

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

The Scientific and Statistical Committee (SSC) reviewed the 2017 stock assessment of the northern subpopulation of Pacific sardine. Drs. Kevin Hill and Paul Crone (Southwest Fisheries Science Center) presented the results of the stock assessment and Dr. André Punt (SSC) provided an overview of the Stock Assessment Review (STAR) Panel report. The SSC appreciates the effort put forth by the stock assessment team to improve the assessment model in response to previous full and update assessment concerns.

The SSC endorses the 2017 Pacific sardine base case assessment model (termed model ALT in the assessment document) as the best available science for use in managing the northern subpopulation of Pacific sardine. The base case model uses an integrated assessment approach to estimate age-1+ biomass at the start of the 2017/2018 fishing year (July 1, 2017). This model is more stable, shows improved fit to recent surveys, and has improved retrospective patterns and thus is an improvement over the 2014 full assessment model and subsequent update assessments. Major differences include starting the assessment in 2005 rather than 1993, excluding the Daily Egg Production Method and Total Egg Production indices, and changing model specifications for natural mortality, weight-at-age, survey selectivity, catchability, and steepness of the stock-recruitment relationship.

There is no direct information on the size of the 2016 year-class, so it is estimated from the stock-recruitment relationship. As a result, there is considerable uncertainty associated with the estimate of age-1+ biomass in 2017. A substantial proportion of total biomass will be from that incoming cohort of uncertain size, especially when the stock size is estimated to be low, as it is presently. There are additional key uncertainties associated with natural mortality, weight-at-age, survey selectivity, and catchability.

The estimate for total age-1+ biomass on July 1, 2017, is 86,586 mt. The SSC recommends an overfishing limit (OFL) of 16,957 mt and that the base model be considered a category 1 assessment with a default sigma ( $\sigma$ ) of 0.36 to be used in determining the acceptable biological catch.

The SSC reiterates that the assessment and OFL are only for the northern subpopulation of Pacific sardine, although some portion of the U.S. catch in each year is likely from the southern subpopulation.

There may be benefits to the survey-based approach advocated by the stock assessment team, and the planned early 2018 review of this survey could provide further information on the suitability of this approach. There would be less uncertainty in the calculation of the OFL when using a survey-based approach if the time-lag between conducting the survey and the start of the fishing year was minimized. Further evaluation of a survey-based assessment approach through a management strategy evaluation would be beneficial.