

Review of Management Provisions for Pacific Sardine

July 22-24, 2026



► Why we are here

Goal of the meeting

- ▶ Council has determined it is appropriate to revise the current stock definition for Pacific sardine, as described in the fishery management unit of the CPS FMP
- ▶ Develop a recommendation for key management provisions (reference points and control rules) for the proposed revised Pacific sardine stock definition (U.S. stock)
- ▶ Necessary to
 - ▶ respond to new scientific information on the stock
 - ▶ achieve the goals and objectives of the fishery management plan (FMP)
 - ▶ prevent overfishing, achieve optimum yield, and ensure that management measures are based on the best scientific information available (BSIA)

Purpose and Scope

- ▶ The MSA and its National Standards establish required provisions and guidelines for stocks in FMPs
- ▶ The framework for CPS management in the FMP can be applied, as appropriate, to manage a revised U.S. Pacific sardine stock

Purpose and Scope

- ▶ Council and National Marine Fisheries Service (NMFS) staff have completed a review of the CPS FMP and management provisions for CPS stocks (attachment provided)
 - ▶ The requirements of an FMP per the MSA
 - ▶ Guidance for meeting the foundational requirements of the MSA (I.e. reference points)
 - ▶ Unique dynamics of CPS

Responsibility of Meeting Participants

- ▶ Review the information provided
- ▶ **Provide recommendations on proposed options for management provisions**
 - ▶ Recommendations should be within the framework of the CPS FMP and satisfy the requirements of a stock, per the MSA and the NS
 - ▶ Recommendations should be based on best scientific information available

Decision & Discussion Points

- ▶ **Specification of status determination criteria (SDC) and supporting parameters** ▫ **CPSSC**
 - ▶ Overfished status (minimum stock size threshold [MSST]) and measure of biomass defined as input
 - ▶ Overfishing status (overfishing limit [OFL]) and the ABC control rule
 - ▶ As time allows, discuss approaches, calculations, or values for E_{MSY}
- ▶ **Application of more intensive management approach in CPS FMP utilizing HG** ▫ **CPSMT**
 - ▶ Harvest Guideline (HG) control rule
 - ▶ Discuss and recommend values or approaches for specification of parameters of control rules: CUTOFF, FRACTION, and MAXCAT
- ▶ **Joint Sessions to Coordinate on Overlapping Tasks**
- ▶ **Advisory Input** → CPSSC and CPSMT in alternating sessions, CPSAS, NMFS

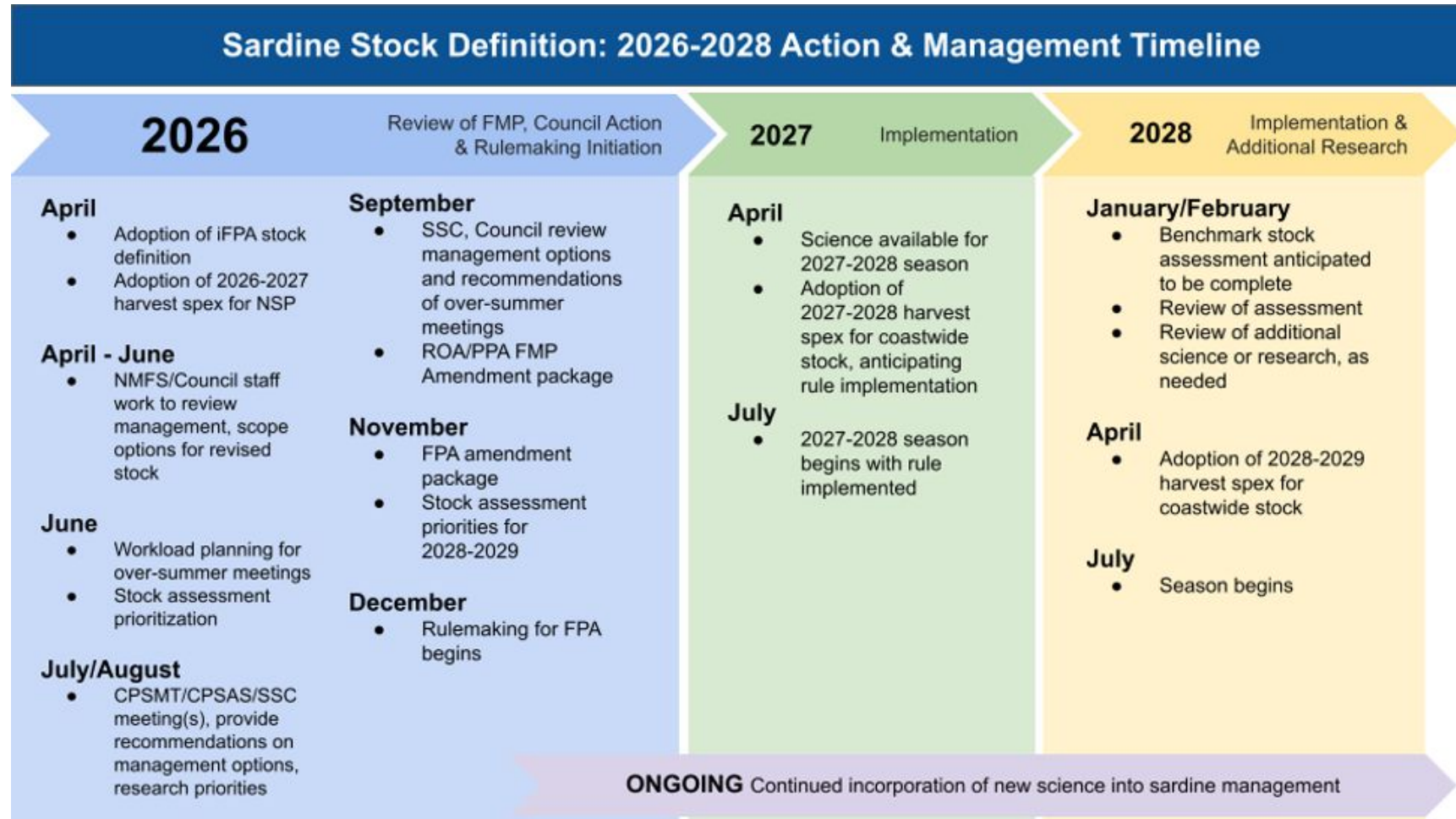
Information Provided (Attachment)

- ▶ Summary of the **CPS management framework**, goals and objectives
- ▶ **Criteria of the MSA and application of NS guidance**, particularly NS1 (OY) and NS 2 (BSIA)
- ▶ **Potential options** for defining reference points, applying control rules, and defining or calculating parameters, proposed by NMFS and Council staff as a result of their review of management provisions, including examples of those historically applied to NSP.
- ▶ Other relevant references that may be helpful in reviewing and evaluating specific management options
- ▶ Tasks for meeting participants related to each decision point (reference point, control rule, parameter, discussion point etc.)

Next Steps

- ▶ Meeting Participants will prepare and deliver a final report, organized by CPSSC, CPSMT, and advisor tasks, including all recommendations from this meeting.
- ▶ Report will be submitted for consideration by the Council and its SSC at their September 2026 meetings in Vancouver, Washington

Next Steps



Summary of Tasks

Highest Priority Tasks

- ▶ Consider the appropriate management approach, including OFL, default, and general control rules in the CPS FMP framework for application to Pacific sardine (CPSSC and CPSMT)
- ▶ Provide recommendation on appropriate option(s) (value and/or formula) for specifying MSST for a U.S. Pacific sardine stock in the CPS FMP, including the appropriate definition of biomass (CPSSC)
- ▶ Recommend specification of an OFL and ABC formula type for Pacific sardine (CPSSC)

Other Priority Tasks

- ▶ Recommend appropriate specification of FRACTION for Pacific sardine (CPSMT)
- ▶ Recommend a stock-specific CUTOFF for Pacific sardine (CPSMT)
- ▶ Consider whether a stock-specific MAXCAT value should be specified for Pacific sardine and recommend a value, if appropriate (CPSMT)

Lowest Priority Tasks

- ▶ Early discussion on an EMSY for the proposed revised Pacific sardine stock (CPSSC)

CPSAS to and NMFS to provide input throughout



► MSA and NS

MSA and NS

MSA Statutory Text at 16 U.S. Code § 1853 - Contents of fishery management plans The MSA establishes the required and discretionary provisions of FMPs. Notably, requirements include conservation and management measures and the specification of MSY and OY, guidance on which is expanded upon in the National Standards.

§ 600.310 National Standard 1 - Optimum Yield NS 1 and its guidelines specifically address the MSA requirement to prevent overfishing and achieve OY. For all stocks and stock complexes that require conservation and management, the Councils must evaluate and describe the following items in their FMPs:

1. Maximum sustainable yield (MSY) and status determination criteria (SDC)
2. Optimum yield (OY) at the stock, stock complex, or fishery level and provide the OY specification analysis
3. Acceptable biological catch (ABC) control rule
4. Mechanisms for specifying annual catch limits (ACLs)
5. Accountability measures (AMs)

CPS FMP

- ▶ Framework

Flexible and Adaptive Management

► Flexibility in the CPS FMP

- framework approach described in the FMP is intended to allow modifications to management procedures to be made in a timely and efficient manner; specific frameworks may be considered to achieve this for sardine
- as data become available, improve, or are updated, control rules and OY specifications or procedures may be modified
- default approach may not necessarily preclude a better option based on BSIA

► SDC Flexibility White Paper (2024)

- SDCs may be specified in the FMP as adaptable in order to accommodate changes in BSIA without amending the FMP
- i.e., stock status determinations may be based on any reasonable proxy accepted through the BSIA process

Goals and Objectives of the CPS FMP

- ▶ Promote efficiency and profitability in the fishery, including stability of catch.
- ▶ Achieve OY.
- ▶ Encourage cooperative international and interstate management of CPS.
- ▶ Accommodate existing fishery segments.
- ▶ Avoid discard.
- ▶ Provide adequate forage for dependent species.
- ▶ Prevent overfishing.
- ▶ Acquire biological information and develop long-term research program.
- ▶ Foster effective monitoring and enforcement.
- ▶ Use resources spent on management of CPS efficiently.
- ▶ Minimize gear conflicts.

Management Approaches

- ▶ **Less Intensive (i.e., 'Default' control rule)**
 - ▶ OFL= Stock Specific MSY Proxy
 - ▶ ABC= OFL*0.25
 - ▶ ACL= Equal to ABC or reduced by OY considerations
- ▶ **More Intensive (i.e., 'General'/'HG' control rule)**
 - ▶ $OFL = BIOMASS * F_{MSY} * DISTRIBUTION$
 - ▶ $ABC = BIOMASS * BUFFER * F_{MSY} * DISTRIBUTION$
 - ▶ ACL = LESS THAN OR EQUAL TO THE ABC
 - ▶ HG: $H = (BIOMASS - CUTOFF) * FRACTION * DISTRIBUTION$; *harvest formula never exceeds MAXCAT*

Management Approaches

- ▶ **Option 1** - Application of the less-intensive management approach including the 'Default' control rule
- ▶ **Option 2** - Application of the intensive management approach, including the 'General' control rule (HG)

Task: Consider the appropriate management approach, including OFL, default, and general control rules in the CPS FMP framework for application to Pacific sardine



► SDC - Overfished

SDC - Overfished

Any fishery management plan which is prepared by any Council, or by the Secretary [of Commerce], with respect to any fishery, shall— . . . specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) (MSA sec 303(a)(10)). If the Secretary determines at any time that a fishery is overfished, the Secretary shall immediately notify the appropriate Council and request that action be taken to end overfishing in the fishery and to implement conservation and management measures to rebuild affected stocks of fish (MSA sec 302(e)(2)).

- ▶ Most commonly-used SDC is **Minimum Stock Size Threshold (MSST)**

SDC - Overfished

- ▶ **General Options for MSST:** Static Value, Formula (depletion or MSY-based), ability to set proxies and alternatives as needed
 - ▶ 50,000 mt
 - ▶ Other Static Value
 - ▶ Formulaic MSST
 - ▶ Some combination of the above, or Reasonable Proxy/Alternative
- ▶ **Biomass Considerations**

***Task:** Provide recommendation on appropriate option(s) (value and/or formula) for specifying MSST for a U.S. Pacific sardine stock in the CPS FMP, including the appropriate definition of biomass in the FMP*

Formulaic MSST Considerations

References: Last revisit of CPS MSST:

- ▶ 2016 Review and Re-evaluation of MSSTs for finfish in CPS FMP

As reviewed in that document:

1) $MSST = 0.5 * SSB_{MSY}$ (for $M \geq 0.5$); or $MSST = (1-M) * SSB_{MSY}$ (for $M < 0.5$) **MSY based**

2) $MSST = 0.2 * SSB_0$ **depletion based**

3) $MSST = 0.2 * SSB_{0current, F=0}$

- ▶ MSY based references points have not been used for CPS given their life history
- ▶ While these are commonly used depletion-based MSST, different formulas (both proportion and biomass metric itself) can be selected.

Biomass Definition Considerations

Current definition of biomass in FMP:

“Biomass means the estimated amount, by weight, of a CPS population. The term biomass means total biomass (age one and above) unless stated otherwise.”

Overfished determinations for NSP have been based on an MSST defined as 50,000 mt of age 1+ biomass on the first day of the fishing year (July 1).

A narrow definition of biomass may exclude the possibility of using alternative biomass values when available.

- SSB and age 1+biomass are expected to be close for Pacific sardine
- SSC concluded that SSB is a more appropriate biomass definition (see response to 2016 MSST document)

How should biomass be defined for the MSST?

MSST Discussion

Task

Provide recommendation on appropriate option(s) (value and/or formula) for specifying MSST for a U.S. Pacific sardine stock in the CPS FMP, including the appropriate definition of biomass in the FMP

Discussion Questions

- ▶ Utilization of a fixed value versus a formulaic MSST?
- ▶ If a fixed value is to be used, what should that value be?
- ▶ If a formulaic MSST is to be used, should MSST be MSY-based, or depletion-based? What formula should be specified?
- ▶ How should biomass be defined for the MSST?
- ▶ Should the FMP include the ability to use a proxy, or two or more of the above options for flexibility in calculating the MSST?



► SDC - Overfishing

SDC - Overfishing

Overfishing occurs whenever a stock or stock complex is subjected to a level of fishing mortality or total catch that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis. (50 CFR 600.310(e)(2)(i)(B))

► Two general options

- Fishing Mortality Rate Exceeds MFMT (maximum fishing mortality threshold)
 - Catch Exceeds OFL (overfishing limit)
-
- **ABC** is level of annual catch, which is based on an ABC control rule that accounts for the scientific uncertainty in the estimate of OFL, any other scientific uncertainty, and the Council's risk policy.

SDC - Overfishing

Options within the CPS FMP

- ▶ **Option 1: OFL and ABC for less-intensive management of a stock**
 - ▶ $\text{OFL} = \text{Stock Specific MSY Proxy}$
 - ▶ $\text{ABC} = \text{OFL} * 0.25$
- ▶ **Option 2: OFL and ABC for intensive management of a stock**
 - ▶ $\text{OFL} = \text{BIOMASS} * \text{FMSY} * \text{DISTRIBUTION}$
 - ▶ $\text{ABC} = \text{BIOMASS} * \text{BUFFER} * \text{FMSY} * \text{DISTRIBUTION}$

Task

Recommend specification of an OFL and ABC formula type for Pacific sardine

Discuss application of parameters within the formula (next section)



► Parameters

DISTRIBUTION

- ▶ Parameter within the OFL and HG for stocks in the CPS FMP, represents the average portion of population biomass estimated in U.S. waters
- ▶ Revised stock definition does not include biomass outside U.S. waters, the objective of the DISTRIBUTION term no longer applies for Pacific sardine

No task at this meeting

EMSY

Task: *Early discussion on considerations for EMSY for the proposed revised Pacific sardine stock (not needed for FMP amendment)*

Discussion Questions

- ▶ Fixed value vs fixed equation, or a framework /formulaic EMSY ?
- ▶ If a fixed value or fixed equation is to be used, how should these be calculated?
- ▶ If a framework/ formulaic EMSY should be used, should it be MSY-based, productivity based, or other? Should an exact formula(s) be specified? How should these be calculated?

Some EMSY Options

- ▶ MSE (simulation)-derived
 - ▶ Fixed value
 - ▶ Formula relating EMSY to environmental variable
- ▶ Assessment-derived
- ▶ Productivity-based (e.g. spawning potential ratio)

Other considerations

- ▶ Set a default?
- ▶ Allow for proxies/alternatives?

FRACTION

- ▶ Within the general harvest control rule, FRACTION is equal to the F_{MSY} used in the OFL and ABC control rules
- ▶ Harvest rate never increases above FRACTION

Option 1 - Specify FRACTION as E_{MSY}

Tasks:

- ▶ *Consider CPSSC discussion on calculation of E_{MSY}*
- ▶ *Recommend appropriate specification of FRACTION for Pacific sardine*
- ▶ *Discuss any additional considerations for specifying FRACTION*

CUTOFF

- ▶ CUTOFF is the lowest level of estimated biomass at which the primary directed fishery is allowed
- ▶ Intended to protect the stock when biomass is low by continuously reducing the exploitation rate as biomass declines, providing for an implicit rebuilding program

Option 1 - CUTOFF = 150,000 mt

Option 2 - CUTOFF = other value or relative proportion of MSST

Tasks:

- ▶ *Recommend a stock-specific CUTOFF for Pacific sardine*

MAXCAT

- ▶ the maximum allowable level of catch, may be advisable to complement the general harvest control rule to guard against extremely high catch levels

Option 1 - MAXCAT = infinite (set no MAXCAT)

Option 2 - MAXCAT = 200,000 mt

Option 3 - MAXCAT = 300,000 - 400,000 mt

Tasks:

- ▶ *Consider whether a stock-specific MAXCAT value should be specified for Pacific sardine and recommend a value, if appropriate*

References (full list in attachment)

Methot, R.D., M.A. Karp, J.M. Cope, M.O. Nadon, E.N. Brooks, D.R. Goethel, A.M. Berger, C. Szuwalski, D. Lambert, J. Brodziak, S. Calay, S. Hunt, T.J. Miller, C. Porch, C. Wetzel, K. Blackhart, K.E. Greene, and M. Macpherson. 2025. Technical Guidance for Estimating Reference Points Used for Stock Status Determination in Accordance with the National Standard 1 Guidelines. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/SPO-261, 96 p. <https://doi.org/10.25923/4dvw-v426>

NOAA Fisheries. 2016. Review and Re-evaluation of Minimum Stock Size Thresholds for Finfish in the Coastal Pelagic Species Fishery Management Plan for the U.S. West Coast. Agenda Item E.1.a, Supplemental NMFS Report, September 2016, Pacific Fishery Management Council. https://www.pcouncil.org/documents/2016/09/e1a_sup_nmfs_rpt_mssts_sept2016bb.pdf

NOAA Fisheries. 2024. Flexible status determination criteria example and their application white paper. https://www.fisheries.noaa.gov/s3/2024-09/Flexible_Status_Determination_Criteria_Examples_and_their_Application_White_Paper_FINAL_0.pdf

Pacific Fishery Management Council (PFMC). 1998. Amendment 8 to the Northern Anchovy Fishery Management Plan incorporating a name change to the Coastal Pelagic Fishery Management Plan. Portland, Oregon. [pcouncil.org/documents/1998/12/cps-fmp-amendment-8-feis.pdf](https://www.pcouncil.org/documents/1998/12/cps-fmp-amendment-8-feis.pdf)

Pacific Fishery Management Council (PFMC) Scientific and Statistical Committee (SSC). 2016. Scientific And Statistical Committee Report on Minimum Stock Size Threshold Report for Coastal Pelagic Species. Agenda Item E.1.a, Supplemental SSC Report, September 2016, Pacific Fishery Management Council. https://www.pcouncil.org/documents/2016/09/e1a_sup_ssc_rpt_sept2016bb.pdf

Restrepo, V.R., G.G. Thompson, P.M. Mace, W.L. Gabriel, L.L. Low, A.D. MacCall, R.D. Methot, J.E. Powers, B.L. Taylor, P.R. Wade, and J.F. Witzig. 1998. Technical guidance on the use of precautionary approaches to implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Tech. Memo. NMFS-F/SPO-31, 54 p. <https://media.fisheries.noaa.gov/dam-migration/ns1-technical-guidance-1998-restrepo.pdf>