

COASTAL PELAGIC SPECIES ADVISORY SUBPANEL REPORT ON  
PACIFIC SARDINE ASSESSMENT, HARVEST SPECIFICATIONS, AND  
MANAGEMENT MEASURES – FINAL ACTION

The Coastal Pelagic Species Advisory Subpanel (CPSAS) reviewed the 2019 Sardine Assessment Update (Agenda Item E.3, Supplemental Attachment 1). CPSAS members also listened to the presentation by Dr. Kevin Hill during the Science and Statistical Committee (SSC) meeting on April 10.

The CPSAS continues to express concerns with issues raised during SSC discussion, for example:

- The coefficient of variation (CV) (73%) was far higher than the running average.
- This update assessment also continued the assumption that selectivity is uniform, meaning the acoustic trawl (AT) survey sees all the fish age 1 and older. However, assuming logistic selectivity (implying that the AT survey does not sample the entire stock) would increase the biomass estimate substantially.
- The  $Q$  in Model Alt is increasing every year (1.1 in 2017, 1.15 in 2018 and 1.17 in 2019), although Council of Independent Experts (CIE) scientists in the Acoustic Trawl Methods (ATM) Review called a  $Q$  of 1 unrealistic and recommended that AT surveys could be used as a relative index but should not be used for absolute biomass for any CPS at this time, until a management strategy evaluation (MSE) is conducted.

We note an SSC Subcommittee request for a sensitivity run, reducing abnormally high landings of assumed “northern” stock in Ensenada to 10 percent of the value, more in line with recent years, based on knowledge that fishing has been occurring south of Ensenada. The outcome raised the biomass estimate above 50,000 metric tons (mt). In contrast, the update assessment deleted about 33,000 mt of sardines observed in Southern California, on the assumption that they were “southern” stock. Including these fish in the biomass estimate would again have raised the estimate above the 50,000 mt minimum stock size threshold (MSST). These are just a few of several choices made, or not made, based on the habitat model and other assumptions, that impacted the outcome of this update assessment.

We support recommendations made by the SSC subcommittee, which were endorsed by the SSC, to be included in the next Stock Assessment Review (STAR) panel review, scheduled in 2020:

- *review the basis for the habitat model and refine estimates of both the catch and biomass attributable to the Northern Subpopulation and Southern Subpopulation.*
- *use all available age and length composition data, including data for the live bait fishery or from CPS fisheries with incidental take of sardine sampled by the California Department of Fish and Wildlife.*
- *A  $Q$  of one may not fully account for unsampled areas in the nearshore and the upper 10 m of the water column. Accounting for the biomass shoreward of the AT survey through a separate survey was highlighted by the 2017 AT review. This would be preferable to adjusting an estimated  $q$  to reflect the unsampled waters given uncertainty in the proportion of biomass omitted.*

- *Consider alternative selectivity patterns for the AT survey.*

We also recommend that the 2020 STAR Panel Review should incorporate all available indices of abundance, including the Juvenile Rockfish Survey, the hake survey, and incidental sardine landings in the whiting fishery.

At the end of their discussion, the SSC approved the 2019 assessment for use in management because it met the Terms of Reference (TOR) for an Update Assessment. We point out that the lack of flexibility in both the TOR and CPS fishery management plan (FMP) has prevented the ability to address the problems identified by the SSC. Many of the issues carried over from the 2017 STAR Panel Review and 2018 AT Methods Review have not yet been resolved. The CPSAS recommends taking another look at the TOR with the intent of addressing these concerns.

Because this update now estimates sardines below the 50,000 mt MSST, the FMP requires that the stock be declared “overfished,” notwithstanding the fact that the directed fishery has been closed since 2015. A majority of the CPSAS requests the Council to review the Magnuson Act to determine if a designation of “depleted,” can be applied in this situation.

In a 2015 analysis by the CPS Management Team, the 20 percent incidental catch limit required when this stock assessment is approved could impact 48 percent of Pacific mackerel landings, as much as 40-45 percent of anchovy landings, according to fishermen, and more than 20 percent of market squid landings (April 2015 Agenda Item G.1.b, Supplemental CPSMT Report).

In reality, fishermen will be forced to forego fishing on mixed schools to avoid sardine, despite the increasing nearshore abundance of sardine that fishermen have reported since 2015. In California, until recent years, the CPS fishery complex produced on average 80 percent of total statewide fishery volume, and close to 40 percent of dockside value. This volume has been essential to maintain infrastructure and jobs in many harbor communities; CPS fisheries are important contributors to California’s fishing economy.

In the Pacific Northwest, sardines are taken incidentally in both CPS and non-CPS fisheries. Within the last several years, market squid landings have increased, along with bycatch in other non-CPS fisheries. The amount of sardine bycatch available to these Northwest fisheries is a concern. These fisheries are worth hundreds of millions of dollars to the local communities.

As for the live bait fishery, in 2015 marine recreational anglers spent \$1.5 billion on fishing activities, adding an additional \$1.3 billion of economic value and support of approximately 16,000 full and part-time jobs, according to National Oceanic and Atmospheric Administration statistics.

In light of the uncertainties identified in this update assessment, and the probability that the estimate is substantially underestimated, a majority of the CPSAS recommends the following management measures for the 2019-20 season:

We recommend that the Council approve a P\* (probability of overfishing) of 0.4, as used in past assessments, and annual catch limit (ACL) be equal to acceptable biological catch (ABC).

ABC (P* 0.4)	4,514 mt
ACL	4,514 mt
ACT	4,000 mt
EFPs	405 mt
Incidental in CPS fisheries at 20% by weight, Other uses, including directed live bait & small-scale fisheries and a 2-ton incidental catch allowance for non-CPS fisheries	3,595 mt (2,500 mt trigger for live bait, then 1-ton trip limit thereafter)
If 4,000 mt is attained	1 mt per trip in all fisheries up to 4,514 mt

Minority Statement

A minority of the CPSAS notes that the evidence suggests Pacific sardine are presently in a low-productivity state, in addition to being below MSST as of July 1. Consequently, harvest specifications and management measures should be set with a high level of precaution. Given the current condition of the stock, a minority of the Subpanel suggests that the ACL should be set lower than the ABC in order to account for ecosystem considerations and other Optimum Yield factors. The CPS FMP notes that “Optimum Yield will be set less than ABC to the degree required to prevent overfishing.” With the sardine stock projected to be below MSST, setting the ACL less than ABC could allow the Council to take a more precautionary approach that is appropriate to the current situation.

The entire CPSAS thanks the Council for your consideration of these recommendations.

PFMC  
04/12/19