CPS Science and Management Priorities

Agenda Item G.5

April 2025

History & Purpose

List of Topics

Prioritization

HISTORY

2023

- April – discussed scheduling EMSY workshop
- September – requested science needs and stock structure agenda item
- November - “Science Needs and Stock Structure” added to YAG

2024

- Item changed names and rescheduled
- November – Advisory bodies recommended scope for “Science Needs and Priorities”

2025

- Science and Management Priorities
- White paper detailing list of topics, state of the science, and information to prioritize

COUNCIL TASK

1

Review, revise, and adopt list

2

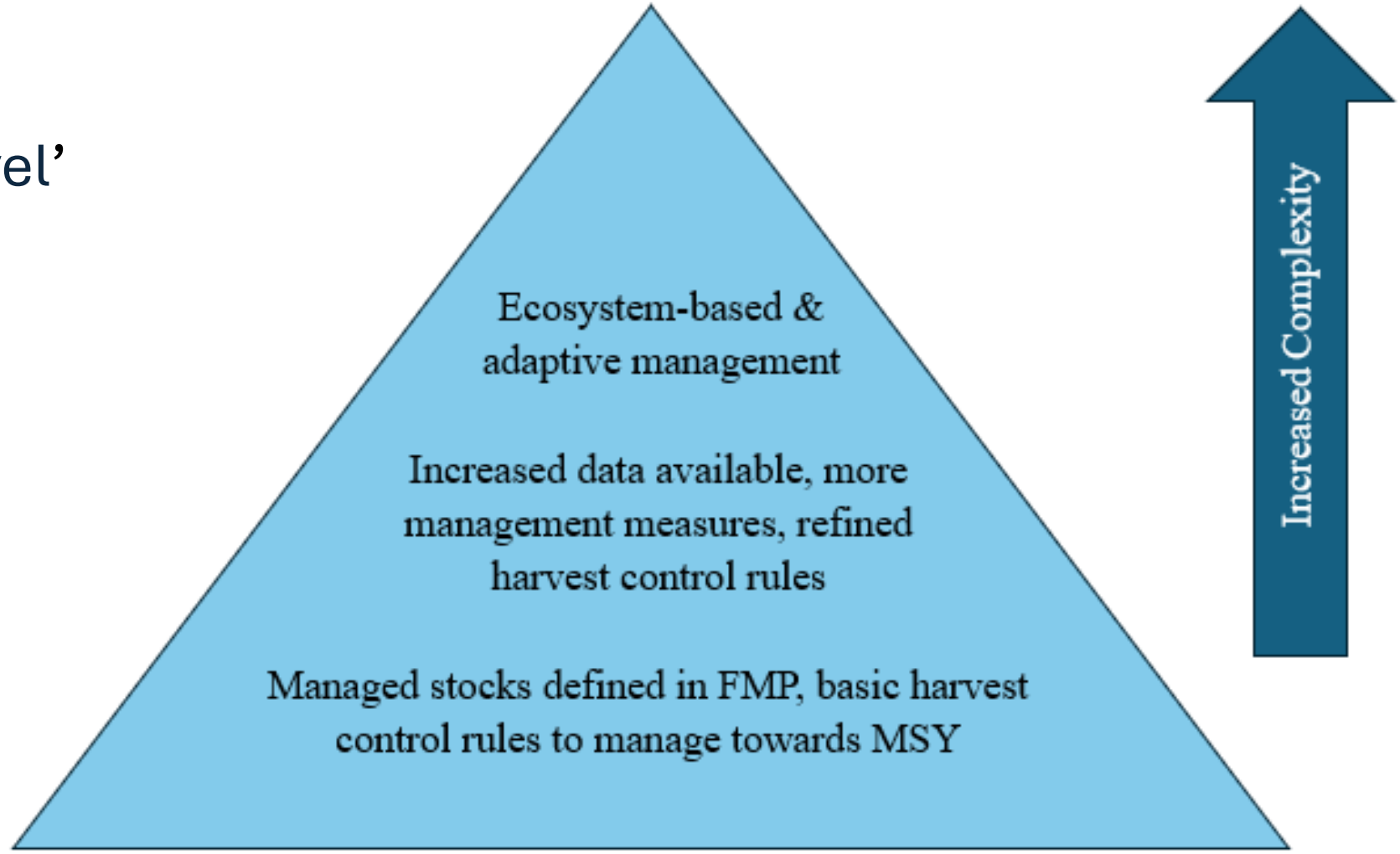
Recommend near term priorities

3

Review and adopt proposed process

Why is sequence important?

1. Priority
2. ‘Management Level’



Science & Management Topics
1. Pacific Sardine Stock Structure
2. Use of EMSY in Pacific Sardine HCRs
3. DISTRIBUTION term – (a) Pacific Sardine and (b) NSNA HCRs
4. Stock Assessment Frequency – (a) Pacific Mackerel and (b) NSNA
5. Managing Annual Opportunity – (a) CSNA ACL (b) Incidental Landing Limits

1. PACIFIC SARDINE STOCK STRUCTURE

What is the management topic?

- 3 stocks under current definition – we manage NSP
- Determine appropriate units to manage stock(s) in need of conservation and management in the U.S. EEZ
- Catch accounting
  - In season – all to NSP ACL
  - Post-season assessment – use updated habitat model to attribute to NSP or SSP

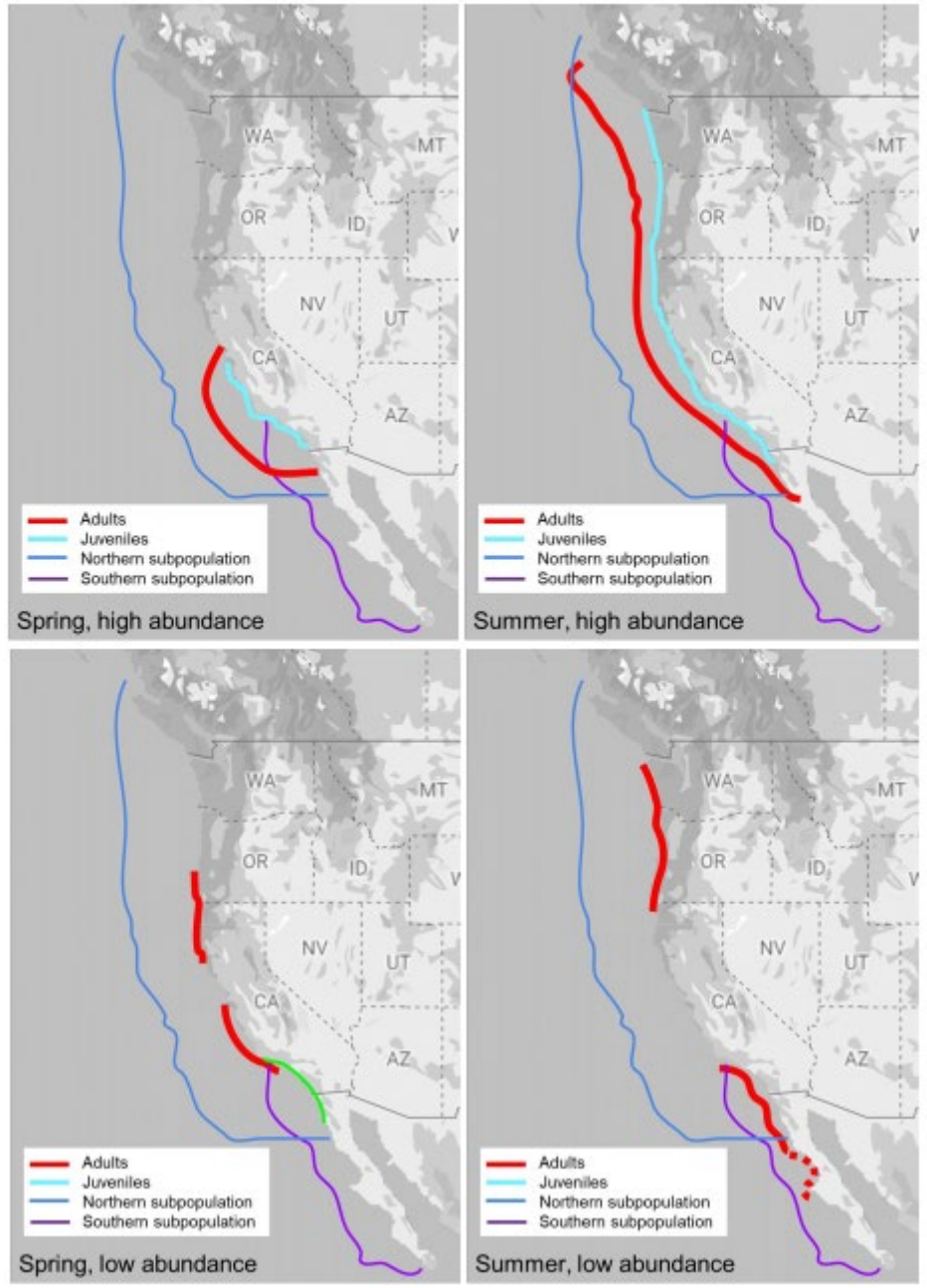
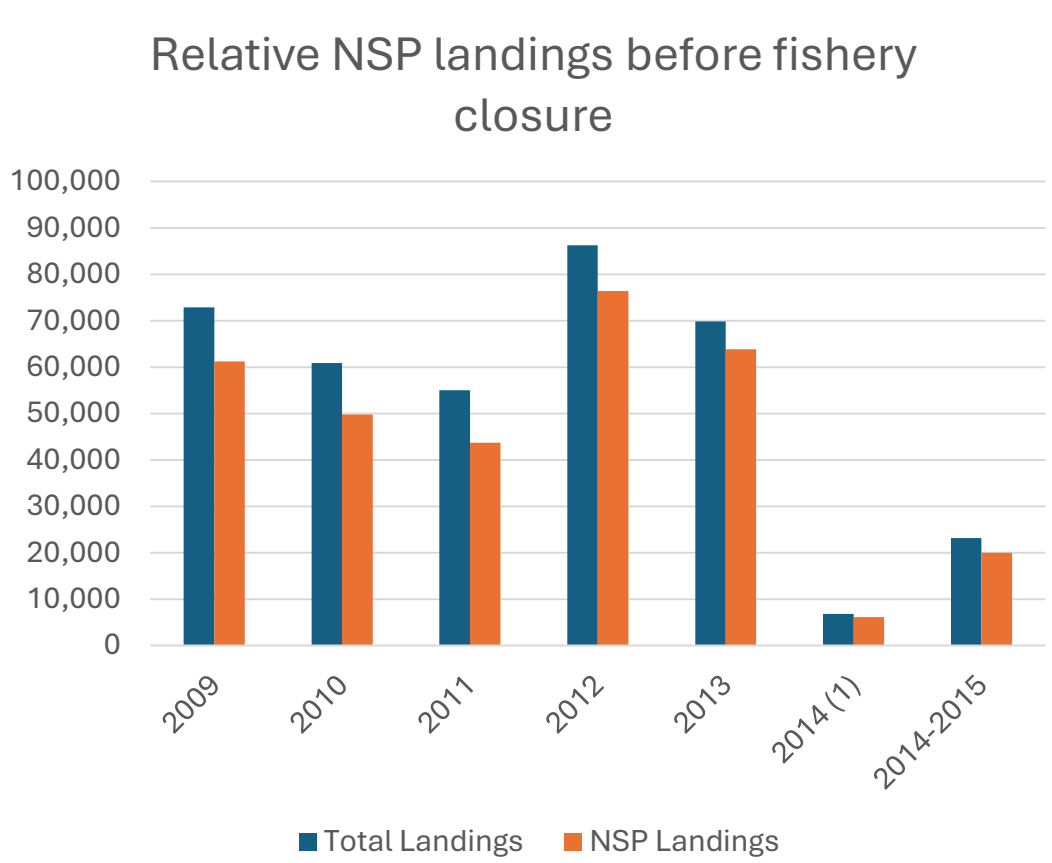
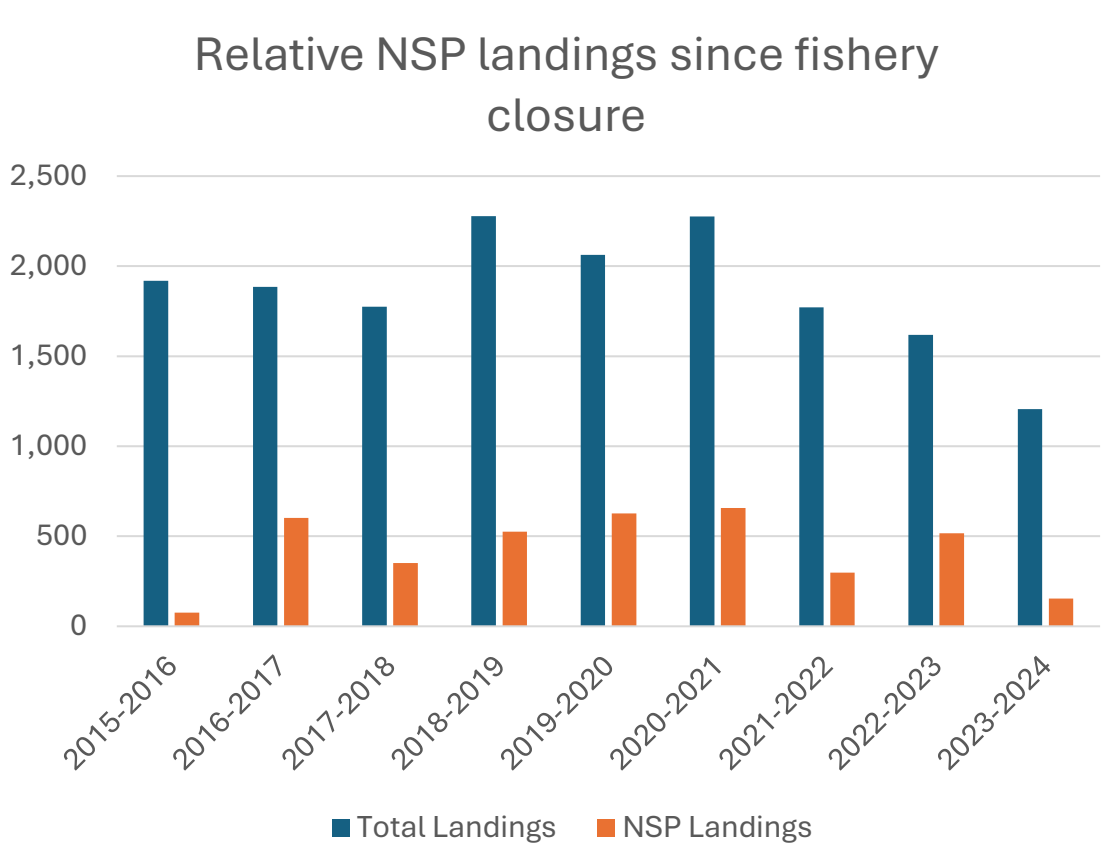


Figure: Illustrative archetype of northern subpopulation of Pacific sardine. Adult distribution in red, juvenile distribution in green, northern subpopulation in blue, southern subpopulation in purple

1. PACIFIC SARDINE STOCK STRUCTURE





1. PACIFIC SARDINE STOCK STRUCTURE

State of the Science

2022 workshop

- Described the current definition – two subpopulations.
- Discussed alternative hypotheses - single stock with no differentiation between northern and southern subpopulations.
- Discussed preliminary findings and ongoing research
    - Delineation of two stocks based on several historical studies that support the existence of multiple subpopulations - do not have data to reject idea of a single, coastwide population of Pacific sardine ranging from Baja California to Canada
    - Re-evaluation of length-at-age
    - Evaluating population structure using genetics
    - During 2014-2016 heatwave, presence of northern habitat and associated sea surface temperature were largely absent off southern California

1. PACIFIC SARDINE STOCK STRUCTURE

State of the Science

- 2023 update in habitat model *(Zwolinski & Demer)*
- Recent tech memos on population structure
  - Length-at-age cannot be used to apportion biomass into multiple subpopulations *(Erisman et al. 2025)*
  - Review covering century of literature *(Craig et al. 2025)* – little evidence to support multiple subpopulations
- Emergence of Japanese sardine
  - Present since 2022, potentially due to marine heat waves
  - *(Longo et al. 2024, Longo et al. 2025)*

1. PACIFIC SARDINE STOCK STRUCTURE

Recommendations on Priority	Recommendations on Sequence
• Routine requests for prioritization by industry • Nov 2024 CPSMT and CPSAS recommended as top priority	• Foundational to management of Pacific sardine – all other topics depend on stock definitions

1. PACIFIC SARDINE STOCK STRUCTURE

Workload Considerations

- Multiple potential coordinated actions
  - Assessment needs and cycles
  - Defining HCRs and management measures
- Need to coordinate with 2027 benchmark assessment

Next steps = review of updated information on population structure, scoping ROA, scoping necessary coordinated actions

Refresher on Pacific Sardine Harvest Control Rules (HCRs)

The Pacific sardine HCRs include the following:

- OFL = Biomass * **EMSY** * *DISTRIBUTION*
- ABC = Biomass * BUFFER * **EMSY** * *DISTRIBUTION*
- ACL = LESS THAN OR EQUAL to ABC
- ACT = OPTIONAL; LESS THAN ACL

2. EMSY IN PACIFIC SARDINE HCR

What is the Management Topic?

- Key component of HCRs

- Based on an environmental relationship to reflect environmental drivers of stock productivity
  - CalCOFI SST in use since 2014 – relationship between SST and sardine population dynamics

OFL = Biomass * **EMSY** * DISTRIBUTION
ABC = Biomass * BUFFER * **EMSY** * DISTRIBUTION

2. EMSY IN PACIFIC SARDINE HCR

State of the Science

- 2013 moved from Scripps Pier to CalCOFI SST relationship
  - Use and revised EMSY relationship adopted by Council in November 2014
  - *Footnote of section 4.6.4 in CPS FMP but FMP does not require use*
- 2025 re-evaluation of relationship between CalCOFI and Pacific sardine recruitment dynamics *(Agenda Item G.3 Attachment 2)*
  - Still a valid statistical relationship, though it has changed

2. EMSY IN PACIFIC SARDINE HCR

Recommendations on Priority	Sequence
• Recommended as one of the top long term priorities by CPSAS and CPSMT in Nov 2024 • The SSC has provided statements on evaluating and potentially deriving a new value	• Sequentially tied to stock definitions – if stock changes, HCRs may need to change

2. EMSY IN PACIFIC SARDINE HCR

Workload Considerations

Potential paths forward:

- Review correlation and determine need for further review
- Management Strategy Evaluation (MSE)
  - Compare performance of static and temp-dependent EMSY
- Potentially derive new EMSY
  - Proposal of methodology review
- See Att. 1 Section 2.2.1.1

Next steps = determine interest in further evaluation of current CalCOFI relationship and EMSY formula; deriving new potential EMSY values/formula if necessary; follow paths above depending on decision

3. DISTRIBUTION TERM

Stock	DISTRIBUTION term
Pacific Sardine (northern subpopulation)	87%
Pacific mackerel	70%
CSNA	82%
Jack mackerel	65%

- Estimates percentage in U.S. EEZ
- Applied to HCR formulas – default approach but not required
- Values developed for CPS FMP in 1998 for Amend. 8

OFL = Biomass * EMSY * ***DISTRIBUTION***
ABC = Biomass * BUFFER * EMSY * ***DISTRIBUTION***

3a. DISTRIBUTION - PACIFIC SARDINE

State of the Science

- 2015 Workshop
  - Re-evaluated DISTRIBUTION & examined 5 alternative percentages
  - Council and SSC recommended maintaining 87% value
  - Recommendations to tweak term and made conclusions regarding methods, uncertainty
  - DISTRIBUTION could be removed from the HCR entirely in favor of another approach.

- April 2024 SSC Recommendation
  - *“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”*

3a. DISTRIBUTION - PACIFIC SARDINE

Recommendations on Priority	Sequence
• Recommended as one of the top long term priorities by CPSMT in Nov 2024 • Recommended for reconsideration by SSC in April 2024	• Sequentially tied to stock definitions – if stock changes, HCRs may need to change

3a. DISTRIBUTION - PACIFIC SARDINE

Workload Considerations

Potential paths forward:

- New values derived
- New process developed to guide dynamic updates in response to conditions or other periodic review

Next steps = coordination to derive new values and/or process; review of any values; potential FMP amendment

3b. DISTRIBUTION – Northern Subpopulation of Northern Anchovy (NSNA)

Current Management Approach

- Fixed MSY (FMSY = 0.3)
  - No annual management, hence no DISTRIBUTION term
- Portion of the stock is distributed in British Columbia, Canada
- If HCR is ever changed to a formula, DISTRIBUTION could be developed

3b. DISTRIBUTION – (NSNA)

Recommendations on Priority	Sequence
• Not a highly targeted stock	• Could be used if complexity added to HCRs

Workload Considerations

- Development of new term requires coordination with scientists, review by SSC
- Requires FMP amendment

4. STOCK ASSESSMENT FREQUENCY

Stock	Assessment Schedule
Pacific Sardine (NSP)	Assessed every three years with updates in interim years
Pacific mackerel	Assessed every four years, with a catch-only update in the second interim year
CSNA	Assessments are conducted every eight years, every two years determine if adjustments to harvest parameters or the assessment schedule needed (framework in Figure 1 of COP 9)
Jack mackerel	No Schedule
NSNA	No schedule
Market Squid	Managed by States

4. STOCK ASSESSMENT FREQUENCY

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4. STOCK ASSESSMENT FREQUENCY

4a. Pacific Mackerel

- Reduction in frequency or change in approach

4b. NSNA

- Fixed MSY (FMSY = 0.3)
- No annual management
- Never formally assessed, potential for future assessment

4. STOCK ASSESSMENT FREQUENCY

Workload Considerations

4a. Reduction in Frequency:

- Could reduce the workload of the SWFSC, NMFS West Coast Region, and Council staff, potentially freeing up capacity for other priority topics in highly targeted fisheries
- Requires a change to COP 9

4b. A new assessment methodology:

- Requires a high level of coordination with the SWFSC (survey and stock assessment scientists) as well as the SSC.
- Potential changes required to CPS survey
- Capacity potentially taken away from the ability to do status quo CPS management
- Requires a change to COP 9

4a. PACIFIC MACKEREL

Recommendations on Priority	Sequence
• Recommended by CPSAS (November 2024)	• Could open up capacity for other priorities

4b. NSNA

Recommendations on Priority	Sequence
• Not a highly targeted stock • CPSMT recommended as potential long-term goal, but not a priority (November 2024)	• May wait until identification of concern • Any changes in stock assessment could precede or run parallel to other changes to HCRs

5. MANAGING ANNUAL OPPORTUNITY

5a. CSNA ACL

- OFL and ABC last issued in 2020 -119,153 mt and 28,788 mt, respectively - ACL remained static at 25,000 mt
- Flowchart dictates frequency of initiating change to HCRs via ABC, but does not guide revisions to ACL
- Landings have been low in recent years, but were higher than 25,000 mt in years the reduction fishery operated

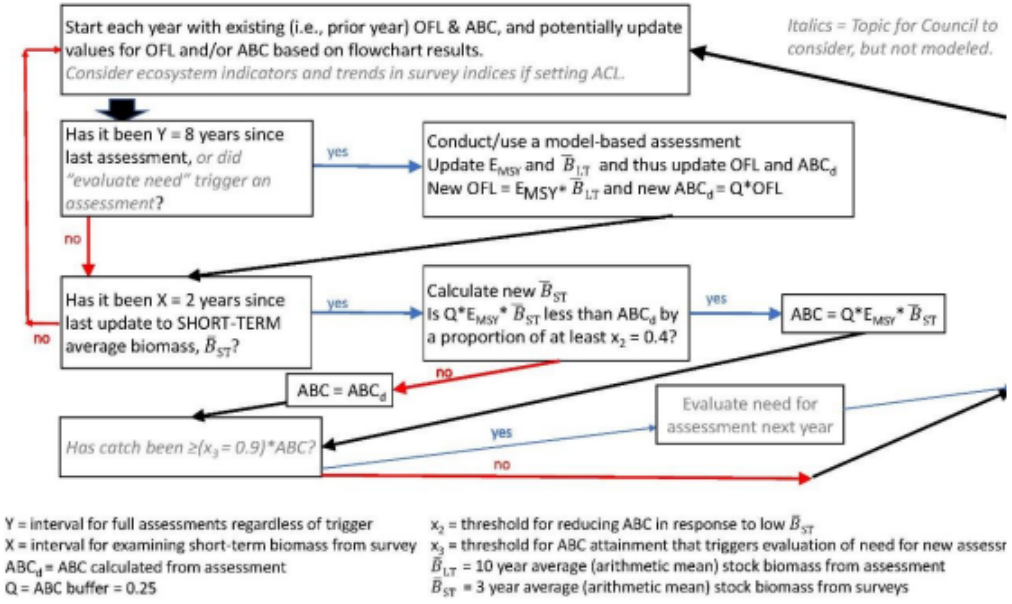


Figure 1. Flowchart depicts the framework for managing the central subpopulation of northern anchovy with the parameter values to be utilized.

5a. MANAGING ANNUAL OPPORTUNITY – CSNA ACL

Recommendations on Priority	Sequence
• No current concerns of restriction	• May be topic of interest in future if ACL needs adjusting for opportunities

Workload Considerations

- Changes to the management process require changes to COPs
- Changes to the ACL itself requires regulatory amendment

5. MANAGING ANNUAL OPPORTUNITY

5b. INCIDENTAL LANDING LIMITS

- CPS FMP provides guardrails for Council to recommend incidental landing limits for CPS species, depending on stock status
- Increase in the incidental landing limit would provide more flexibility for other CPS fisheries that incidentally catch sardine (CPSMT and CPSAS April 2024)
- Public comments by industry members have expressed concern about restriction
- CPSMT previously evaluated this topic for Pacific sardine under Amend. 17 and during annual spex cycles

Table: CPS Incidental landing limits, per CPS FMP Section 5.2

Overfished	Not Overfished
0 – 20% of landed weight	0 – 45% of landed weight

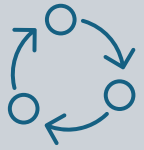
5b. MANAGING ANNUAL OPPORTUNITY - INCIDENTAL LANDING LIMITS

Recommendations on Priority	Sequence
• Frequent concern of industry members • May not be a priority until stock consistently above MSST	• Sequentially tied to stock definitions – if stock changes, management measures may need to change

Workload Considerations

- Council may consider review of limits
- Changes would require additional analysis by CPSMT or Council staff
- Changes require an FMP amendment

CONCURRENT COUNCIL PROCESSES



Adaptive and ecosystem-based management

Research and Data needs

Proposed Process

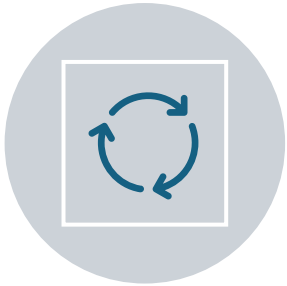
1. Model after stock assessment prioritization in November of every even year
2. Council and ABs can use same recurring timeline to discuss the current status of science questions related to the management of CPS, amend the list as necessary, and similarly prioritize items for the following two years
3. Council may choose to skip any given prioritization meeting
4. This process could be incorporated into the COPs if deemed appropriate

Council Action

Review, revise, and adopt list

Recommend near term priorities for scheduling under Agenda Item H.3

Provide guidance on their sequence



Review and adopt proposed process

Questions?