

## COASTAL PELAGIC SPECIES MANAGEMENT: ADJUSTMENTS TO PACIFIC SARDINE HARVEST PARAMETERS

In February, 2013, the Council and the Southwest Fisheries Science Center (SWFSC) convened a workshop to address four objectives related to current Pacific sardine management: developing a risk assessment framework to evaluate the performance of alternative harvest control rules; reviewing the temperature-recruit relationship used to inform each year's harvest fraction; reviewing the portion of the stock residing in US waters; and planning for a full management strategy evaluation (MSE). The workshop produced a draft risk assessment framework, and a recommendation that there was sufficient new information to move forward with a revised temperature-recruit relationship. The workshop participants also agreed that there was not sufficient new information to warrant further consideration of a revised geographic distribution term and that existing ecosystem and economic model support was insufficient at this time to warrant specific planning for a comprehensive MSE. At the April, 2013 meeting, the Council considered the workshop results and scheduled for the June 2013 Council meeting (1) a possible final decision on the use of a new temperature-recruitment index, and (2) consideration of a supplemental report from the risk assessment analysts evaluating the effect on long term stock productivity and associated fishery performance measures of alternative overfishing limit (OFL) and harvest guideline (HG) control rules suggested by the Council and its advisory bodies.

Temperature-recruit index: Currently, the Scripps Institution of Oceanography (SIO) temperature is used as an indicator of sardine recruitment. The temperature is used to generate a fishing rate (harvest fraction) which in turn is used to calculate OFL and HG. When the temperature drops below a certain threshold, the OFL and fishing rate are both reduced accordingly, but the fishing rate will never go above 15 percent or fall below 5 percent, based on the Council's precautionary policy approach described in the fishery management plan (FMP).

The February workshop found that although a temperature-recruitment correlation is still valid, the California Cooperative Oceanic Fisheries Investigations (CalCOFI) temperature index showed better alignment with sardine recruitment than the SIO temperature series. Further, it was shown that the SIO temperature series has diverged from other temperature indices in the Southern California Bight since its initial adoption for use in 1998. Initial analysis of changing to the CalCOFI temperature index, and making no other changes in harvest control rules, shows that in some recent years, the fishing rate would have been lower than it was using the current SIO temperature index. In other words, instead of the harvest fraction being set at 15% (the highest allowed under the CPS FMP) using the SIO index in some recent years, it would have been in the 8 percent-14 percent range, resulting in lower OFLs and HGs. The Coastal Pelagic Species Management Team and Advisory Panel, and the Scientific and Statistical Committee, are expected to have additional analysis relative to the Council consideration to change this harvest parameter.

Risk assessment framework: The report from Felipe Hurtado-Ferro and Andre Punt, the primary analysts for this matter, is presented as Agenda Item I.4.b, Attachment 1 and includes stock and fishery performance measures of alternative OFL and HG control rules, sensitivity tests, and an

assessment of changing to a new temperature recruit index. The report was considered at a May 21-23 joint meeting of the CPSMT and the SSC CPS Subcommittee.

After taking advisory body statements and considering public testimony, the Council should consider incorporating the CalCOFI temperature series and the associated fishing rate relationship into the harvest control rules that generate OFL, acceptable biological catch (ABC), and HG. The Council should also consider whether the set of simulations and fishery performance measures in the risk assessment analysis warrants further changes in the Council's current fishery management policy approach for Pacific sardines.

**Council Action:**

- 1. Consider adopting a new temperature-recruit relationship as a harvest parameter change for Pacific Sardine.**
- 2. Consider other fishery management policy changes as a result of the harvest parameters risk assessment analysis.**

**Reference Materials:**

1. Agenda Item I.4.b, Attachment 1: Revised Analyses Related to Pacific Sardine Harvest Parameters.
2. Agenda Item I.4.c, Supplemental CPSMT Report.
3. Agenda Item I.4.d, Public Comment.

**Agenda Order:**

- a. Agenda Item Overview
- b. Report overview and description
- c. Reports and Comments of Advisory Bodies and Management Entities
- d. Public Comment
- e. **Council Action:** Adopt Harvest Parameter Changes for Pacific Sardine

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