SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
SARDINE ASSESSMENT, SPECIFICATIONS, AND MANAGEMENT MEASURES

The Scientific and Statistical Committee (SSC) reviewed the 2014 stock assessment of the northern subpopulation of Pacific sardine. Dr. Kevin Hill presented the results of the stock assessment and Dr. André Punt provided an overview of the Stock Assessment Review (STAR) Panel report.

A number of changes were made to the 2014 assessment in comparison to the 2011 full assessment. These include: 1) A new sea surface temperature-based method used for assigning catch by port and month to the northern or southern subpopulations. The SSC agrees that this is an improvement over previous methods, but more research could be done to better differentiate catch of the two stocks, as outlined in the STAR Panel report. A result of this approach is a reduction in estimated historical catch for the northern subpopulation. 2) The acoustic-trawl method (ATM) survey was split into spring and summer survey time series with independently estimated selectivity curves.

The 2014 assessment uses four indices of abundance: Daily-Egg-Production Method (DEPM) indices; Total Egg Production indices (for those years without a DEPM index); the spring ATM index; and the summer ATM index, with length composition data from the ATM surveys. Catchability for both ATM surveys are fixed at 1, as was the case for the single ATM time series in the last assessment. The northwest aerial survey indices and composition data were not included in the current assessment.

Fishery data are grouped into two fleets (PacNW and MexCal). Length data and conditional age-at-length data from both fleets are used in the model. After considerable exploration of alternative weighting schemes, fishery conditional age-at-length data were downweighted relative to the other data in the assessment, while ATM survey conditional age-at-length data were removed altogether.

Four areas of uncertainty are highlighted in the stock assessment: 1) uncertainty in recent recruitments, and relationship of recruitment to environmental conditions; 2) uncertainty in the stock structure of Pacific Sardine off of North America; 3) uncertainty in catchability for the ATM surveys; 4) appropriate data weighting in the stock assessment model.

While the recent trend in biomass is well defined, there is considerable uncertainty in the absolute scale of the population. Related to this, the difference in absolute scale between the aerial and summer ATM survey indices in the area of overlap remains a point of concern. The SSC recommends research into the catchability for the ATM surveys and the representativeness of the nighttime tow samples in terms of both the coastal pelagic species composition and sardine size- and age-composition. Similar research into the accuracy of the aerial survey could be conducted. The SSC reiterates the need for a methodology review of the ATM surveys.

Additional uncertainty in the age 1+ biomass is due to the considerable uncertainty in the 2013 recruitment. Modeling a temperature-recruitment relationship in the assessment could help address this issue. The declining trend in sea surface temperature, along with poor recruitments in 2010, 2011 and 2012 leads to some concern that the 2013 recruitment estimate in the assessment may be biased high.

The SSC notes that the assessment and overfishing limit (OFL) are for the northern subpopulation of Pacific sardine, but some portion of the U.S. catch in each year is likely from the southern subpopulation. In addition, age-0 sardine are being harvested, but these fish are not included in the summary biomass.

The change in timing of the assessment review from September to March provided five extra months for the Stock Assessment Team (STAT) to receive and analyze the data and develop the model. Dr. Hill commented that this extra time was helpful in developing the assessment. The SSC notes that, despite this, some materials for review were not complete before the STAR Panel, and recommends that in future the Pacific sardine STAT should endeavour to follow the Terms of Reference.

The SSC endorses the 2014 Pacific sardine stock assessment as the best available science, and recommends an OFL of 39,210 mt for the northern subpopulation of Pacific sardine. The SSC further recommends that the assessment be considered a category 1 assessment.

PFMC
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