RECOMMENDATIONS FOR OFF-YEAR SCIENCE IMPROVEMENTS

Council Staff Recommendations

- Conduct a stock assessment review (i.e., "post-mortem") workshop to review the 2009 stock assessment review (STAR) process and discuss improvements for the 2011 STAR process.
- Conduct the second harvest policy evaluation workshop to review the current groundfish management framework and seek refinements.

NMFS Science Center Recommendations

- Continue efforts to develop, evaluate, and apply data-poor assessment methodologies to groundfish stocks that have yet to be assessed.
- Investigate, evaluate, and verify the appropriateness of various methods of "tuning" stock assessment models and, in particular, procedures for: (1) estimating input sample sizes of compositional information, (2) adjusting input sample sizes of compositional information to an "effective" sample size, (3) increasing the input variance of trend statistics to match model expectation, and (4) altering input estimates of recruitment process error (σ_r).
- Conduct a comprehensive investigation of the effect of calendar date on groundfish catch rates in the triennial trawl survey. The study should include a wide variety of stocks and should evaluate various statistical standardization procedures that would allow the survey to be maintained as a single time series from 1980-2004.
- Review the contents and recommendations of the NOAA Fisheries Habitat Assessment Improvement Plan (HAIP) and develop a process that would facilitate incorporation of habitat information into groundfish stock assessments.
- Consolidation, analysis, and evaluation of any habitat data, maps, and research relevant to west coast groundfish stocks that have become available since the 2005 Pacific Groundfish essential fish habitat (EFH) process. Such an evaluation is necessary and critical prior to the Council's first 5-year EFH Review, which is scheduled for 2011.

General Recommendations of STAR Panels

- A Management Strategy Evaluation (MSE) approach is needed to evaluate the 40-10 harvest control rule when applied to a stock with dramatically episodic recruitment, such as Pacific hake stock. An MSE is recommended for petrale sole because the estimates of B_0 and $B_{CURRENT}$ are sensitive to the assumed stock-recruitment relationship, making these reference points more uncertain, while B_{MSY} estimates are consistent among all the model run results. (MSE efforts are related to the harvest policy evaluation workshop)
- SS3 implements new options for bias adjustment of stock recruit relationships that have been used with little or no peer review. Simulation testing is needed to confirm that bias adjustment is justified in all cases. Guidelines should be developed on how to configure bias adjustment settings to reflect the biological characteristics of the stock and the available assessment information.

- Develop methods to incorporate uncertainty in natural mortality and/or steepness in model configurations in which these parameters are fixed. The delta method for propagating uncertainty (McCall in prep.) is a promising approach that warrants further evaluation.
- The comprehensive catch reconstructions currently underway in Washington and Oregon need to be completed (as well as the effort to reconstruct California catches). The mixing of U.S. and Canadian catches is of particular concern for the Washington fleets.
- The current assessment platform (SS3) is structurally complex, making it difficult to understand how individual data elements are affecting outcomes. The panel recommends investigating simpler, less structured models, including statistical catch/length models, to compare and contrast results as data and assumptions are changed.
- Explore a Generalized Linear Mixed Method (GLMM) approach with a calendar date covariate to estimate catch per unit of effort (CPUE) indices for the entire triennial survey time series. A species assemblage meta-analysis approach could be used to develop priors for the ratios of q among the early triennial, the late triennial and the Northwest Fisheries Science Center (NWFSC) surveys.
- Explore the relationship between ageing precision, recruitment variability, and bias adjustment (and effects on depletion estimates) using simulation methods, and develop recommended procedures for appropriate methods to follow.
- Investigate alternative methods of re-weighting the data series in Stock Synthesis.
- More work is needed to better understand the performance of maximum likelihood and Bayesian estimators of stock size and trends when large numbers of poorly informed recruitment deviations are estimated. Although it is logically appealing to include such uncertainty, even when there are little coherent data informing cohort strengths, technical and computational issues need to be solved before this approach can be implemented in situations such as yelloweye rockfish.
- Accessing and processing recreational intercept data from Recreational Fishery Information Network (RECFIN) and the three states is much too cumbersome for the stock assessment teams (STATs). A single database that holds all the raw recreational data in a consistent format would greatly expedite processing and interpretation of the data and would reduce the potential for introduction of errors.

PFMC
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