CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE REPORT ON PACIFIC SARDINE ASSESSMENT

The California Department of Fish and Wildlife (CDFW) participated in the Stock Assessment Review for the 2020 Pacific sardine northern subpopulation (NSP) benchmark stock assessment (Pacific Fishery Management Council (PFMC) 2020, Agenda Item D.3, Attachment 1). CDFW appreciates the Southwest Fisheries Science Center (SWFSC) for incorporating aerial survey data by reducing Catchability (Q) in the assessment and looks forward to more complete inclusion of these important data in future assessments.

The primary data input for the NSP sardine assessment is the National Oceanic and Atmospheric Administration's (NOAA) acoustic trawl survey (AT). A methodology review for the AT was completed in January 2018 and identified several limitations of the method, including research needed to address stock abundance inshore of the AT survey (PFMC 2018, Agenda Item C.3, Attachment 2). The 2018 AT Review panel concluded management bodies as well as assessment teams need to resolve this issue. To help assess nearshore NSP stocks, CDFW has collaborated with the California Wetfish Producers Association and NOAA to conduct an aerial survey (California Coastal Pelagic Species Survey, CCPSS) to provide a biomass estimate for areas not surveyed by the AT. During an October 2019 management and science meeting for the central subpopulation of northern anchovy, reviewers concluded that aerial observations are a useful method to survey sardine and anchovy in nearshore waters (PFMC 2019, Agenda Item D.4, Attachment 1). The review also concluded that estimates from the CCPSS are consistently lower than the actual tonnage of the observed schools and underestimate the total population.

In both 2017 and 2019, a substantial biomass of nearshore NSP sardine was documented by the CCPSS in a relatively small section of the coast compared to the AT (PFMC 2020, Agenda Item D.3.a, CDFW Report 2). In 2017, the CCPSS documented nearly twice the biomass of NSP sardine compared to the AT (21,046 mt (CV = 1.13) vs. 14,103 mt (CV = 0.30), respectively) in less than one third of the coast (307 nm vs. 930 nm). In 2019, the CCPSS documented more than one third the biomass of the AT (12,279 mt (CV = 1.34) vs. 33,632 mt (CV = 0.19), respectively) over approximately one third of the surveyed coast (324 nm vs. 930 nm).

While the CCPSS observed biomass was not directly included in the 2020 assessment, it was used to partially address nearshore biomass by reducing Q (catchability) from 1.0 to 0.73 in the assessment model. As noted in the 2020 STAR Panel Report, one of the primary data gaps for the CCPSS is the lack of nearshore biological data to accurately parameterize selectivity in the stock assessment model (PFMC 2020, Agenda Item D.3, Attachment 2); therefore, CDFW plans to collect this needed information to facilitate direct use of CCPSS data in future assessments. The STAR Panel Report also contains research recommendations to improve reproducibility and quality control of aerial biomass estimates, which CDFW intends to pursue that would transition the CCPSS to a more automated format. Additionally, the 2020 Star Panel recommended that a CDFW scientist be a member of a future sardine STAT to enhance the likelihood of using the CCPSS data to the maximum extent possible. CDFW concurs and will provide staff to fulfill this role. CDFW looks forward to closer coordination with SWFSC for more complete inclusion of these critical aerial survey data in future assessments.