

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
PACIFIC SARDINE HARVEST SPECIFICATIONS AND
MANAGEMENT MEASURES FOR 2024-2025 – FINAL ACTION

The Scientific and Statistical Committee (SSC) reviewed the 2024 stock assessment ([Agenda Item I.3, Attachment 1](#)) of the northern subpopulation (NSP) of Pacific sardine, as modified in [Agenda Item I.3, Supplemental Attachment 3](#). Peter Kuriyama (Southwest Fisheries Science Center) presented the results of the stock assessment and André Punt (SSC, STAR Chair) provided an overview of the Stock Assessment Review (STAR) Panel Report ([Agenda Item I.3, Attachment 2](#)). The SSC appreciates the effort by the stock assessment team to improve the assessment model in response to recommendations from previous full and update assessment reviews.

The modification described in Agenda Item I.3, Supplemental Attachment 3 was the removal of the model year 2020 semester 2 (spring 2021) acoustic-trawl (AT) survey biomass estimate. This estimate was removed due to a lack of spatial coverage for that survey and because all of the sardine biomass observed in that survey was later determined to be southern subpopulation (SSP) rather than the NSP it was originally attributed to. This means that the NSP biomass estimate from that survey, which was already low, should have been even lower. When that survey was removed from the assessment, the new 2024 biomass estimate was slightly higher than originally estimated, despite the observation of low NSP biomass in the excluded survey. However, the effect on estimated age-1+ biomass for the upcoming management year is small (58,614 mt vs. 56,428 mt). The spring 2021 survey lacked spatial coverage of areas where the NSP were most likely to be present based on the revised habitat model. In the future, the SSC recommends a consistent and repeatable approach, with a clearly explained rationale, for the inclusion or exclusion of spring surveys.

The SSC endorses the modified 2024 NSP assessment model as the best available science for use in management of the NSP. Major improvements from the last benchmark assessment in 2020 and the 2021 and 2022 updates include routine use of inshore AT survey observations and an updated habitat model for allocating catches and AT biomass to the NSP and SSP.

The model estimate for age-1+ biomass on July 1, 2024 is 58,614 mt ([Table 6](#) of Supplemental Attachment 3). Based on application of the harvest control rule (HCR) with the [temperature-dependent](#) E_{MSY} of 0.163 and the static DISTRIBUTION term of 0.87, the overfishing limit (OFL) is 8,312 mt.

The SSC recommends a [category 2d](#) sigma (baseline value of 1.0 with a time-dependent increase as described on [Page 15](#) of the assessment) be used for calculating the 2024-2025 ABC from the 2024-2025 OFL. [Table 6](#) of Supplemental Attachment 3 provides the ABC values for P* alternatives that may be selected by the Pacific Fishery Management Council (Council), using the $ABC_{Tier\ 2\ row}$.

The SSC notes that since the HCR was revised in 2013, temperature measurements have suggested an E_{MSY} close to the upper end of the recommended range, despite evidence for low productivity

and abundance since that time. The SSC recommends revisiting the analysis and assumptions informing the NSP Pacific sardine HCR, given evidence that the adopted relationship between sardine productivity and ocean temperatures is not currently valid.

A substantial proportion of the U.S. catch in recent years (e.g., 87 percent in management year 2023-2024) is inferred to be from the SSP (see [Table 9.1](#) of the assessment). The SSC notes that the catch of sardine attributed to the NSP in Mexican waters appears to have declined over time, suggesting that the static DISTRIBUTION term used to apportion the OFL for the NSP should also be reconsidered.

There is no information on the strength of the 2023 year-class from any data source in the assessment, so it was estimated from the stock-recruitment relationship. A substantial proportion of estimated 1+ biomass available for the 2024-2025 fishing year derives from the 2023 year-class. The lack of an empirical estimate of age-1 biomass for 2024 adds unquantified uncertainty to the biomass estimated to be available in 2024-2025. Pre-specifying a fixed value of Q (survey catchability) leads to un-quantified uncertainty in biomass, and Japanese sardine contributed an unknown proportion of the estimated total sardine biomass. There are also uncertainties associated with stock-recruitment steepness, the natural mortality rate, AT target strength and species composition, and limited AT survey age composition data that were poorly fit by the model.

The assessed July 1, 2024 summary (age-1+) biomass of 58,614 mt is above the Minimum Stock Size Threshold (MSST) of 50,000 mt, but below the rebuilding target of 150,000 mt. However, the SSC notes that the difference between the assessed biomass and the MSST is substantially smaller than the uncertainty in the assessed biomass.

The SSC endorses the [research recommendations](#) of the STAR Panel to improve future assessments (Agenda Item I.3, Attachment 2). The SSC reiterates that the assessment and OFL apply to the NSP. An increasing proportion of the U.S. sardine catch, particularly in southern California waters, has been assigned to the SSP based on the habitat model. The SSP is not currently included in the Coastal Pelagic Species Fishery Management Plan. Consequently, catches of the SSP are counted against the allowable catch for the NSP, but the biomass of the SSP is not included in the assessed NSP biomass. The SSC recommends that the Council consider identifying management approaches for the SSP given its inferred increased presence in U.S. waters.

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