SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
PACIFIC MACKEREL ASSESSMENT, HARVEST SPECIFICATIONS AND
MANAGEMENT MEASURES

Dr. Paul Crone (Southwest Fisheries Science Center) and Dr. Juan Zwolinski (UC Santa Cruz) presented the results of the Pacific mackerel stock assessment, and Dr. Owen Hamel of the Scientific and Statistical Committee (SSC) presented a report on the Pacific mackerel Stock Assessment Review (STAR) Panel.

The Stock Assessment Team's (STAT's) preferred assessment model differs from the model used in the previous catch-only projection assessment in 2017. The Commercial Passenger Fishing Vessel logbook catch per unit effort index, which had been used previously, was removed from the preferred assessment model. An index of abundance from the acoustic-trawl (AT) survey and associated composition data were added to the assessment. Among other changes, the start year of the assessment was changed from 1983 to 2008, natural mortality was estimated with a prior rather than fixed, steepness was fixed rather than estimated, and a prior was developed for AT survey catchability (q). The preferred model includes commercial fishery age composition data as well as abundance indices and composition data collected in the AT survey. There was tension between the fit to the AT survey indices and composition data and the commercial fishery composition data. Removal of the fishery composition data was explored, but they were included in the final base model, though they were down-weighted.

The SSC endorses the STAT-preferred assessment model as the best available scientific information for management of Pacific mackerel. The SSC further endorses the overfishing limits of 14,931 mt for 2019-20 and 11,772 mt for 2020-21. The 2020-21 overfishing limit could be recalculated if the acceptable biological catch (ABC) for 2019-20 is less than the harvest guideline for that year. This assessment is assigned to category 2d because of high uncertainty regarding the scale of the biomass, great sensitivity to assumptions, and the fact that much of the biomass derives from the most recent year-class that is currently poorly sampled. The ABC should therefore be based upon the category 2 sigma of 1.0 for the 2019-20 fishing season and 1.075 for the 2020-21 season. The higher sigma for the 2020-21 season reflects increasing uncertainty with time since the previous assessment. The final ABCs depend on the Council's risk tolerance as reflected in the choice of P*.

Several critical data and research needs remain for this stock. In particular, there is almost no information on AT catchability (particularly its lower bound) and hence the scale of estimated biomass given the data, except that contained in the prior for catchability, which is itself based on limited information. The likelihood profile is nearly flat over a broad range of plausible values for catchability, thus in the absence of the prior on catchability, the variance of biomass estimates are likely to be much higher, indicating there is little else in the model informing the scale of the biomass. This poses particular concern for the suitability of management based exclusively on a "survey-based assessment" for this stock given the lack of sampling in Mexican waters and the absence of a strong justification for an informed prior on catchability. The SSC agrees with the STAT and STAR panel recommendations to support coordination with Mexico to conduct the AT

survey in Mexican waters to address uncertainty in the catchability given its influence on the scale of the assessment and to start to quantify the variability of the proportion of the stock in U.S. waters. Furthermore, efforts should be made to coordinate with researchers in Mexico to incorporate length and age composition data from the Mexican fishery in the assessment. There should be better coordination between State and Federal ageing laboratories in standardizing ageing methods and accounting for ageing bias, to facilitate ageing of samples from the fishery and the AT survey for future assessments.

PFMC
06/21/19