

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
FUTURE COUNCIL MEETING AGENDA AND WORKLOAD PLANNING

In November 2011, the Council tasked its Executive Director with “... scheduling a timely workshop to review key fishery management parameters (for Pacific sardine) such as F_{MSY} , productivity regime shifts in F_{MSY} application, and geographic distribution dynamics.” In June 2012, the Scientific and Statistical Committee (SSC) presented a proposal entitled “*Management Strategy Evaluation Planning Workshop for Pacific Sardine*” to address the Council’s request. Dr. André Punt reviewed the SSC’s proposal highlighting the four key steps involved:

1. Identification of management objectives and quantification of these by means of performance statistics (e.g., average catch, probability the resource drops below a threshold biomass level over a 20-year projection period, impact of abundance of other ecosystem components).
2. Identification of a set of models of the system to be managed (referred to as operating models). This set of models needs to be selected to cover (to the extent possible and feasible given available data) the key uncertainties which may impact the performance of control rules.
3. Identification of candidate overfishing limit/acceptable biological catch/harvest guideline control rules.
4. Projection of the system as reflected in each operating model, given catch limits set by each candidate control rule.

The Coastal Pelagic Species Management Team (CPSMT) proposed an alternative, more narrowly-focused workshop to address the Council’s November 2011 request, entitled “*Workshop to Re-evaluate Parameters of the Harvest Control Rule for Pacific Sardine*” (Agenda Item F.4.b, CPSMT Report). This workshop would focus primarily on the appropriateness of the temperature-recruitment relationship, as well as evaluation of other potential environment-recruit covariates. This reassessment of the environment-recruit relationship could suggest a change in the F_{MSY} as used in the current harvest control rule.

The SSC recognizes the importance of the work proposed by the CPSMT. A better understanding of the environmental effects on Pacific sardine productivity is also an important prerequisite for conducting a management strategy evaluation (MSE) – specifically for carrying out Steps 2 and 4, above. The original simulation work carried out in the late 1990s (Amendment 8 of the Coastal Pelagic Species Fishery Management Plan (FMP)) used an MSE-like design to determine a harvest guideline (HG). This involved jointly identifying the parameters FRACTION (a temperature-dependent exploitation rate) and CUTOFF. The current management structure includes, in addition, the F_{MSY} -based OFL control rule. A new MSE, incorporating updated information on environmental correlates of productivity, could provide

updated parameters F_{MSY} , FRACTION and CUTOFF (or parameters for alternative HG formulations) with a more comprehensive analysis than was possible given the computing power available when the analysis for Amendment 8 was conducted.

The SSC recognizes the considerable workload associated with conducting the proposed MSE. In order to make the effort more manageable and efficient and to provide some of the key results in the near term, a series of short workshops (2-3 days) is suggested:

1. **Environment-Productivity Relationship (February 2013)** Following the CPSMT proposal (Agenda Item F.4.b), the goal of this workshop is to evaluate the environment-productivity relationship, and to recommend which (if any) environmental covariates are important and how they should be modeled. Both oceanographers and biologists should participate.
2. **Operating Model (March 2013)** Using the management objectives from the previous MSE work (Amendment 8 of the FMP) and the recommendations from Workshop 1, above, the key attributes of the operating model will be agreed. Some aspects of the original biological modeling will be updated to take advantage of advances in computer technology. The goal of this workshop is to establish all the detailed aspects of the operating model in principle. The actual coding of the model and runs to re-estimate the parameters of the current control rule will most likely occur after the workshop.
3. **Feedback and Remaining Issues (Timing TBD)** Workshops 1 and 2, above, are designed to produce some key results in the near term by streamlining the process. However, they will not be able to consider all of the important issues, e.g. international management (portion of the stock in USA waters); key economic factors; and ecosystem considerations. After the work of Workshops 1 and 2 has been completed and based on the feedback from the Council and other stakeholders, a third workshop should be convened to scope out the remaining work.

Finally, the SSC notes that a properly done MSE is a considerable effort involving many players (scientists, fishery managers, and stakeholders). The SSC recommends an MSE be conducted within the next two years. However, while results and conclusions are often desired sooner rather than later, the nature of the process is such that delays are not uncommon, and are often necessary to do the job well.

PFMC
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