New England Fishery Management Council

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

To: Paul J. Howard, Executive Director
From: Scientific and Statistical Committee
Date: June 20, 2011

Subject: Projection methodology for setting groundfish ABCs

The Scientific and Statistical Committee (SSC) was asked the following:

- a. Assuming that a way to verify stock size is developed, does the SSC envision that adjustments to catch advice will be two-sided: that is, catches will be increased if the projection is determined to underestimate stock size and decreased if the projection over-estimates stock size? Or does the SSC expect that adjustments will be one-sided: catches will be reduced if the projection is believed to over-estimate stock size but will not be increased if the opposite is true?
- b. If projections are determined to be unreliable, are there specific ad hoc approaches for recommending ABC that the SSC wishes the PDT to explore?

In order to meet this term of reference, the SSC considered the following:

1. Summary of January 4, 2011 Executive Committee meeting.
2. Letter re: groundfish specifications from Paul Howard to Pat Kurkul and Dr. Nancy Thompson dated December 15, 2010.
3. Report from the Augmented Groundfish PDT (APDT) to the Groundfish Oversight Committee dated April 16, 2011.
4. Summary of May 31, 2011 conference call from the APDT to the Groundfish Oversight Committee and SSC.
5. Survey-biomass regression results and supporting analyses.
6. Data and regression diagnostics.
7. Presentation on regression analyses by APDT Chair Tom Nies.
8. Presentation on preliminary projection analyses by APDT member Chris Legault.

Following GARM I (2002) and GARM II (2005), groundfish catch limits were set for a three-year period covering the span of time between each GARM and the next. However, following GARM III (2008), the decision was made to not hold a GARM IV in 2011, but rather to assess each stock on a unique timeline determined by need and resource constraints (financial and personnel). One consequence of this decision was that, unlike specifications that followed GARM I and II, biomass for some stocks would need to be projected beyond the three- or four-year limit of scientific confidence. GARM III, completed in 2008, used data up to and including 2007. Specifications for 2010 and 2011 therefore projected three and four years beyond the terminal year, but forthcoming specifications for 2012, 2013 and 2014 would require projections five, six and seven years beyond the terminal year.

Given those circumstances, the Groundfish PDT began a more in-depth examination of the reliability of biomass projections over a medium term horizon (i.e., more than four but less than ten years). Due to the extensive workload imposed by this task, the PDT was augmented with additional experts in stock assessment and projection methodology. Analyses by this Augmented PDT (APDT) are ongoing, but the SSC was presented with an update on the work and asked to provide advice. While a more detailed report to the APDT is being prepared, a summary of the SSC's advice is provided below.

The SSC recommends:

- 1. The regression analysis illustrated that survey trends are generally inconsistent with projections, and therefore that more work needs to be done to evaluate projections before they can be used as the basis for setting ABCs.**
- 2. The analyses conducted to better understand projection methodologies trialed for Georges Bank yellowtail flounder show promise. Continued modification of this approach and application to other stocks is worth pursuing, and might help explain discrepancies between projections and surveys. Determining the sources of deviations between the projected and “true” biomass estimates (e.g., recruitment patterns, changes in selectivity, weight-at-age, etc.) would help improve the methodology and potentially modify outputs using survey data to obtain more accurate estimates.**
- 3. If a suitable methodology can be developed, the SSC feels that, in principle, adjustments to ABCs would be made upwards or downwards. However, a final determination would be contingent upon the specifics of the outcomes (e.g., magnitude of changes, confidence in the methodology, etc.).**
- 4. The APDT should consider when the work required for a new methodology approximates or exceeds that required for a new assessment of any or all stocks, and therefore the point at which the work should be abandoned in favor of new assessments.**
- 5. As the projection analyses continue, alternative methods that do not rely on projections should be developed in parallel, such as those that retain or modify current ABCs.**