SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON GROUNDFISH MANAGEMENT SCIENCE IMPROVEMENTS AND METHODOLOGY REVIEW TOPICS

The Scientific and Statistical Committee (SSC) reviewed possible topics for off-year science workshops related to improving groundfish stock assessments for the 2019-20 management cycle based on recommendations from recent Stock Assessment Review (STAR) panels (Agenda Item G.4a, Attachment 1). The SSC identified three priority topics for off-year science workshops. These three workshops were also recommended in 2013 (and two of them in 2011), but could not be completed for various reasons. The SSC continues to regard them as priority topics.

Successful workshops require dedicated research, careful organization before the workshop, and post-meeting development of scientific reports, all of which come at a cost of time and resources. The Council should be cognizant of the trade-off between the number of workshops that are held and amount of progress that can be made on other projects with the potential to improve data inputs and stock assessments.

1. Workshop to review historical landings time series (recommended in 2011 and 2013).
A major effort to reconstruct historical landings was initiated in 2008 in response to the Council's call to compile the best estimates of catch history early in the development of Pacific Coast groundfish fisheries. Currently, this effort has produced published estimates for most California and Oregon fisheries and species. Databases have been developed for raw landings and historical species composition data for Washington, and some analysis should be complete by summer 2016, in time for a workshop. An off-year science workshop would review reconstructions of all landings comprehensively. This review would need to be structured differently than the other proposed workshops, since the most expertise is to be found among current and former employees of state agencies, and experienced fishermen and processors. Formal uncertainty analysis for the historical catch estimates due, for example, to uncertainty in estimates of landings species compositions, would also be an important priority for this workshop.

2. Workshop on estimation of B_{MSY} proxies (recommended in 2011 and 2013).
The Council's harvest control rules depend on estimates of stock size relative to a B_{MSY} proxy, with a default B_{MSY} proxy defined as some fraction of unfished stock size, B_0. Changes in stock assessment methods or data inputs can lead to large changes in estimated B_0, and in some cases to marked changes in depletion levels, overfishing limits, acceptable biological catches, or rebuilding times. This workshop would review alternative control rules (e.g., control rules based on "Dynamic B_0" or on direct estimates of B_{MSY}) and compare their performance with current approaches using management strategy evaluation (MSE). The workshop would build on the last B_0 workshop, but would be more focused on the performance of control rules. It would also include review of stock status for a range of stocks when stock status determinations are based on "Dynamic B_0." The evaluation of control rules could be based on the MSE currently being developed to evaluate rebuilding revision rules.

3. Workshop on the shape of the stock productivity curve (Recommended in 2013).
Recent data-moderate assessment approaches such as Extended Depletion-Based Stock Reduction Analysis (XDB-SRA) are designed to have greater flexibility in how productivity changes with stock size. In contrast, nearly all full assessments of West Coast groundfish use the two parameter Beverton-Holt stock recruit relationship, which imposes strong constraints on the shape of the stock productivity curve. While the approach used in XDB-SRA has conceptual appeal, it is not clear whether such flexibility is appropriate given what is known about the growth and mortality of West Coast groundfish. The two approaches represent a fundamental difference in how stock productivity is modeled, and there are important implications to biomass and fishing mortality reference points used in Council's harvest control rules. The SSC recommends that a scientific workshop be sponsored that would evaluate the suitability of these alternative ways of modelling stock productivity in data-moderate and full assessments. Work to include XDB-SRA's approach for modeling productivity in Stock Synthesis has been conducted, making 2016 an opportune year to review productivity assumptions.

Other potential future workshops discussed include:

- Workshop on methods of data reweighting (recommended in 2013).

The Center for the Advancement of Population Assessment Methods (CAPAM) is holding a workshop on this topic in October, 2015. Depending upon the results of that workshop, there may no longer be a need for a separate west coast workshop on this topic. The issue, while technical in nature, has important consequences, since it is not unusual for assessment results to be fairly sensitive to the weights given to composition data. These issues apply to groundfish, CPS and other assessments.

- Workshop on transboundary groundfish stocks.

This workshop would address both control rules and transboundary assessments. Current assessments that are limited by political boundaries that are not reasonable assessment boundaries biologically. Transboundary assessments without related international control rules may not result in better management. Work with scientists from Canada and/or Mexico would be helpful prior to and during this potential future workshop.

- Workshop on recreational catch per unit effort (CPUE) standardization.

Several recent stock assessments have depended upon CPUE standardization, relying on a few methods, such as that of Stephens and MacCall (2004). There has been a proliferation of methods in recent years, and a review of alternative methods would be useful to provide consistent advice prior to future assessments.

- Workshop on spatial models.

As with CPUE standardization methods, there is a fair amount of recent research and literature on spatial modeling. A workshop to review alternative methods and provide guidance for stock assessment could be useful in the future.

PFMC
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