SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON SARDINE HARVEST PARAMETERS WORKSHOP REPORT

Dr. André Punt presented the report of the Pacific Sardine Harvest Parameters Workshop as well as subsequent analyses. Mr. Felipe Hurtado-Ferro was present to respond to questions regarding the analysis.

The Scientific and Statistical Committee (SSC) endorses the conclusions of the workshop (Agenda Item I.1.b, Attachment 1). This includes the conclusion that there is a relationship between Sea Surface Temperature (SST) and sardine productivity and that it is reasonable to include this relationship in the Harvest Control Rules (HCRs). The best measure of SST for relating to sardine productivity was found to be the annual CalCOFI SST index.

The workshop report outlined a Management Strategy Evaluation (MSE) (simulation analysis of alternative harvest control rules [HCRs]). All but one of the sensitivity analyses identified at the workshop have now been completed. Fourteen illustrative "harvest policy variants" were evaluated.

Performance metrics reported in the MSE include average catch, average population size, the probability of catch being below 50,000 mt, the probability of age 1+ biomass being above 400,000 mt. However, the mean and median catch values in Table 5 (Agenda Item I.1.b, Attachment 2) are calculated using only years with positive catches and thus do not represent mean catch across years, especially for those scenarios that result in zero catches in a large proportion of years, such as harvest policy variants 5 and 10. Also, the underlying model of climate variability focuses on decadal changes but does not represent annual variation due to ENSO events. Ignoring El Niño Southern Oscillation events results in an even lower simulated average recruitment during cold regimes.

The analyses use the biomass at the beginning of the fishing season to set harvest levels rather than biomass 6 months earlier. This is the preferred approach, and the SSC recommends that the biomass at the start of the fishing season be used for harvest specification.

The MSE approach presented is adequate to determine whether and how to change the HCRs. The SSC recommends that HCRs include a SST relationship, whereas the current overfishing limit control rule does not. The analysis could be updated and extended based upon Council guidance on performance measures and on alternative SST metrics (annual or average across years), harvest policies and sensitivity scenarios.

This MSE presented to the SSC is focused on the stock and the fishery, but not on spatial or forage issues. If there is a desire to explicitly include ecosystem measures, then a much more complicated process of creating an ecosystem MSE would be necessary. However, further development of existing (or new) ecosystem models is needed before such an MSE would be feasible.