

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

The Coastal Pelagic Species Advisory Subpanel (CPSAS) attended the joint Coastal Pelagic Species Management Team (CPSMT)/CPSAS/Scientific and Statistical Committee (SSC) meeting on April 7, where we heard Dr. Peter Kuriyama's presentation on the updated stock assessment and Dr. Andre Punt's presentation on the March 2 meeting of the CPS subcommittee of the SSC. We thank the SSC for acknowledging the problems in the below list of issues and the Southwest Fisheries Science Center (SWFSC) for their efforts to address them.

First, regarding the update stock assessment and future stock assessment activities, we appreciate the continued and expanded concerns of the SSC and the CPSMT regarding the uncertainties inherent in the benchmark and update stock assessments. We agree with the recommendation made by the SSC in their statement ([Agenda Item E.3.a, Supplemental SSC Report](#)) to delay a benchmark stock assessment until 2024 and hold two workshops to address and resolve numerous outstanding issues that make the current stock assessment unreliable and undermine the management measures that flow from it.

The first workshop would be a methodology review to include how to best utilize the aerial surveys, associated correction factors, and other indices, issues related to the acoustic trawl (ATM) survey itself especially when biomass is lower; the determination of Q and related sensitivity scenarios; developing an updated Emsy (recruitment parameter); and best approaches for F values and exploitation rates. We have been making these recommendations since at least 2019 ([Agenda Item E.3.a, Supplemental CPSAS Report 1, April 2019](#); [Agenda Item D.3.a, Supplemental CPSAS Report 1, April 2020](#); [Agenda Item E.4.a, Supplemental CPSAS Report 1, April 2021](#)) and are pleased to see the SSC and SWFSC suggesting a workshop to work through these research needs and developing a plan to do a benchmark stock assessment.

The second workshop would review sardine stock structure to accurately divide catches into the northern and southern subpopulations. The two populations vary spatially over time. As we have noted before, currently, a "catch-22" exists for the sardine fishery: sardines found in water temperatures above 16.7 degrees C are assumed to be 'southern' sardines and are not accounted for in the stock assessment. However, all catches, regardless of water temperature, are subtracted from 'northern' sardine catch limits set by the Council and NMFS. Fishermen believe these assumptions could have led to the northern sardine stock's 'overfished' declaration. The overfished declaration mandates a reduction in incidental catch allowance to a maximum of 20 percent in other fisheries. This has restricted catches in virtually all CPS fisheries, including market squid, and has caused serious socio-economic impacts to our fisheries and fishing communities.

To emphasize this, we paraphrase comments from several frustrated fishermen who are CPSAS members:

- *Using temperature parameters to differentiate North-South sardine sub-populations does not work.*
- *The Mexican Fishery catches our fish while we sit at the dock.*
- *Attempt to develop a working relationship with Mexican Fishery managers.*
- *Fishing management is in the same place it was 20 years ago.*
- *Our sardines swim south of the border, and they are legal to catch while we can't fish for either the south or north subpopulations. Mexican scientists estimated that 12% of the southern sub population (when we had a fishery) was caught in U.S. waters. These are transboundary stocks. (Enciso-Enciso, et. al. presentation at 2019 Trinational Sardine Forum)*
- *Fishermen are observing large schools of sardines from Point Conception to the Mexico border.*
- *You use airplanes if you want to find sardines. Sonar is the second-best device. Down sounders are the last choice fishermen use when hunting for fish.*
- *Industry is supportive of improving the data. This may be best done by developing other indices.*
- *Industry is not confident using the ATM survey for developing abundance of biomass for management.*
- *We have lost our fishery. This has been a road to nowhere.*

While we are frustrated, we commend the SSC for their two recommendations. It is long overdue. We would add that the habitat model should also be peer reviewed, and the “two-stock hypothesis” needs to be reevaluated to establish the fundamental reasons why fish that are genetically identical are in fact, separate populations. Do they interbreed? Can southern fish adapt to colder climates over several generations? Perhaps the only way to know is a radio tag tracking program for each population. This might be a tough proposition, but so is sitting on the beach watching the bank repossess your boat.

A last comment on the analysis of the northern-southern subpopulation issues. Although it may be possible to develop a scientific approach to better understand the dynamics of these two subpopulations, the tougher challenge may be to determine how management will be able to restore our sardine fishery when the rebuilding plan metrics are met. This may need to consider different factors such as do we need two stock assessments for management guidance? Assuming a review determines there are two transboundary stocks, what will be done to provide parity with the Mexican fishery that harvests both stocks? It is an unfair burden to the U.S. Fishery to be tied to the dock because there are no management parameters or constructs to allow a fishery. The California U.S. Fishery has almost assuredly harvested some amount of “southern subpopulation” every year they have fished. Likewise, the same is likely the case for the Mexican fishery for the “northern subpopulation”. The U.S however has taken a path that no longer allows a target fishery of any sardines, while the Mexicans have done the opposite. This is a conundrum that must be resolved. Doing so will not be an easy task, but it is a task that must be solved. And, although this issue may not be a product of climate change, it may be exacerbated by it and may only be a first of many similar management issues that will test the resiliency of our management system in the face of climate change. Bottom line is, we should not lock our CPS fleet off their fishing grounds because we can't find a solution to the present issue. It is not only unfair but contradicts the tenets of the Magnuson Stevens Act.

Second, regarding management measure recommendations: The CPSAS supports the SSC’s recommended overfishing limit (OFL) and the CPSMT’s recommended harvest specifications and management measures for the 2022 – 2023 Pacific sardine fishery, as follows:

Biomass	27,369 mt
OFL	5,506 mt
P* Buffer	0.40
ABC _{Tier 2}	4,274 mt
ACL	4,274 mt
ACT	3,800 mt

List of CPSMT Recommended Accountability Measures

1. Incidental landing limit in CPS fisheries of 20 percent.
2. If landings in the live bait fishery attain 2,500 mt, a per landing limit of one mt of Pacific sardine per trip will apply to the live bait fishery.
3. If the ACT of 3,800 mt is attained, a per trip limit of one mt of Pacific sardine applies to all CPS fisheries.
4. An incidental per landing allowance of two mt of Pacific sardine in non-CPS fisheries until the ACL is reached.

In support of the above recommendations: We quote:

“northern” sardine US exploitation rate is less than 1 % (per stock assessment document: E.3 Attachment 1, page 8 and table 5 — 2021-22 (USA NSP landings only 105MT).

PFMC
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